

WHAT FUTURE FOR TAXATION IN THE EU?

edited by Catherine Mathieu
and Henri Sterdyniak

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WHAT FUTURE FOR TAXATION IN THE EU?

Catherine Mathieu and Henri Sterdyniak

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The 11th EUROFRAME¹ Conference on economic policy issues in the European Union was held in Paris on 6 June 2014. The aim of the conference is to provide an economic forum for debate on economic policy issues relevant in the European context. In June 2014 the Conference topic was: “What future for taxation in the EU?”. The programme and conference papers are available at the EUROFRAME Conference webpage: www.euroframe.org. Six of the papers given at the Conference are released in this issue of the *Revue de l'OFCE*.

European economies have high taxation levels, which allow financing the European Social Model, characterised by a high level of public and social spending. In 2012, the tax-to-GDP ratio was 39.4% for the whole EU, 40.4% for the euro area, as compared to 39.4% for Japan and 24.5% for the US. There are however wide disparities within the area. The tax-to-GDP ratio is higher than 45% in Denmark, Belgium and France, and ranges between 45% and 40% in Sweden, Finland, Italy and Austria. But it is below 35% in Greece, Spain, Poland, and Portugal; 30% in Slovakia, Ireland, Romania, and Bulgaria. There was no trend in the tax-to-GDP ratio developments at the EU level over the last 20 years.

Taxation issues are especially important in Europe, and have generated a huge number of analyses, reports and debates. Three elements of debate seem crucial to us. The first one lays in the tax reforms needed at domestic level. Some advocate a less heavy and a more neutral taxation. Others wish to keep and even strengthen the redis-

1. EUROFRAME is a network of ten independent European research institutes: WIFO (Austria), ETLA (Finland), OFCE (France), DIW and IFW (Germany), ESRI (Ireland), PROMETEIA (Italy), CPB (Netherlands), CASE (Poland), NIESR (United Kingdom).

tributive and incentive role of taxation. There seems to be some consensus on the need to increase progressively environmental taxation and to reduce the tax burden on labour (but is this consistent with social protection financing?). The second element of debate deals with tax harmonisation and tax coordination at the EU level. Some wish to combat tax evasion (which leads Member States to deprive themselves of tax revenues in order to cut taxes on the wealthiest and on large companies; to combat 'tax tourism' (which allows the wealthiest and large companies to choose their tax residence in order to avoid taxation). On the contrary, others wish to let competition play in order to oblige countries to cut their public spending levels. Many are in favour of European taxation, to accompany a rise in the EU budget, either to combat tax evasion, or to favour environmental transition or to reduce the size of finance. Last, a third element of debate deals with the role that tax reforms could play in the resorption of euro area current imbalances. Some advocate substituting fiscal devaluations to monetary devaluations, which can no more be implemented in a monetary union, but fiscal devaluations should be coordinated at the euro area level. Should economic activity be supported by large tax cuts (at the risk of widening public deficits), offset by public spending cuts (at the risk of being detrimental to output and to the European social model)? Should wealth taxation be increased to reduce public debts and deficits?

Structural taxation issues

The paper given by Leon Bettendorf – *Study on the impacts of fiscal devaluation*² – analyses the consequences of fiscal devaluation, i.e. of employers' social contributions cuts offset by rises in VAT. The country implementing such a policy will benefit from competitiveness gains, which will be all the more large and long-lasting than wages and social contributions are not price-indexed. This measure can also be analysed as a once for all tax on capital in place. However, as VAT and social contributions have more or less the same tax base (value added minus investments versus value added minus profits), the total impact on output, employment or trade balance is small in the medium-term.

2. Not released in this issue. The paper is available as a European Commission taxation papers, *Working paper* No. 36, 2013.
http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_36_en.pdf.

In *Carbon Tax, Pensions and Public Deficits: The hidden cost of the compartmentalization of expertise*,³ Emmanuel Combet and Jean-Charles Hourcade argue that analyses on social spending trends linked to population ageing and policies to combat climate change are intertwined. The authors advocate to finance the rise in pensions spending through a rise in environmental taxation accompanied by employers social contributions cuts and higher income tax, so as to generate a triple dividend: financing social protection, reducing CO2 emissions, and rising employment. One may fear however that the paper overestimates the positive effects of the carbon tax.

The Financial Transactions Tax

The paper by Stephan Schulmeister – *The struggle over the Financial Transactions Tax – A politico-economic farce* –, shows that financial markets speculation induces a strong volatility detrimental to growth. The Financial Transactions Tax (FTT) would allow to reduce this volatility. The proponents of this tax succeeded to have it advocated by the European Commission in September 2011. But under the counter-attack of liberal economists and of the financial lobby, the FTT lost a substantial part of its content and its implementation was delayed.

In *A step too far? The European financial transactions tax on the repo market*⁴, Daniela Gabor also addresses the EU debate on the FTT. The author analyses the strong opposition of financial and banking lobbies to repo-FTT. Transactions in the repo market contributed to the expansion of shadow banking which increases the fragility, opacity and interconnection of the European banking system; taxing repos would have reduced the size of shadow banking, but governments abandoned this project under the pressure of the banking lobby, which put forward the threat of a rise in government borrowing costs.

The paper by Gunther Capelle-Blancard: *Securities Transaction Tax in Europe: First impact assessments*⁵ analyses the impact of the securities transaction tax which was introduced in France and Italy. The paper shows that this tax reduces somewhat traded volumes, without increasing market liquidity or volatility.

3. Not released in this issue. The paper can be downloaded from: <http://www.euroframe.org/conferences.html?aid=1#june2014>

4. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

5. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

The paper by Maria Coelho, *Dodging Robin Hood: Responses to France and Italy's financial transactions taxes*⁶ shows that market operators were able to reduce substantially the weight of these taxes, mainly through modifying the frequency and locations of their activities; market volatility was not significantly affected.

Country experiences

The paper by Sarah Godar, Christoph Paetz and Achim Truger, *The Scope for Progressive Tax Reform in the OECD Countries: A macroeconomic perspective with a case study for Germany*, shows that tax progressivity was clearly reduced in many OECD countries before 2007. The paper shows that there is very limited empirical evidence that high taxation rates reduces labour supply from the wealthiest and investment from large companies. But the rise in incomes inequality induced by tax cuts on high incomes and wealth, social benefits cuts, have negative impacts on demand and finally lead to a rise in the government deficit, which entails public spending cuts. The paper suggests coordinating at the international level taxes on high incomes and wealth, on domestic companies, and domestic policies to increase income redistribution, which would enhance growth and make it easier to meet fiscal targets.

The paper by Katharina Jenderny, *Tax progression and the German dual income tax*⁷, provides an analysis of the impact of the introduction of a dual tax system in Germany in 2009. Capital incomes are no more taxed according to the progressive tax schedule, but at a flat withholding tax. The reform benefited higher incomes, reduced strongly the progressivity of the German income tax, especially for higher-earnings.

The paper by Henri Sterdyniak, *The Great tax reform: a French myth*, analyses the specificities of the French tax system: relatively low levels of income taxation and employers' social contributions; high taxation of capital incomes and higher incomes. The paper analyses, for each kind of tax, the reforms which could be introduced and discusses their relevance. In particular, the paper shows that replacing employers' social contributions by VAT is useless; it is desirable but difficult to raise environmental taxation. It is often recommended that France could be brought in line with the EU average thanks to fiscal devalua-

6. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

7. Not released in this issue. Available at: http://www.ecineq.org/ecineq_bari13/FILESxBari13/CR2/p216.pdf

tion, obtained through *via* strong cuts in employers' contributions and corporate taxation, financed by a rise in CSG; but this should be implemented only in a European context.

The paper by John FitzGerald, *Tax policy issues in Ireland*⁸ shows that prior to the crisis, tax revenues in Ireland were relying heavily on property related activity and corporate taxation. Social contributions are very low. Since the beginning of the crisis, a third of the fiscal effort was done through taxation. A housing property tax was introduced, replacing transactions taxes on property. The author considers that raising the corporate tax rate (currently at 12.5%) would be detrimental to jobs in Ireland. However, corporate tax rate cuts in Ireland's neighbour countries reduces the advantage of Ireland, such that Ireland will have to adapt. The marginal income tax rate, at close to 50% should be cut and its base widened.

European taxation issues

In *What future for VAT in the EU? Key challenges and strategies for reform*⁹, Stephen Smith recalls the drawbacks of the current VAT system for intra-EU trade, in particular the risks of fraud and the problems which arise with the development of trade in services and e-commerce. But can the system be improved? No system combines all needed qualities: destination principle, freedom for EU members to set their VAT rates, equal treatment for domestic and intra-EU trade. An alternative system would be to set a uniform rate in the EU for all trade within companies; some fraud possibilities would be reduced, but it sometimes difficult to disentangle intra-company trade and final sales.

The paper by Sebastian Kessing, Vilen Lipatov and Malte Zoubek, *Optimal taxation under regional inequality*,¹⁰ assumes that workers from poor regions (or countries) may increase their productivity in working in richer regions (or countries). From that perspective, redistribution between rich and poor regions (countries) through taxation and social benefits may restrain migration flows and hence be detrimental to total productivity. Accounting for this effect, reduces optimal redistribution at the domestic (or EU) level. The objective of European construction however remains to be set: increasing migration flows

8. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

9. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

10. Not released in this issue. Available as a *CESIFO Working Paper* No. 5152.

from poor to richer countries or ensuring productivity convergence in poor countries.

The paper by Mathias Dolls, Clemens Fuest, Dirk Neumann and Andreas Peichl, *An unemployment insurance scheme for the euro area: Evidence at the micro level*¹¹ proposes an empirical analysis of the impact of the introduction of an unemployment insurance scheme at the euro area level. Such a scheme will depend on the characteristics of the system. As countries with low unemployment rates would oppose a system entailing permanent transfers, EU benefits would be entitled to recently unemployed people only (i.e. between 3 to 15 months) and the gross replacement ratio would be 35% only. During the crisis, the system would have entailed transfers from Germany, Austria, and the Netherlands to Greece, Ireland, Portugal and Spain. But the stabilisation effect would be limited and would vanish over time. In our view, a system of this type cannot be a substitute for a satisfactory fiscal coordination in Europe, allowing each country to run a fiscal policy relevant in the domestic macroeconomic context.

The paper by Marcio de Andreis and Mauro Marè, *Why and how the EU budget should be reformed?*¹², makes a proposal for a comprehensive reform of the European budget, currently too small, rigid and with an outdated composition. The paper suggests the European budget should be financed by a EU VAT on intermediate consumption. The paper suggests to reorient expenditure from agriculture and social cohesion to public goods such as defence, border control, external affairs and security, R&D. In our view, the paper underestimates the role that the EU budget should play in redistribution between regions (and countries)

Labour income taxation

The paper by Michele Catalano and Emilia Pezzolla, *The interaction between labor tax wedge and structural reforms in Italy*, uses a DSGE model to analyse the impact of structural reforms (lower margin ratios for companies and lower wages) and various tax reforms (cuts in employers' contributions, income tax, IRAP, property taxation), or fiscal (cuts in public expenditure, public investment, social benefits). Prices are assumed to balance supply and demand for goods. Public expenditure has no specific usefulness. The most favourable to jobs

11. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

12. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

measure in the medium/long-term would be cuts in IRAP financed by cuts in social benefits, but neither the impact on households' welfare nor on partners' countries is analysed. Introducing structural reforms would allow for higher public investment, which would increase the initial positive impact of the reform.

The paper by Flavia Coda Moscarola, Ugo Colombino, Francesco Figari and Marilena Locatelli, *Shifting taxes from labour to property. A simulation under market equilibrium*,¹³ suggests to increase the property tax in order to increase the tax credit on low incomes and make it refundable. This reform would reduce income inequalities and increase labour supply from the low-skilled, especially women.

The paper by Etienne Lehmann, Claudio Lucifora, Simone Moriconi and Bruno Van der Linden, *Beyond the labour income tax wedge: The unemployment-reducing effect of tax progressivity*¹⁴ shows in theory and empirically that labour taxation progressivity has in the end a positive impact on employment and decreases unemployment. Of course, the willingness to work, and productivity may be affected, but tax progressivity plays a wage moderation role and increases total labour demand, which is more sensitive to wage costs for low-skilled people.

Corporate taxation

The paper by Manuel Bonucchi, Monica Ferrari, Stefania Tomasini and Tsvetomira Tsenova, *Tax policy, investment decisions and economic growth*, gives a detailed analysis of labour costs and capital costs in Italy, accounting for changes in taxation. The paper provides an econometric analysis of the impact of demand and of the relative capital/labour cost on investment. The paper advocates active demand and public investment policies. Temporary measures of cuts in capital costs have had a strong impact and may be used for their counter-cyclical role. Last, cutting IRAP would have a more positive impact on jobs than corporate tax cuts.

The paper by Hendrik Vrijburg, *Do small and medium-sized enterprises respond to the corporate tax system?*¹⁵, provides an econometric analysis on individual data of the impact of corporate taxation on Dutch companies. The paper makes a distinction between young and mature companies, between financially and non-financially

13. Not released in this issue. Available as IZA Discussion Paper No. 8832.

14. Not released in this issue. Available as CESIFO Working Paper No. 4348.

15. Not released in this issue. Available at: <http://www.euroframe.org/conferences.html?aid=1#june2014>

constrained companies. Corporate taxation would have a limited impact on investment, but a large impact on financing.

The paper by Arjan Lejour, *The foreign investment effects of tax treaties*¹⁶, shows that international, bilateral or multilateral treaties on dividend transfers or parent-subsidiaries relationships increase strongly foreign direct investment flows and stocks.

Tax reforms

The paper by Gaëlle Garnier, Aleksandra Gburzynska, Endre György, Milena Mathé, Doris Prammer, Savino Ruà and Agnieszka Skonieczna (European Commission), *Recent reforms of tax systems in the EU: good and bad news*,¹⁷ recall the tax reforms recommended by the Commission: reducing labour taxation, not increasing tax rates but widening tax bases, abolishing tax expenditures which are not very useful ; improving tax revenues collection (combating fraud and tax evasion), reducing the corporate tax bias towards indebtedness, increasing housing property taxation. In all these areas, progresses have been made, but they remain limited. We may regret that the European Commission does not mention the fight against income and wealth inequalities, the fight against financial instability and green taxation as a main objective.

The paper by Florian Wöhlbier, Caterina Astarita, and Gilles Mourre (European Commission), *Consolidation on the revenue side and growth-friendly tax structures: an indicator based approach*,¹⁸ sets two objectives to tax reforms in Europe: lowering labour taxation (especially for low-skilled workers and for married women); contributing to public finance sustainability. The paper assesses which countries tax labour more heavily, which countries need to raise their tax revenues in the medium term, which countries have room for manoeuvre in terms of taxation not harmful to growth and jobs: property taxation, consumption taxes and environmental taxes. However, the paper does not account for macroeconomic considerations (the depressive impact of higher taxes); fairness (no tax on high wealth is considered); the effect of shifting taxation from labour to consumption is probably overestimated.

16. Not released in this issue. Available as a *CPB Discussion Paper*, No. 265.

17. Not released in this issue. Available as: European Commission taxation papers, *Working paper* No. 34, 2013.

18. Not released in this issue. Available as: European Economy *Economic Paper* 513, February 2014.

The paper by Margit Schratzentaler, *Sustainable tax policy, concepts and indicators beyond tax ratios*, gives a critical view on the current trend of international organisations, and of the Commission in particular, to assess tax reforms from the only perspective of economic growth. Equity and social cohesion considerations, as well as environmental sustainability are as much important and should be taken into consideration at the same level. The paper is in favour of broad indicators, accounting for these three aspects in an in-depth way. Thus, one should be cautious with too simple indicators, and build relevant indicators. For instance, one should account for gender inequalities, for the role of public expenditure in reducing inequalities, for the risk that environmental taxation weighs more heavily on the poorer than on the rest of the population.

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The preparation of the volume was ensured by OFCE. We would like to thank everyone involved in the work, and especially Nathalie Ovide, who co-ordinated the secretarial work, Esther Benbassat, Claudine Houdin and Valérie Richard, and Najette Moumami who took care of finalising the volume.

THE STRUGGLE OVER THE FINANCIAL TRANSACTIONS TAX

A POLITICO-ECONOMIC FARCE¹

Stephan Schulmeister

WIFO

The struggle over the FTT has developed in three phases. In the first phase (2009 to 2011) the supporters of the tax went on the offensive, supported by the “shock effects” of the financial crisis. This phase ended with the (preliminary) “victory” in the form of the FTT proposal of the European Commission (EC) in September 2011.

The second phase was shaped by the search for ways how to implement the FTT within the EU. It ended with the publication of a modified FTT proposal by the EC in February 2013 as basis for the implementation in 11 Member States.

The last phase has been marked by a strong counter-offensive of the financial lobby which succeeded in playing off FTT supporting countries against each other, in particular Germany and France. This phase ended with a defeat of the FTT supporters. Not even in a group of EU Member States will a general FTT be implemented in the foreseeable future.

The struggle over the FTT was mainly carried out in two “battlefields”, the intellectual disputes between economists at universities, research institutes and international organizations, and the political controversies between NGOs, political parties, governments and pressure groups, in particular the finance industry.

Keywords: boom and bust of asset prices, speculation, Financial Transactions Tax.

1. I dedicate this essay to Jernej Omahen, Chris Turner, Jean-Francois Neuez and Luca De Angelis from Goldman Sachs Research representative for all economists who sell their intelligence in the market for interest justifications.

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1. Introduction

The conflict between recognition and interest, explanation and justification, analytical and normative thinking shapes the work of economists to a much larger extent than the work of any other types of intellectuals. The reason is given by Keynes at the end of his “General Theory”: “... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else.” (Keynes, 1936, p. 383). If economic theories “rule the world” then the distribution of power, income and wealth depends on which economic theory becomes a “paradigm”. This is so because economists then derive from this “Weltanschauung” the “navigation map” for policy.

The thinking of economists is therefore driven by the interaction of three forces/motives/activities: Analysis and recognition of “true” relationships (science), justification of interests (ideology), and elaboration of concepts for “improving the world” (ethics). Any output of economists’ reasoning is a “mixture” resulting from the interaction of these three activities. Even though one cannot exactly quantify the contribution of each of these activities (as they are closely interlinked), the following rule of thumb helps to gauge the importance of the ideological component of an economic theory or proposal: The higher is the degree of abstraction of their model, and the less its basic assumptions are derived from empirical research/experience, the more plausible is the suspicion that assumptions as well as methods were chosen to arrive at certain conclusions.

Classical economists, notably Adam Smith, David Ricardo, and Karl Marx, were well aware of the conflicting economic and political interests of different classes in society. As a consequence, they embedded their theories in the context of the interaction of these interests. Conceiving themselves as members of the society, those economists took clear positions in favour of certain classes and against other classes. Their economics was devoted to analysing the “political economy” and to formulate proposals for its improvement – the idea of a “value-free” economic science would have seemed absurd to the classics. Related to this understanding is

their methodological approach: As they try to explain the most important economic developments like economic growth, specialization and trade, the distribution of income and wealth, the role of government in a market economy, etc., they try to base their assumptions on observations and to reach general conclusions carefully in an inductive way (taking into account the historical and regional context).

Even though the content of the – genuinely macroeconomic – theory of Keynes is very different from the – market-oriented – classical theories, Keynes shared the attitude of the classics in many respects: Also Keynes thought concretely and problem-oriented, based his reasoning rather on experience than on abstract models, and as a “political philosopher” he put his theory in the context of the conflict of interests of entrepreneurs, workers and (financial) rentiers. Last but not least, Keynes elaborated many concrete proposals for a better organization of the domestic and of the global economy.

In complete contrast to this attitude, neoclassical economics, which has become the predominant school since the late 19th century, assumes that there exist “eternal truths” about the functioning of a capitalistic market economy. Economics is conceived as a value-free science, which aims at finding out these “economic laws” (they are assumed to be valid beyond time and space). Establishing economics as a value-free and, hence, non-ideological science is itself the most important ideological component of the neoclassical school of thought. Such a self-image enables economists to “sell” their conclusions as objective truths and to repress the simple question: Which groups/classes are favoured or put at a disadvantage by the neoclassical “truths”.

The denial of the interaction between economic theory and economic reality calls for a specific methodological approach: One sets assumptions about the agents (“homo oeconomicus”), ideal market conditions, permanent market clearing, etc., all of which are not supported by the empirical evidence. Based on these assumptions, one constructs highly abstract models from which those results are (tauto)logically deduced which are already contained in the assumptions: All markets should be “liberalized”, governments should refrain from an active economic policy, irrespective whether it regards business cycle fluctuations, social

security, income distribution or the regulations of the financial sector, etc. All these prescriptions favour certain groups in society over others.

I term the first – classical and original Keynesian – approach to analysing economic relationships “realistic economics” (RE) and the neoclassical approach “idealistic economics” (IE). The key differences between both approaches concerns the way of thinking:

- “Realistic economics” (RE) addresses concrete economic problems, collects empirical observations and tries to arrive at general conclusions about the relevant relationships in a predominantly – yet not exclusively – inductive manner. RE acknowledges the importance of contradictions in the economy, which should therefore be incorporated in economic theory. Policy recommendations are problem-oriented, pragmatic and, hence, embedded in the context of historical time.
- “Idealistic economics” (IE) aims at modelling the universe of economic relationships in an ideal world – free of contradictions. To this end, IE has to make assumptions which “abstract away” essential properties of human beings and of their interaction in society like the role of emotions or of uncertainty. From the general equilibrium models based on these assumptions, one deducts a “navigation map” for economic policy – again valid beyond time and space.

The two different approaches to economics do not only shape the activities of economists at the academic level, but also economic policy. E.g., the New Deal of Roosevelt or the full employment policy of the 1950s and 1960s are typical examples of the RE approach, strict rules for monetary and fiscal policies like the fiscal compact of the EU or deregulation as a general guideline are typical for the IE approach.

The sequence of prosperity and depressions is interconnected with the sequence of RE and IE paradigms. One specific reason for that lies in the influence of economic paradigms on the incentive conditions of the overall system. IE paradigms favour deregulation in general and of financial markets in particular so that striving for profits shifts gradually from the real to the financial economy. The

“production” of “fictitious capital” (Karl Marx) in the form of over-valued assets, in particular the government debt, leads inevitably into a deep crisis. After a long lasting learning period (the bottom phase of the “long cycle”), an RE paradigm leads to changes in the incentive structure and in economic policy: Striving for profits is again focused on activities in the real economy, leading to prosperity.

The long cycle since the 1920s is a good example for this interaction: The finance-capitalistic framework conditions and the related stock market boom led to the crash of 1929, the subsequent recession was transformed into a depression due to the austerity policy prescribed by the IE paradigm. The learning from the crisis, in particular in the form of a new RE theory provided by Keynes, laid the ground for the real-capitalistic system of the 1950s and 1960s. Since then, the restoration of the neoclassic paradigm, completed by the most unrealistic assumptions ever made in the history of economic thought (rational expectations, financial market efficiency, real business cycle, etc.), served as the scientific legitimation of the interest of finance capital in a complete deregulation of asset markets. The related change in the incentive conditions paved the long way into the current crisis.

At present, the European economy is in a state of depression (external demand is the only growth component), typical for the bottom phase of the long cycle: The IE recipes continue to weaken domestic demand, yet, the elites remain stuck in the neoliberal paradigm which has been dominating longer than ever before. In such a situation where a new RE paradigm is not in sight, single RE proposals are put forward which could/should change the course of events (e.g., the Glass-Steagall act of 1933 to restrict – as Roosevelt put it – “speculation with other people’s money”). In the present situation in Europe, the proposal of a general Financial Transactions Tax (FTT) has become the most important proposal of this kind.

The struggle over the usefulness of a FTT on the academic level, in the media and in politics, between EU member states as well as within each country, reflects the fundamental differences between the “realistic” and “idealistic” approach to economics. As the crisis deepens, this struggle will extend to other problem fields like unemployment or the public debt. These struggles are part of the process

of destructing the old paradigm and developing a new one (in part by trying new ways in practice as done by the New Deal). Such a process is most typical for the trough phase of the “long cycle”.

In this essay I shall elaborate upon the most important arguments/weapons of the proponents of and the opponents to a FTT. I’ll try to show that the arguments of the proponents are typical for RE reasoning, whereas the arguments of opponents are derived from the “idealistic” economic paradigm. I shall further document how the arguments against a FTT, derived from extremely abstract axioms, legitimate the extremely concrete interests of banks and hedge funds which have been specializing in “finance alchemy” for so long.

2. “Finance alchemy” and a general transactions tax: A personal remark

In 1982, the debt crisis of developing countries broke out which hit Latin America most. The standard explanation attributed the crisis to mismanagement, corruption and political instability in these countries – but these (“structural”) factors had already been in effect over the 1970s when Mexico, Brazil and Argentina were considered the “tiger economies” of that time. Hence, I started to look for other, more concrete explanations.

First, I looked at the currency structure of the foreign debt – it was almost exclusively held in US-dollars. The global key currency had appreciated by almost 30% since 1980 (mainly due to a policy change in the US). As a consequence, the dollar debts were drastically revalued – unsustainable for debtor countries. But why had they accumulated high dollar debts in the first place? The main reason was: Between 1971 and 1980, the dollar had lost 50% of its value, incurring dollar debts seemed rational (the real interest on an international dollar debt was markedly negative over the 1970s due to strongly rising world trade prices in dollar terms). And why had the dollar so strongly depreciated? First, because the US government under president Nixon broke away with the gold convertibility of the dollar in 1971, causing the Bretton Woods system to collapse (this decision was “scientifically” legitimated by the monetarists’ call for moving to a system of “flexible” exchange rates). Second, currency speculation caused the subsequent dollar

depreciation to overshoot (as it caused an overshooting appreciation in the first half of the 1980s).

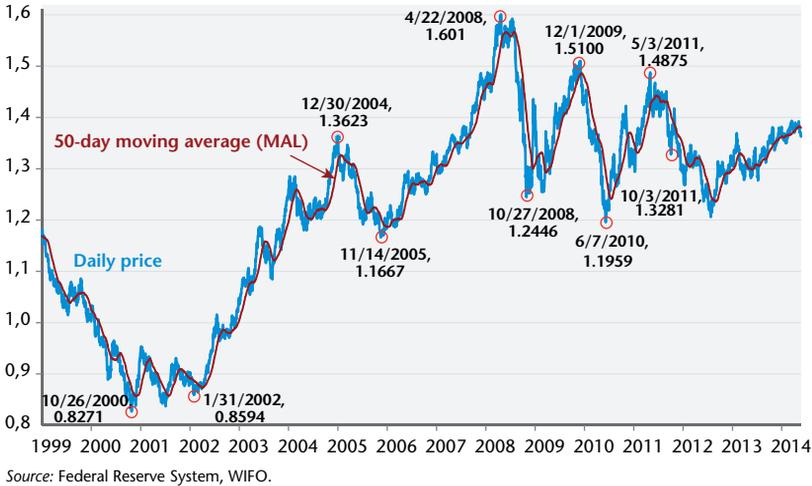
I arrived at the following (hypothetical) conclusion: From their respective point of view and interest, each group of actors had acted rationally, the monetarists, the US government, the currency traders, the developing (debtor) countries, the lending countries and intermediating institutions (in particular London banks “recycling petrodollars”), yet, the interaction of their behaviour led into a rather “irrational” event, the debt crisis of 1982 (the subsequent “lost decade” of Latin America can be conceived as a “silent catastrophe” – if only 1% of the population died earlier than they would have otherwise then roughly 3 million people were concerned).

Could it be that striving for profits through financial speculation causes systematically sequences of “bull markets” and “bear markets” which in turn dampen entrepreneurial activities in the real economy, in particular through the asset valuation effects of overshooting? How are “bulls” and “bears” brought about? In more general terms: Does the “invisible hand” in financial markets produce systematically disorder instead of order? Through which channels do asset price fluctuations impact upon the real economy?

Over the subsequent 30 years, my research program was shaped by the attempt to find concrete answers to these questions.

I began with an analysis of the DM/dollar exchange rate movements since the early 1970s. As conventional exchange rate theory could not explain the persistence of the overshooting process downward (1971/80) as well as upward (1980/85), I turned to an inductive/exploratory approach. First, I tried to find out which types of trading behaviour could – in the aggregate – bring about the pattern of daily exchange rate movements as a sequence of (underlying) short-term trends, interrupted – comparatively rarely – by non-directional movements, called “whipsaws” in the traders’ jargon (Figure 1 displays daily movements of the dollar/euro exchange rate – their “Gestalt” is the same as in the case of the DM/dollar rate and – as it turned out later – of all asset prices traded in financial markets). Second, I started with some field research in trading rooms.

Figure 1. Trading system for the daily dollar/euro exchange rate



Already at my first “excursion” to banks in Frankfurt in 1986 I got to know the importance of trading systems, be it qualitative (“chartism”) or quantitative (“trend-following” as well as “contrarian”) systems of technical analysis. Until today, these systems are omnipresent in trading rooms (traders have to watch so many screens because trading systems are applied to different data frequencies). As one trader told me: “You have to take into account the trading signals of technical models even if you don’t subscribe to them – too many traders are using them” – unconsciously alluding to Keynes’ “beauty contest” – Keynes, 1936, p. 156).

During my Frankfurt field research, the chief currency trader of “Citibank” (then the most active bank in the foreign exchange market) proudly showed me the profitable sequence of one of their trading systems. I was shocked: Technical models use exclusively the information contained in past prices, if they were profitable then the forex market would not even be weakly efficient!

All trading systems aim at exploiting the phenomenon of “trending” of asset prices (“the trend is your friend”): Trend-following systems produce a buy (sell) signal in the early stage of an upward (downward) trend, contrarian systems produce a sell (buy) signal in the late stage of an upward (downward) trend. The (underlying) trends are filtered out by simple statistical transformations of

the original price series (mostly by calculating moving averages or first differences). Figure 1 shows the functioning of the simplest form of a MA-model (it uses only one MA): Buy whenever the price series (i.e., the dollar/euro exchange rate) crosses the MA-line from below, and sell, when the opposite occurs. Figure 1 demonstrates that even such a simple model would have exploited profitably the downward and upward exchange rate trends (the euro depreciation – bear market 1999/2002 – as well as the tremendous euro appreciation – bull market 2002/2008 – were the result of the accumulation of several downward and upward trends, respectively).

Figure 2. “Bulls” and “bears” in the US stock market and technical trading signals



Source: Yahoo Finance.

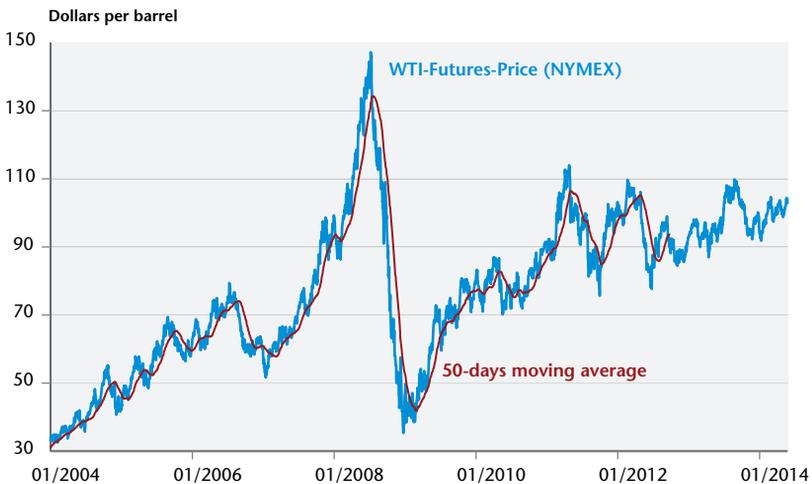
Figure 3. Intraday asset price dynamics



Source: Fed, Olson.

On the academic level, the 1980s were the heydays of “idealistic economics”, it became common sense to believe that under any circumstances would “the market” stabilize the economy – provided it is kept free. Confronting the simple fact of the widespread use of technical model in practice would have meant confronting an unsolvable dilemma: Either these models are not profitable, then the assumption of rationality of market agents has to be dismissed, or they are profitable, then the “freest” markets would not even be weakly efficient. As a consequence, academic research completely ignored technical trading or declared it as irrational “noise trading”.

Figure 4. Trading system for the daily oil futures price



Source: NYMEX.

To clarify this issue, I devoted much of my research efforts over the subsequent 20 years to analysing the profitability and price effects of technical trading systems in the foreign exchange markets (DM/dollar, yen/dollar, dollar/euro – Figure 1), the stock markets (DAX, S&P 500 – Figure 2) and in the commodity futures markets (corn, rice, WTI crude oil and wheat – Figures 4 and 5), using not only daily but also intraday data (Figure 3). I analysed some thousands models, which were selected *ex ante* according to objective criteria (in order to dismiss the suspicion of “model mining”). The results are qualitatively the same for all markets and data frequencies (Schulmeister, 2002, 2006, 2008a, 2008b, 2009a,

2009b, 2009c, 2012; the main results are summarized in Schulmeister, 2010):

- The great majority of the models would have produced profits over the entire sample as well as over sub-periods (not only *ex post* but also *ex ante*, i.e. when selecting the best performing models of sub-period A and following them over sub-period B).
- The number of single losses is always greater than the number of single profits. The overall profitability is exclusively due to the exploitation of relatively few, yet persistent price trends (“cut losses short and let profits run”).
- There operates an interaction between the trending of asset prices and the use of technical models in practice. On the one hand, many different models are used by individual traders aiming at a profitable exploitation of asset price trends, on the other hand the aggregate behaviour of all models strengthen and lengthen price trends.

Figure 5. Trading system for the daily rough rice futures price



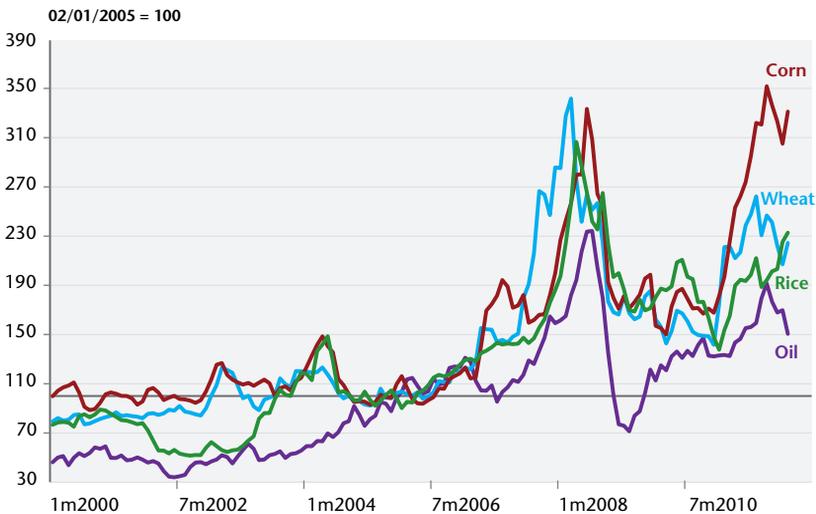
Source: CBOT.

In order to explore the relationship between (very) short-term trends (“runs”) and (very) long-term trends (“bulls” and “bears”), I analysed the slope and the duration of monotonic price movements in the foreign exchange markets, the stock markets and the

commodity futures markets (for the main results see Schulmeister, 2010; see also figures 1 to 5):

- Over the short run, asset prices fluctuate almost always around “underlying” trends which can be filtered out through calculating simple moving averages.
- The phenomenon of “trending” repeats itself across different time scales, e.g., there occur trends based on tick data or 1-minute-data as well as trends based on daily data.
- During bull (bear) markets upward (downward) runs last on average longer than counter-movements, the accumulation of the runs brings about the long-term trend in a stepwise manner (the average slopes do not differ significantly during “bulls” and “bears”).
- There prevails a self-similarity pattern: Several runs based on minutes or five minutes data add up to one trend based on hourly data, many hourly trends add up to one trend based on daily data, several daily trends result in one trend based on monthly data, etc.

Figure 6. Commodity futures prices



Sources: WTI, NYMEX, CBOT.

Combining these results with the analysis of technical trading systems led me to the following hypothesis about trading behaviour and asset price dynamics (“Bull-Bear-Hypothesis”):

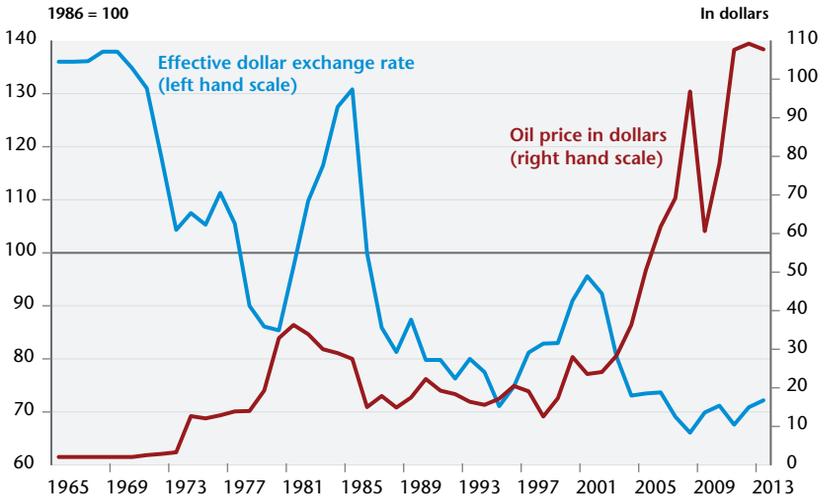
- Price runs are usually triggered by news, in particular about market fundamentals. Traders will then have to gauge within seconds how the majority of other traders might react to the new information (Keynes' "beauty contest").
- In order to reduce the complexity of trading under extreme time pressure, traders form only qualitative expectations in reaction to news, i.e., expectations about the direction of the imminent price move (but not to which level the price might rise or fall).
- Subsequent to an initial upward (downward) price movement triggered by news follows a "cascade" of buy (sell) signals stemming from trend-following technical trading systems. As a consequence, this feed-back-mechanism will often transform the news-induced price change into a trend.
- In many cases the price trends continue after (almost) all technical models have already opened a position congruent with the trend. This trend prolongation is mainly due to a bandwagon effect on behalf of amateur traders (hence, as a group, amateurs end up as the losers in this zero-sum game).
- When the trend finally loses momentum, contrarian models together with news cause the trend to tilt into a counter-trend.
- Most of the time there prevails either an optimistic or pessimistic "market sentiment", called "bullishness" or "bearishness". These "regimes of biased expectations" influence the traders' behaviour in three ways: First, they react much stronger to news, which confirm the prevailing sentiment than to news, which contradict it. Second, traders put more money into a position congruent with the prevailing sentiment, and, thirdly, they hold these positions longer than "counter-positions" (traders do not follow blindly a technical model, this is only the case in "automated" trading like high frequency trading).
- This behaviour causes in the aggregate short-term upward (downward) trends (runs) to last longer when the market is bullish (bearish) than counter-movements. Over several months or even years, the accumulation of the short-term trends results in an over-appreciation (over-depreciation) of the respective asset.

- The more the asset becomes over(under)valued, the greater becomes the probability of a tilt in the market mood and, hence, in the direction of the long-term asset price trend. First, because market participants know from experience that any bull/bear market comes to an end (in contrast to a “rational bubble” in “idealistic economics”), second, because there operate long-term “contrarians” in the market who sell (buy) in an “overbought” (“oversold”) market (like George Soros – see his “Alchemy of Finance”, 1987), third, the effects of an over(under)valuation on the real economy progressively strengthen corrective forces (e.g., the deterioration of the current account and the related decline in economic growth in the case of an persistently overvalued currency).
- “Overshooting” is not an exception due to some “shock” (as IE assumes) but the most characteristic property of long-term asset price dynamics. Exchange rates, stock prices and commodity prices fluctuate in a sequence of “bulls” and “bears” around their fundamental equilibrium without any tendency of convergence towards this level (Figures 6 to 8).

The analysis of trading systems and of the dynamics of asset prices as well as its interpretation (in part based on interviews with traders) contradict completely the assumptions of “idealistic economics“, in particular about perfect information, market efficiency and rational expectations.

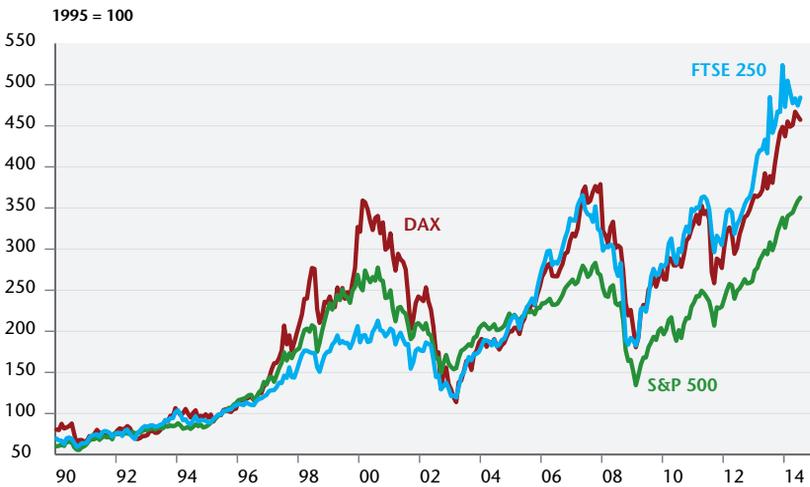
At the same time, the “Bull-Bear-Hypothesis” (BBH) is to a much higher extent in line with the empirical evidence than the “Efficient Market Hypothesis”. In particular, the BBH can explain the following puzzle: On the one hand, asset trading has become progressively more short-term oriented (“faster“), on the other hand, also the phenomenon of long-term trends (“bulls” and “bears”) has become more pronounced. This coincidence can be explained by the fact that long-term trends are the result of the accumulation of very short-term price runs which are exploited and strengthened by the use of ever “faster” trading systems.

Figure 7. Dollar exchange rate and oil price dynamics



Source: IMF, OECD.

Figure 8. Stock prices



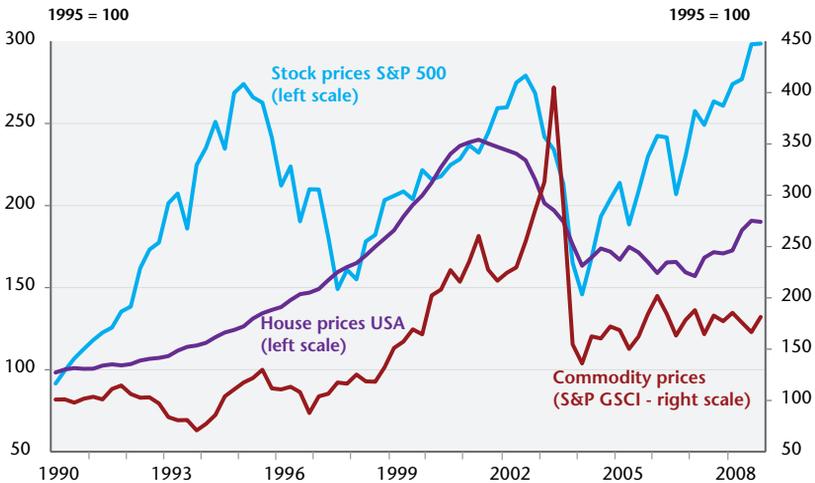
Source: Yahoo Finance.

The rising importance of progressively “faster” asset trading was confirmed by the spectacular rise of transaction volumes. Between 1990 and 2007, the overall volume of financial transactions rose from 15.5 to 72.4 times world GDP. As short-term speculation is concentrated on exchange-traded derivatives, trading volumes in these instruments expanded by far most strongly (Figure 10).

Based on the results of my research, but also motivated by the rather precarious fiscal stance of almost all EU member states, I started in 2007 to work on a comprehensive concept of a general financial transactions tax (FTT). In contrast to a Tobin tax which covers only (spot) currency trading (accounting for only 14% of all transactions – Figure 10), the FTT should be levied on all transactions with any type of financial asset. The essential features of the WIFO proposal were as follows²):

- The FTT is levied on all transactions involving buying/selling of spot and derivative assets. These instruments are traded either on organized exchanges or over the counter.
- The tax base is the value of the underlying asset, in the case of derivatives their notional/contract value.
- The tax rate should be low so that only very “fast” trading with high leverage ratios will become more costly due to the FTT (in the original study a rate of 0.05% was used as benchmark).

Figure 9. Three bulls, three bears and the crisis

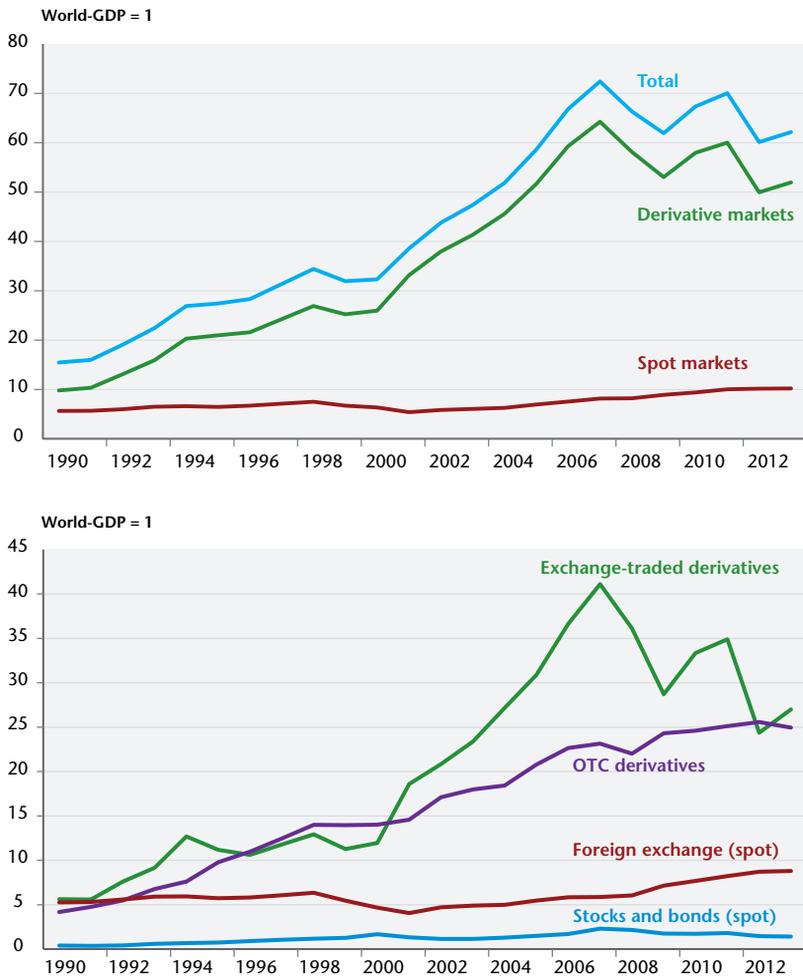


Source: Yahoo Finance, S&P, Case-Shiller.

2. The WIFO concept was not the first one, which would propose a general FTT (Pollin, Baker and Schaberg, 2003, proposed a “securities transaction taxes” for the US markets; Summers and Summers, 1989, had made “a cautious case” for such taxes). However, the WIFO concept was the most detailed concept as regards the reasoning of the usefulness of a general FTT, the revenue potential as well as the implementation issues.

This concept ensures the following: The “faster” an asset is traded and the riskier it is (the higher the leverage ratio is), the more will the FTT increase transactions costs. At the same time, holding a financial asset (including hedging) will not be burdened by the FTT. Hence, a FTT with a uniform rate will specifically dampen very short-term speculation in derivatives because the effective tax burden relative to the cash (margin) requirement rises with the leverage factor.

Figure 10. Financial transactions in the global economy



Source: BIS, WFE, WIFO

“High frequency trading” would become unprofitable even at a tax rate of 0.01%. Other forms of short-term speculation, in particular in derivatives, would be dampened. As a consequence, asset price runs would occur less frequent and would become less persistent. Since long-term trends are the result of the accumulation of short-term runs, a FTT would also dampen the “long swings” of exchange rates, commodity prices and stock prices.

3. The struggle over the introduction of a FTT

The WIFO concept was published in February 2008 in Schulmeister, Schratzenstaller, and Picek (2008). At that time I did not expect that a general FTT would become a major topic in European politics, I only hoped that the proposal might draw (a little) more attention to asset trading in practice and their destabilizing effects on the most important prices in the global economy. As a matter of fact, it was the shock triggered by the collapse of Lehman Brothers and the sharp deepening of the crisis in the financial and in the real economy which drew the attention to the instability of asset markets.

The financial crisis was directly related to the pattern of asset price dynamics as sketched by the BBH. Between 2003 and 2007, the simultaneous bull market of stock prices, commodity prices and house prices built up the potential for their simultaneous collapse, causing the US mortgage crisis to develop into a global economic crisis in 2008/2009 (Figure 9). Even though the importance of “bulls” and “bears” for the valuation of wealth and its impact on final demand and the real economy was (and still is) not fully understood yet, the deepest crisis since the 1930s caused the political elites to call for a comprehensive regulation of financial markets. In this atmosphere, the concept of a general FTT got more attention than ever before.

The struggle over the FTT has developed in three phases:

- In the first phase (2009 to 2011) the supporters of the tax went on the offensive, supported by the “shock effects” of the financial crisis. This phase ended with the (preliminary) “victory” in the form of the FTT proposal of the European Commission (EC) in September 2011.

- The second phase was shaped by the search for ways how to implement the FTT within the EU. It ended with the publication of a modified FTT proposal by the EC in February 2013 as basis for the implementation in 11 Member States joining an “enhanced cooperation procedure” (EU11).
- The last phase has been marked by a strong and well organized counter-offensive of big “finance alchemy banks” like Goldman Sachs or Morgan Stanley and the subsequently deepening conflicts among the EU11 group, in particular between Germany and France. This phase will end with a defeat of the FTT supporters. Not even in a group of EU Member States will a general FTT be implemented in the foreseeable future.

The struggle over the FTT was mainly carried out in two “battlefields”, the intellectual disputes between economists at universities, research institutes and international organizations (IMF, OECD, EC), and the political controversies between NGOs, political parties, governments and pressure groups, in particular the finance industry.

3.1. Fight for public opinion 2009 to 2011: Grassroot movements against mainstream economics

Practically all NGOs active in the field of development aid and of fighting poverty – including the respective organizations of churches – had for many years called for the Tobin Tax. The same is true for NGOs engaged in proposing new ways of organizing the economy, in particular the network ATTAC. In some countries, special campaigns in favour of the Tobin Tax had been successfully organized (e.g., “Stamp-out-Poverty” in the UK). All these NGOs and currency tax movements switched from calling for a Tobin Tax to demanding a general FTT. In the aftermath of the financial crisis, these civil society organizations strongly intensified their campaigns for a fundamental change in the financial system and for the implementation of a FTT as the first and most important step.

Until 2009, there was no strong Pro-FTT-movement in Germany (in contrast to France and the UK). At the same time, Germany is the biggest economy in the EU and should enlarge its political power during the euro crisis. It was therefore crucially important for the offensive of the FTT supporters, that Jörg Alt, a Jesuit,

founded the campaign “Steuer-gegen-Armut” (“tax against poverty”) in fall 2009. This campaign expanded very fast, comprising a broad spectrum of civil society organisations – almost 100 organizations support the campaign, including the most important catholic, protestant, humanitarian and political NGOs.

The campaigning for the FTT was so successful that already in November 2010 61% of the respondents of a “Eurobarometer” poll supported the introduction of a FTT (European Commission, 2011a).

The political elites did not remain unimpressed by the success of the campaigns for the FTT. In particular the leaders of the two (politically) most important EU Member States, Germany and France, began to endorse such a tax. President Sarkozy proposed (unsuccessfully) the introduction of a global FTT to the G20 leaders in 2011. Chancellor Merkel had already in 2010 declared her support for the tax which she previously had rejected. This change in her mind was certainly influenced by the fact that Jörg Alt (as a priest) was able to carry the FTT campaign into the ranks and files of the Christian-Democratic Party.

In 2010, the most important counter-attacks against the FTT were carried out by economists of the IMF and the EC (IMF, 2010; EC, 2010a and 2010a). Instead of a FTT, they proposed a bank levy on certain balance sheet positions and/or a “financial activities tax” (FAT) on (certain components of) the value added of financial institutions. Their reasoning was motivated by the purpose to discredit the FTT. At the same time, this “recognition interest” was hidden in the usual way of “idealistic economics”: One presupposes the empirical validity of a certain theoretical model and derives then the (desired) conclusions in a logical manner. By contrast, the counter-arguments are derived from the empirical evidence in an inductive manner, typical for “realistic economics”. In the following, I shortly summarize the main objections against the FTT and the respective counter-arguments as examples for the two approaches.

Objection 1: An FTT reduces liquidity and therefore hampers the price discovery process.

This reasoning assumes that financial markets are efficient: Rational traders drive the asset price to its fundamental equilib-

rium value the level of which is known to everybody. Hence, the more transactions are carried out, the faster is the market equilibrium reached after a short deviation due to some shock. Hence, liquidity is *per se* positive.

In reality, the widespread use of ever “faster” trading systems, the related explosion of trading volumes, the “abnormal” frequency of persistent asset price runs, their accumulation to long-term trends, the “long swings” of asset prices as sequences of bull and bear markets, all that is enough circumstantial evidence for the inefficiency of asset markets.

Objection 2: It is impossible to distinguish between harmful speculation and beneficial transactions.

This argument is a good example for how a strong interest in specific conclusions hampers coherent reasoning. According to mainstream “efficient market theory” the distinction is clear-cut: Beneficial transactions are based on market fundamentals, transactions based only on the information contained in past prices, are harmful. One has therefore to distinguish between “good” liquidity (i. e., fundamentals-based trading) and “bad” liquidity (i. e., technical trading in a broad sense, including high-frequency trading).

Objection 3: The FTT does not specifically increase the costs of harmful trading.

By construction, a FTT with the notional value as tax base increases the tax burden the more the faster transactions are carried out and the higher their leverage is.

Objection 4: The distortive effects of an FTT will be higher than those of other kinds of taxes, in particular of a VAT because the FTT is a turnover tax which burdens transactions between businesses several times.

This reasoning suggests that financial transactions between financial institutions and non-financial corporations can be perceived as intermediate inputs and outputs. This analogy is misleading. Buying an asset does not represent an (intermediate) input and selling an asset does not represent an (intermediate) output. A more precise analogy to an FTT would be taxes on gambling where usually any bet/transaction is taxed.

Objection 5: An FTT would raise the cost of capital because it has the same effect as taxes on future dividends. As a consequence, the present (discounted) value of an asset will decline in reaction to the introduction of an FTT.

The assumption that an FTT has the same effect as a tax on dividends is misleading because the latter would affect any stock, whereas the FTT would affect only those stocks which are (frequently) traded.

Objection 6: Most financial transactions are not driven by (destabilizing) speculation but stem from managing and distributing risk.

Before something can be distributed, it has to be produced. The production of risk and uncertainty in financial markets has risen due to the increasing use of (automated) trading systems. All these systems disregard market fundamentals and are therefore “by construction” destabilizing.

Objection 7: Derivatives should not be taxed, in particular because this would increase hedging costs.

If a “Standard Classification of Financial Transactions” (SCFT) is introduced in connection with the FTT implementation so that any transaction is assigned a specific code, it would be easy to exempt from the FTT the hedging of counter-positions in the real economy.

In addition, since a hedger is holding a (counter-)position in a derivative, only two transactions are involved. At a FTT rate of 0.01% (as proposed by the EC for derivatives), the additional hedging costs would be 0.02%.

Objection 8: Ultimately, the burden of an FTT will largely fall on consumers.

The tax incidence issue is at least clearer in the case of an FTT than in the case of a bank levy or a financial activities tax. As the latter two tax certain balance sheet positions or (components of) the value added, banks could/would easily shift the tax burden on their clients. By contrast, the FTT would levy certain activities irrespective of who carries them out. Banks, which do not engage in proprietary trading, would pay no FTT at all. Hedge funds, would shift the tax burden on their (wealthy) clients. Amateur speculators would pay the tax, their (internet) brokers would not (they also would shift the tax burden on their clients).

Objection 9: The introduction of an FTT will lead to a considerable relocation of trading activities to tax-free jurisdictions, in particular to offshore markets.

This is already the case today. Many funds operate from offshore places since these jurisdictions serve as tax havens. Many of them engage in short-term trading which is largely done on organized derivatives exchanges. To the extent that they (have to) trade on exchanges in FTT countries, they will have to pay the FTT.

Finally, if an FTT would be implemented according to the “residence principle” as (later) proposed by the European Commission all financial transactions carried out in a non-FTT-country (e.g., the UK) the orders of which stem from an FTT-country (e.g., Germany) would be taxed in the latter country.

If one weighs up the arguments in favour and against the FTT, then it seems rather clear that the former are primarily based on the empirical evidence whereas the latter are derived from that economic (“idealistic”) paradigm which has been the mainstream in economics and politics over the past decades. If one assumes that the “freest” markets, i.e., the financial markets, cannot produce systematically wrong price signals – as would be the case if trending is conceived as the most characteristic property of asset price dynamics – then one has to reject even a very modest taxation of financial transactions.

In spite of the rejection of the FTT by mainstream economists, the European Commission changed its position towards the tax fundamentally between August 2010 (when it still rejected such a tax – see EC, 2010b) and September 2011 (when it proposed the “Council Directive on a common system of financial transaction tax” – see EC, 2011b and 2011c). The reasons for this turn were predominantly political: NGOs continued to campaign intensively for the FTT, the support of the majority of the EU population remained strong (see the Eurobarometer commissioned by the European Parliament and published in June 2011 – EP, 2011), the European Parliament supported the tax in two resolutions in March 2010 and in March 2011 (based on the Podimata report) with an overwhelming majority, and last but not least, the governments of the key EU Member States, Germany and France, called for the introduction of the FTT.

3.2. Searching for ways to implement the FTT 2011 to 2013

The main features of the FTT concept of the EC (in the following abbreviated as ECP) are as follows (I refer to the modified version of February 2013 – EC, 2013).

The tax base is defined very comprehensively. Almost all transactions in financial instruments carried out by financial institutions (FIs) are subject to the tax except for currency spot transactions, for transactions of/with the European Central Bank, the European Stability Mechanism and the European Union itself and for transactions on primary markets (both for shares and bonds).

As regards the country to which the tax revenues accrue, the ECP adopts the “residence principle” and completes it – in the modified version of February 2013 – with the “issuance principle”. The residence principle means that all transactions of FIs established in one of the 11 FTT countries (FTTCs) are subject to the tax wherever they are carried out. If both parties to a transaction are established in a FTTC the tax revenues go to the respective states, if a FI established in a FTTC trades with a FI established in a Non-FTTC the revenues for both sides of the trade go to the respective FTTC.

The issuance principle means that also transactions in financial instruments, which are issued in a FTTC, are subject to the FTT even if none of the parties is established in a FTTC.

For the minimum tax rates the ECP proposes 0.1% as regards financial instruments other than derivatives (i.e., spot transactions of stocks and bonds), and 0.01% as regards derivatives transactions. Each party has to pay the tax at the respective rates, i.e., 0.1% or 0.01%, respectively.

The second phase in the struggle over the FTT (September 2011 to February 2013) was characterized by many attempts to find political ways how to implement the tax in the EU as a whole or at least in a group of Member States. I summarize only the most important steps in this process.

At first, the EC and the finance ministers of the “coalition of the willing” under the leadership of the German finance minister Schäuble tried to find compromises with the EU Member States which opposed most strongly the FTT, in particular the UK and Sweden. The main objective was to get the FTT implemented in the

EU as a whole. These attempts failed as the British finance minister was not willing to deal with a compromise proposal put forward by Schäuble at the ECOFIN in Copenhagen in April 2012.

As a consequence, the “coalition of the willing” aimed at implementing the FTT in their jurisdictions in the form of an “enhanced cooperation procedure” (ECOFIN in Luxemburg in October 2012). This intention was approved by the EC and supported by a resolution of the European Parliament in December 2012.

In February 2013, the EC published its modified proposal for an FTT implementation in the 11 EU Member States joining the “enhanced cooperation procedure”. Finally, it seemed as if the FTT would soon be implemented, even though only in 11 countries. But it should come quite differently.

3.3. The successful counter-attack of the financial lobby since 2013

Even though the modified FTT proposal of the EC did not differ essentially from the original (the issuance principle should complement the – still dominant – residence principle), the reaction of the financial lobby and its supporters in central banks and the media to the publication of the modified concept was completely different from the situation in fall 2011. This time, the economists and managers in the respective institutions had had enough time to prepare and organize the most powerful campaign ever.

The specific targets of the attack were as follows:

- Bomb the public and politicians with as many assertions about the disastrous effects of a FTT as possible within a short period of time. What counts is quantity, not quality.
- Pretend that the interests of the national finance industry are national interests.
- Pretend that the interests of governments to finance their debts stay in conflict with the FTT proposal of the EC.
- Pretend that a FTT harms the interest of the (little) private investor in having his/her money “work”, in particular for his/her retirement.
- Ignore all arguments of FTT proponents concerning trading practices, “manic-depressive” asset price fluctuations and their impact on the real economy.

- Ignore all arguments of FTT proponents concerning the systemic risk of transnational repo financing.
- Declare the willingness of the financial sector to carry its fair share of the costs of the crisis.

Like in any war the most important intermediate target was to split the front of the enemies, in other words, to play off groups of actors and their interests against each other: National interests against the interests of “Brussels bureaucrats”, national interests of EU Member States against each other, government’s interest in easy debt financing against the interests of the civil society, the interests of the latter against the interests of the (little) private investor, etc.

Demonstrating to the majority of the EU population and to the governments of the key Member States Germany and France that they were wrong and act against their own interests seemed to be a mission impossible. Yet, the “total war” of the financial lobby was successful: In a blanket-bombardment on the whole area of governments, civil society, media and EU-institutions the concept of a comprehensive FTT (“all institutions, all markets, all instruments”) was destroyed within a few months.

Crucial to the success of their attack was the combination of well-prepared activities and their concentration on the period immediately after the publication of the EC proposal (March to June 2013):

- Mobilization of all important banks and financial lobby organizations to flood the public with a concentrated load of the already previously discussed objections against a FTT.
- Organizing the (discrete) backing of the counter-offensive by important central banks.
- Concentration of all forces on a decisive breakthrough on a new front where governments (of the FTT-supporting countries) are most vulnerable, the repo front.

The mass mobilization of financial institutions materialized primarily in press conferences and publications of practically all big banks (Goldman Sachs, Morgan Stanley, Deutsche Bank, JP Morgan, Citigroup, etc.) and lobby organizations (International Banking Federation, the ICMA European Repo Council, the European Fund and Asset Management Association, etc.). In all their

messages, the financial lobby repeated over and over again the standard arguments against a FTT: The tax would hamper liquidity, the cascading effects would increase the cost of capital, in particular the costs for financing government debt, the tax would reduce the profits of banks and consequently their tax payments, hedging costs would rise, as a consequence overall financial stability would be reduced.

These assertions were then used to drive a wedge between members of the “coalition of the willing”, in particular between France and Germany: “Indeed, we think the FTT would de facto be a transfer of French taxes (on, e.g., derivative transactions of the French banks, which are the market leaders in Equity Derivatives) to other jurisdictions.” (Morgan Stanley, 2013, p. 2).

The intention to play off governments of the “coalition of the willing” against each other was facilitated by the fact, that France and Italy introduced their own FTT in 2012 and 2013, respectively. The French tax is essentially a “stamp duty” on the change of ownership of French stocks, the scope of the Italian tax is wider as it also covers derivatives.

Once there were national FTTs introduced, the respective governments did no longer stick to the FTT proposal of the EC but wanted the latter to be changed according to their national FTT concepts. E.g., the French government wanted the residence principle to be removed and derivatives to be excluded from the tax as both measures would hurt the competitiveness of their national banks (in France, all big banks have specialized in “finance alchemy” through short-term derivatives trading whereas in Germany this is mainly the case for Deutsche Bank). At the same time the Italian government insisted in leaving out government bonds from the FTT.

In an extremely important manoeuvre, the financial lobby mobilized the central banks, in particular the ECB (even though Draghi had officially to declare his support of the FTT “in principle”): Between March and July 2013, the “consultations” between the ECB and the financial lobby on the FTT issue intensified. In May 2013, the then Governor of the Bank of England stated bluntly about the FTT in a press conference: “Within Europe, I can’t find anyone in the central banking community

who thinks it's a good idea." At the same time, the Governor of the Banque de France and the President of the German Bundesbank criticized the FTT explicitly in the public (see Corporate Europe Observatory, 2013).

The attack of the financial lobby would not have been so successful had it not opened a new front, the repo front (with a repurchasing agreement, a bank raises cash by selling a security – usually a government bond – to the lender, and commits itself to repurchase the security when the repo expires – in most cases just after one day). The assertion that the FTT would damage in a disastrous way one of the most important markets for collateralized finance turned out to become the most effective weapon against the FTT proposal of the EC. There are several reasons for that:

- Until spring 2013 the question, how the repo market might be affected by the FTT had not attracted much attention. Hence, the lobby could pretend that the proponents of the FTT, the European Commission and politicians in general had just overlooked the damage such a tax would cause to one of the most important instruments of the European financial system.
- Politicians who had supported the FTT proposal became uncertain as they were in fact not familiar with repos, the greatest component of the European shadow banking system.
- At first glance, it does indeed seem inconsistent that unsecured credits remain FTT-free whereas collateralized borrowing is taxed (legally, the lender gets ownership of the security).
- The most important types of collateral in repos are government bonds. According to the financial lobby, the FTT would strongly dampen liquidity in the repo market. As a consequence, the costs of financing the government debt would rise. Even though this reasoning just repeated the (wrong) argument that a high turnover in the secondary market lowers capital costs, it hit a very salient issue of finance ministers.
- In a similar manner it was argued that also pension funds would see lower returns as consequence of higher repo costs.

- Central banks would remain the largest provider of liquidity once the repo market dries out – and this will make it much more difficult to withdraw from measures of unconventional monetary policy (a particularly great concern of German central bankers).

All this reasoning hides the core properties of repo transactions and of the repo market as the core component of the shadow banking system:

- Most repo transactions finance short-term trading activities, in particular proprietary trading of banks.³ Intraday trading is financed by so called tri-party repos where purchasing and repurchasing takes place within hours.
- Repos facilitate leveraged trading to the extreme in the sense that one can purchase an asset (almost) without cash by borrowing money to buy the asset and simultaneously posting the asset as collateral.
- Short-selling is fostered by the repo market. One lends money in the repo market, takes the security one intends to short as collateral, and then sells the security.
- The extremely high leverage of repo transactions strengthen boom-bust-cycles of asset prices and increase systemic risks: Rising asset prices stimulate repo financing which feeds back onto the bull market and conversely in the case of a bear market.
- The possibility to re-use the collateral produce “repo chains” (e.g., bank A sells a security to bank B in return for cash, bank B sells the security to bank C, etc.), increasing systemic risk: Strong and persistent movements of securities prices cause “chain reactions” feeding back on the bull or bear market.⁴)

It is no surprise that the increasingly short-term repo transactions developed in tandem with the increasingly short-term proprietary trading of (certain) banks. This type of trading is predominantly unrelated to market fundamentals (it is to a large extent driven by trading systems).

3. According to survey studies of the Bank of England two thirds of repo turnover concern overnight deals (Hördahl and King, 2008).

4. For the different channels through which the repo market produces (avoidable) systemic risk see the excellent paper by Gabor (2014) and the literature quoted there.

The financial lobby rightly expects (very) short-term repo financing to become unprofitable due to the implementation of a FTT. This, however, might not be a disadvantage but an advantage to the economy as a whole insofar as these transactions finance predominantly short-term and destabilizing asset speculation.

To put it differently: If banks were focused on financing activities in the real economy like real investment, production and trade of enterprises as well as housing and durables of private households, there would be no need to shortly raise millions through overnight repos. It is one objective of a FTT to change the incentive conditions in favor of real world activities at the expense of the profitability of “finance alchemy”.

The “production” of systemic risks by short-term repos is confirmed by their role in the recent financial crisis (e.g., Hördahl and King, 2008; Gorton and Metrick, 2010; Tuckman, 2010; for a summary see Gabor, 2014). Before the outbreak of the crisis, banks and their “special purpose vehicles” created securities from loans which often were backed by subprime mortgages. These securities were then used as collateral for repos. At the same time also the main segment of the repo market where government securities serve as collateral, boomed. In this way “securitized banking” created liquidity which further fuelled the bubbles in the stock markets, housing markets and in the commodity (futures) markets.

When the confidence in the real value of mortgage backed securities became weaker and weaker and house prices started to decline, the confidence crisis spilled over to the repo market as a whole. The subsequent “run on repo” caused interbank interest rates to shoot up, the bankruptcy of Lehman Brothers in September then accelerated the simultaneous fall of stock prices, house prices and commodity prices dramatically, turning the liquidity crisis into a solvency crisis of the banking system (Figure 9). The strong and simultaneous devaluation of the three types of wealth in turn was a main factor for the spill-over of the financial crisis to the real economy.

All these aspects were – of course – neglected in the attack of the financial lobby on the FTT. It focused on the rising costs of banks, governments, pension funds and private investors which would be caused by the FTT. One needed, however, some kind of “scientific”

documentation of these assertions. The most influential “study” became a research report of Goldman Sachs, in the following termed “GS study” (Goldman Sachs, 2013).

This study is a perfect example how economists develop research methods guided by the interest in reaching certain results. In the case of the GS study this interest consisted in “blowing up” the costs of the FTT to the maximum extent. This interest was so overwhelming that the GS researchers accepted making absurd assumptions and calculating meaningless “effective annual tax rates”. In addition, the researchers changed their own method whenever convenient for the purpose of their exercise.

The GS study summarizes the main results right at the beginning: “On a 2012 pro-forma basis, the FTT would amount to €170 bn for the 42 European banks we have analysed. By affected balance sheet category, the bulk of the impact stems from the European banks’ REPO books (€118 bn), followed by derivatives (€32 bn), equities (€11 bn) and government bond books (€4 bn). By bank, the impact extends across business models – investment, universal, global and domestic retail banks. Similarly, by geography, it has a reach well beyond the EU-11. Indeed, we show some of the most affected banks would be those in the UK and Switzerland.

Individually, we show that the most affected banks are the French and German institutions. The six French and German banks show a 2012 pro-forma FTT as a percentage of 2015E PBT (i.e., profits before taxes) ranging from 168% (BNP), up to 362% (DBK) and finally 423% (Natixis). But even pure-play retail lenders – the Italian/Spanish domestic banks for example – stand to be significantly impacted (16%-130% of 2015E PBT).” (Goldman Sachs, 2013, p. 4).

The messages are clear:

- Just for the 42 banks analysed, the overall FTT costs are five times higher than estimated by the EC for all financial institutions.
- Also banks outside the EU11 are heavily affected by the FTT.
- The two countries pushing strongest for the FTT, France and Germany, would inflict the biggest damage to their own banks.

— Also Italian and Spanish banks - which engage much less in investment banking – would be heavily affected by the FTT.

In a few lines – written in a sober tone – the researchers sent messages to all types of banks of different countries within and outside the EU11 calling for standing up against the FTT.

In order to arrive at these “magic” figures, the GS researchers invented a new estimation procedure: “... we attempt to gauge what the 2012 FTT (theoretically) payable by individual banks would be, were they asked to apply FTT retroactively, to 2012 balances. This is a theoretical, ‘all else equal’, exercise. The results, however, allow us to identify the business areas/product lines where the FTT impact would be most pronounced...” (Goldman Sachs, 2013, p. 16).

In other words: When calculating the costs of the FTT, GS researchers assume that transaction volumes remain unaffected by the tax – they call this the “pro-forma-effect”. On other occasions, however, the report of GS Research stresses the effect that transaction volume will be the more reduced the more frequently an instrument is turned over.

The degree of seriousness of this procedure can be illustrated using the following example. Trading volume in UK financial markets amounted to 563 times the British GDP in 2010 (even without repo transactions which are not covered by the BIS data base).⁵ On a “pro-forma” base, a general and uniform FTT rate of 0.1% would generate tax revenues of 56.3% of GDP, at a rate of 1% the British government might even receive revenues amounting to 5.6 times the British GDP.

The GS researchers justify the “pro-forma” estimation arguing that “the results allow us to identify the business areas/product lines where the FTT impact would be most pronounced...” This is simply wrong: The structure of activities differ markedly between European banks (as the report itself stresses). Banks which are specialized on short-term trading and repo financing (“finance alchemy banking”) will therefore reduce these activities in reaction

5. Based on data from the World Federation of Exchanges (WFE) and the BIS overall transaction volume in 2010 on UK markets is estimated at 1,270,4 tn. \$.

to the FTT implementation to a much greater extent than the more traditionally operating banks (“boring banking”).

For the same reason, the calculations of the distributions of the “pro-forma” FTT payments by types of banks and by countries are flawed. However, the publication of these numbers should strengthen the resistance of banks against the FTT and should deepen (potential) conflicts between EU governments: “French banks are the largest contributors, at €61 bn (36%). Germany (this includes only DBK and CBK) absorbs the second highest hit with €35 bn, mainly driven by Deutsche Bank (€26 bn)” Goldman Sachs, 2013, p. 28).

To serve its “research interest”, GS researchers introduced the concept of an “effective annual tax rate”. This means that the estimated *annual* FTT payments are related to the *average* repo value. In this way one can document astronomically high “tax rates” as these rates becomes the higher the shorter the financing period of the REPO is. For tri-party-REPOS which are turned over 3 to 5 times per day, GS Research arrives at an “effective annual tax rate” of the FTT of 360% (Goldman Sachs, 2013, exhibit 12 on p. 19).

The problematic of this procedure becomes evident if one considers the following example: An US household spends every day on average 100\$ on consumption for which it has to pay 5\$ in sales tax. What sense does it make to calculate an “annual effective sales tax” of 365 times 5% = 1,825% instead of speaking of a general sales tax rate of 5%?

Another example for the predominance of the “research interest” in the reasoning of GS researchers: When discussing the FTT impact on the profits of European exchanges the researchers does not stick to their “pro-forma” estimation but applied the assumption of the EC about the FTT-induced reduction of trading volumes. In this way, the GS report arrives at the following conclusion: “... we estimate that the average European Exchange & IDB (i.e., interdealer brokers) under our coverage would see pre-tax profits decline by 22% as a result of the tax. Our analysis suggests that Deutsche Börse would see the largest impact to earnings, with a potential 51% reduction in our forecast pre-tax profits for 2014.” (GS Report, p. 44). Again: stupid Germans harm themselves.

An exquisite example of manipulation concerns the impact of the FTT on retail investors: “Our analysis suggests that much of the burden of the FTT... would fall on retail investors rather than institutional investors we estimate that a typical retail investor from the Euro area-11 could expect to incur an annual FTT charge of 33 bp, while a similar institutional fund manager would incur 11 bp in tax. On this basis, a 30 year-old retail investor in the Euro-11 area who invested €1,000 a year until retirement at 65 could expect to see 14% of the principal investment consumed by the FTT.” (GS Report, p. 54).

These calculations are biased in three respects. First, it is assumed that investors would not reduce the turnover of their portfolio due to the FTT. Second, it is – unrealistically – assumed that the retail portfolio returns over 35 years 6% p. a. on average. Both assumptions result in a high sum of cumulative tax payments (4.875 €). Third, this sum is then related to the cumulative cash invested (35.000 €) leaving out the interest-compound effect. If one takes the latter – correctly – into account, the cumulative tax burdens amounts to only 4.1% of the closing portfolio (this ratio is documented in exhibit 34 but not mentioned in the main text).

The “dirty” campaign of the financial lobby, designed by economic researchers as their intellectual servants was successful: The tensions between members of the “coalition of the willing” rose, in particular between Germany and France, and the EC proposal is no longer the common base of the “enhanced cooperation procedure.”

In order to make some statement on the FTT issue before the elections to the European Parliament, 10 finance ministers of the EU11 (Slovenia did not sign up) declared on May 6, 2014: “...The Council Working Group has reviewed the Commission’s proposal during the past months. It is evident that complex issues have arisen. As a result, more technical work needs to be conducted. Our commitment to the introduction of a financial transaction tax remains strong... We agree on the following key elements: The work on the introduction of a harmonized financial transaction tax is to be based on a progressive implementation of the tax. The progressive implementation will first focus on the taxation of shares and some derivatives.”

In plain language this passage should read: “The campaign of the financial lobby during past months was too strong. This forced us to give up the ‘all institutions, all markets, all instruments’ approach proposed by the European Commission. Instead, we shall introduce a tax on shares like the British ‘stamp duty’, but with much lower tax rates. We commit ourselves to call it ‘financial transaction tax’”.

To tax only spot transactions in shares in a first step means (no important derivatives will be included as the French government does not want to disturb “their” banks’ business): Out of all instruments the “FTT” would tax exactly only those which are less used for short-term speculation and more for holding wealth (compared to derivatives). It won’t be too difficult for pension and investment funds to carry out a campaign against such a one-sided “FTT”. But even if such a tax is implemented, it will soon be suspended since the revenues will fall short of projections – trading will shift to stock (index) derivatives and new forms of derivative “stock hybrids”.

As project of the “enhanced cooperation procedure” this type of “FTT” will probably never be introduced because there won’t be the minimum of 9 Member States available. It simply does not pay off for politicians to support such a tax as proponents of a true FTT conceives such a support as mockery of their engagement and opponents reject any kind of transaction tax.

4. Outlook

The defeat of the FTT proponents did not come as a surprise. It just reflects the power of “big finance” which has been growing over the past 40 years in tandem with the transformation of the economic system from “real capitalism” in the 1950s and 1960s to “finance capitalism” afterwards. The key difference between both types of capitalism concerns at which activities is striving for profits – the “core energy” of capitalism – focused on.

In real capitalism, the framework/incentive conditions promote entrepreneurial activities in the real economy because under stable exchange rates, stable commodity prices and interest rates stabilized at a level far below the rate of economic growth it is hardly possible to “make money out of money”. Under these conditions,

banks play an important, yet modest role by channelling private savings to investments (“boring banking”).

The “scientific” legitimation of a real-capitalistic system is provided by theories which stress the inherent (financial) instability of capitalism and, hence, the necessity of strict regulations of the financial sector and of an active economic policy. In more general terms, in real capitalism one strives for an integration of the great contradictions: Between governance through politics and governance through market forces, between cooperation and competition, between individual self-interest and social coherence/social self-interest, between (real) capital and labour.

The real-capitalistic phase of the 1950s and 1970s was shaped by the predominance of Keynesianism as the theoretical/ideological basis, by stable financial conditions, by building-up the welfare state, by strong expanding real investments (the main form of profit-seeking), and consequently by high economic growth and full employment. These conditions strengthened over the 1960s trade unions and social-democratic parties, the institutions of the welfare state helped to secure their power, intellectuals moved to the left.

All these developments provoked the offensive of a counter-movement by the late 1960s. The core demands of neoliberalism, i.e., fighting trade unions, weakening the welfare state and liberalizing financial markets, were strongly supported by “big business” and scientifically legitimized by the monetarist theory.

The stepwise realization of the monetarists’ demand for de-regulation of financial markets transformed the system from a real-capitalistic to a finance-capitalistic regime over the 1970s. Unstable exchange rates, commodity prices, interest rates above the rate of growth, booms and busts in the stock market together with financial innovations – in particular the emergence of financial derivatives – progressively fostered “finance alchemy” at the expense of entrepreneurial activities (figures 1 to 8). These systemic changes have strongly contributed to the decline of economic growth from decade to decade, and to the related increase in unemployment as well as in the public debt. This process has caused (many) banks and hedge funds to transform themselves from institutions serving the real economy to special-

ists in “finance alchemy” (some aspects of this transformation process is discussed in Boot and Ratnovski, 2012).

However, economic history shows that this type of profit-seeking is self-destructing since it produces progressively more financial assets which are not backed by real values – “fictitious capital” in the form of overvalued stocks and government bonds. The simultaneous devaluation of stock wealth, housing wealth and commodity wealth through the coincidence of three bear markets deepened the financial crisis and was the most important systemic cause of the most severe crisis of the real economy since the 1930s (Figure 9 – the stock market crash 2000/2003 can be conceived as a “foreshock”). The European elites could not recognize this cause, mainly because the neoliberal “Weltanschauung” has been dominating already for more than 30 years – first at the universities, then in the media and – at least since the early 1990s – in politics.

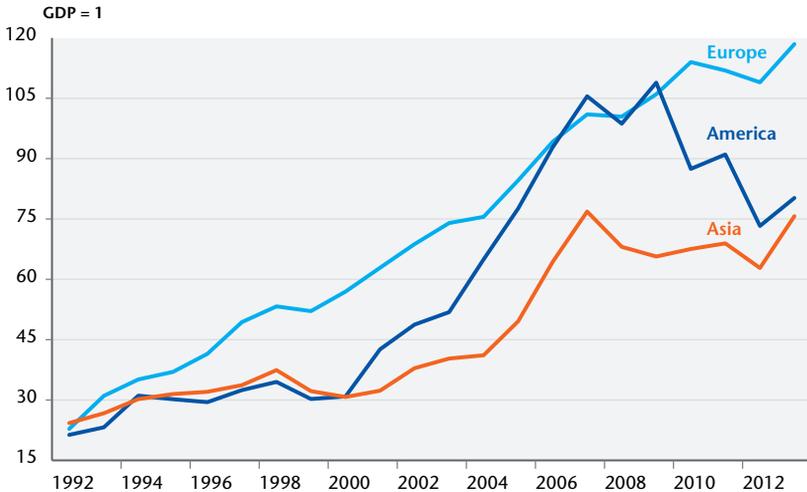
As a consequence, the European elites resorted to “more of the same”: “Finance alchemy” was completed by a new game, the speculation against sovereign states, austerity policy has been strengthened, labour markets liberalized, real wages cut. All these measures only deepened the crisis: Unemployment is higher than ever before in post-war Europe, the public debt has risen tremendously. Whereas the real economy is depressed, stock prices boom again, fuelled by a pseudo-Keynesian monetary policy (conventional Keynesianism cannot work under finance-capitalistic framework conditions).

The US policy followed a much more pragmatic course: “Finance alchemy” was somewhat dampened by the Frank-Dodd act, in particular by the restrictions on proprietary trading (“Volcker rule”) and no strict austerity measures were imposed on the economy. In the US, “realistic economics” has been to a much lesser extent marginalized in academia, media and politics as compared to Europe where – under German leadership – “idealistic economics” has almost completely obsessed the heads of the elites.

These differences are also reflected by the development of financial transactions (Figure 11). In 2007, overall trading volume amounted to 105.5 times GDP in the US and to 101.1 times GDP in Europe. Until 2013, trading volume fell in the US to 80.2 times GDP whereas it rose to 118.5 times GDP in Europe (based on data

from the “Triennial Survey” of the BIS and the data base of the “World Federation of Exchanges” – the data do not comprise repos and CDSs).

Figure 11. Financial transactions in the global economy



Source: BIS, WFE, WIFO.

To sum up: Since the outbreak of the crisis six years ago the resistance of the European elites to learning from the crisis and to reconsidering their neoliberal “Weltanschauung” and the “navigation map” derived from it, has not been weakened but strengthened. As a consequence, the long-term divergence between a booming financial economy and a progressively depressed real economy has been sharpened since the crisis. In such an environment, the proposal of a comprehensive FTT had finally to be rejected. The real surprise is that the idea of a general FTT made it up to an official proposal of the European Commission.

If elites are unable to learn from a crisis they have to repeat it. This will happen in the near future, once again triggered by the tilt of stock prices from a bull market to a bear market. Even if stock prices fall “only” as strongly as in 2000/2003 or 2008/2009 (they could fall stronger as the recent boom was also stronger – see Figures 2 and 8) will the related worldwide devaluation of stock wealth dampen final demand. It will dampen directly consumption and investment because many households and enterprises are

already in a precarious financial situation. The situation will be aggravated by the fact that governments – certainly in Europa – will not be willing and able to stabilize the economy through expansionary fiscal policy measures. The situation could worsen further if the extremely high bond prices fall in tandem with stock prices.

In other words: The next bear markets and the thereby induced crisis will accelerate the process of self-destruction of finance capitalism during the trough phase of the long cycle⁶). The depression will only be overcome if framework conditions are changed in such a way that entrepreneurial activities are much more rewarded than “finance alchemy”. A general FTT could serve this purpose, but more radical solutions will probably be necessary.

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6. Arrighi (2010) analyses the changes between real-capitalistic and finance-capitalistic regimes since the 15th century. In his interpretation, an economic and political system becomes the hegemon during a real-capitalistic upward phase, then moves to “high finance” and by doing so finances the upward phase of its successor. In this way, the Republic of Genoa financed the expansion of the Dutch Republics during the 17th century which then financed the industrialization of Great Britain. When London moved to “high finance” in the 2nd half of the 19th century it financed the US expansion. When the Wall Street became dominant in the late 1970s, the US started to finance the expansion of the Chinese economy through joint ventures which also provide a continuous technology transfer. Note, that the Chinese economic system is characterized by real-capitalistic conditions (e. g., exchange rates and interest rates, the two most important prices intermediating between the real and the financial sphere, are controlled by economic policy). Note further, that in China stock prices have fallen between 2009 and 2014 by almost 50% whereas they have doubled in the West (in the meantime, however, stock markets in China have boomed like never before indicating a chance to “export” finance capitalism there). At the same time, the real economy continues to boom in China, whereas it is still stagnating in the West, especially in Europe. (“Wall Street culture” is one of the most powerful allies of China on its long way to hegemony over the real economy). In this context, one should also consider the fact that the French economy has been to a much greater extent “financialized” than the German economy. Note also the recent attempts of US policy to re-industrialize the US economy whereas in Europe the financial sector continues to dominate.

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SUSTAINABLE TAX POLICY

CONCEPTS AND INDICATORS BEYOND THE TAX RATIO

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The current academic and political debate about the quality of tax systems does not systematically take into account aspects of sustainability. For some time now, OECD, International Monetary Fund and European Commission have been pushing the case for enhancing the growth-friendliness of tax systems. Ecological and social/equity considerations appear to have lower priority in the hierarchical order of objectives guiding the recommendations for the design of tax systems. The European Commission and the OECD regularly publish an increasing number of indicators and the underlying data that can be used to assess different sustainability dimensions of tax systems and/or individual tax categories also in a cross-country comparison and over time. In particular, the European Commission has developed a set of indicators trying to capture the contribution of member states' tax systems to the goals of the Europe 2020 strategy. This set of indicators, however, focuses on the growth-friendliness of member states' tax systems, while indicators for their distributional and environmental impact play a less prominent role. The paper attempts at establishing a conceptual basis for the development of a consistent set of indicators to capture the sustainability impact of tax systems. Firstly, we formulate fundamental objectives underlying a sustainable tax system. Then we present some fundamental deliberations about the function of indicators and a classification of indicators which may be useful to assess the sustainability impact of tax systems. Against this background, we critically review the European Commission's indicator-based approach to evaluate EU member states' tax systems within the European Semester. Finally, we address open questions and next research steps.

Keywords: tax structure, sustainable tax system, indicators, sustainable development, tax policy.

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1. Introduction

Rather coincidentally, together with the outbreak of the current financial and economic crisis a fundamental debate emerged among economists focusing on two main inter-related issues: First, to develop alternative concepts to secure and improve economic, social and environmental sustainability. Second, to replace the conventional approach to define and measure the welfare of an economy and its members via the steady growth of GDP by an approach taking into account a broad set of economic, social and ecological aspects and indicators. This recent debate is led under the catchphrase “Beyond GDP” and roots in an initiative started by European Commission, European Parliament, Club of Rome, OECD and WWF in 2007 by hosting a high-level conference titled “Beyond GDP”. The “Report by the Commission on the Measurement of Economic Performance and Social Progress” (the so-called Stiglitz-Sen-Fitoussi-Report) issued in 2009 serves as the starting point for a growing number of contributions from the academic as well as from the political side, the latter both on the national and the supranational levels, concentrating on alternative concepts for welfare and well-being for economies and societies as well as on alternative indicators to assess overall social, economic and environmental progress¹.

Up to now, the “Beyond GDP”- activities following the Stiglitz-Sen-Fitoussi-Report of 2009 have been focusing on the outcome of the total of (economic) policies on individual and societal well-being and welfare as well as on economic, social and ecological sustainability. Single policy areas have barely received any attention. Especially the potential contribution of public sector activities and interventions to improve economic, social and environmental sustainability has not played a very prominent role in this recent debate. This is particularly surprising with respect to tax policy. Given the level of tax ratios in industrial countries, reaching about 40 percent of GDP on the EU average, tax policy can be expected to exert a significant influence on decisions of

1. Also within the EU research project *WWWforEurope* alternative welfare indicators and concepts are elaborated, see e.g. Kettner, Köppl and Stagl (2012) and van den Bergh and Antal (2014).

private firms and households on production and consumption as well as on labour supply and demand and thus on their respective contributions to the sustainability of the lifestyle of economies and societies. Moreover, tax policy has a considerable potential to change the market distribution of incomes and wealth and is therefore one important factor influencing individual well-being as well as social cohesion.

At the same time, aspects of sustainability are not systematically taken into consideration in the current academic and political debate on the quality of public finances in general and of tax systems in particular. For the last few years, OECD, International Monetary Fund as well as the European Commission have been pushing the case for enhancing the growth-friendliness of tax systems: According to this work, tax systems should primarily promote economic growth (Arnold *et al.*, 2011; Acosta-Ormaechea and Yoo, 2012). Ecological and social/equity considerations are not completely neglected, but appear to have lower priority in the hierarchical order of aims and objectives guiding the design of tax systems. Moreover, the (social and environmental) “quality” of economic growth does not play any role. The concept of green tax reforms has a wider focus, explicitly combining environmental and employment goals via the “double dividend hypothesis”: Revenue-neutral green tax reforms aim at reducing environmental damage by increasing ecotaxes, the proceeds of which are used to cut labor taxes and thus to increase employment.²

Altogether, currently tax theory and tax policy are addressing partial aspects of sustainability, but do not adopt an integrated perspective. On an internationally comparable basis, an increasing number of data and indicators are regularly published by the European Commission and the OECD that can be used to assess different sustainability dimensions of tax systems and/or individual tax categories also in a cross-country comparison and over time. In particular, the European Commission has developed a set of indicators trying to capture the contribution of member states’ tax systems to the goals of the Europe 2020 strategy. This set of indicators, however, focuses on the growth- and employment-friendliness of member states’ tax systems, while indicators for their distri-

2. See, e.g., the contributions in Ekins and Speck (eds.) (2011).

bution and environmental impact are largely neglected. Thus, a consistent set of indicators conveying an overall picture of a tax system's contribution to sustainable development is still missing.

This short paper attempts at establishing a conceptual basis for the development of such a set of indicators. We firstly formulate fundamental objectives underlying a sustainable tax system (chapter 2). Chapter 3 presents some fundamental deliberations about the function of indicators and a classification of indicators which may be useful to assess the sustainability impact of tax systems. Against this background, chapter 4 critically reviews the European Commission's indicator-based approach to evaluate EU member states' tax systems within the European Semester. Chapter 5 concludes by addressing open questions and next research steps.

2. Sustainability challenges for tax systems and features of a sustainable tax system

The concept of sustainability, which has been developed, refined and modified since decades based on the so-called *Brundtland report* (WCED, 1987), encompasses three dimensions:³ the economic, the social (or socio-cultural), and the environmental dimension (Rogall, 2008). Very generally, the economic dimension encompasses growth, efficiency and stability; the social dimension includes empowerment, inclusion and governance; and the environmental dimension is concerned about resilience, natural resources, and pollution (Lozano, 2008). It is debated in the literature whether these three dimensions hold equal positions in terms of relevance, as is assumed by Munasinghe (2007) in his well-known sustainability triangle, or whether there is a hierarchical order, as put forward by Daly (1973) who frames the natural environment as the "ultimate means" constituting the foundation of the triangle, while the economy is interpreted as "intermediate means" to reach equity and human well-being (i.e. the social dimension) as "ultimate ends". Some authors, e.g. Hart (2000), even postulate environmental sustainability as the precondition for economic and social sustainability: while the environment can

3. For an extensive overview over the most relevant definitions of sustainability and the related literature see Dimitrova *et al.* (2013).

exist without the society and the economy, and the society can exist without the economy, neither society nor economy can exist without the environment. This paper assumes, however, that the three sustainability dimensions are equally ranking.

These three sustainability dimensions break down into several sustainability challenges for tax systems. From the perspective of economic sustainability, an important challenge – particularly in the aftermath of the recent financial and economic crisis – is restoring sound public finances, i.e. to contribute to long-term fiscal sustainability. Related is the increasing international mobility of capital and profits, as well as demographic change (i.e. ageing of societies). Further challenges for economic sustainability which are relevant also for tax systems are the ongoing instability of the financial system, as well as weak (employment) growth and high unemployment. Environmental challenges refer to climate change, energy transition and the depletion of natural resources. Challenges from the view of social (socio-cultural) sustainability include the increasing inequality and concentration of income and wealth that can be observed quasi globally (Förster *et al.*, 2014), as well as the persistent gender gap prevailing in many countries worldwide (World Economic Forum, 2014).

From these sustainability challenges, several objectives a sustainable tax system should pursue can be derived.

An economically sustainable tax system should generate sufficient revenues to finance government activities. This includes curbing tax flight, i.e. legal tax avoidance and illegal tax evasion: An economically sustainable tax system should take into account the international framework, in particular the mobility of (capital) income and wealth which has increased dramatically over the last few decades. An economically sustainable tax system should furthermore avoid negative incentives for economic decisions in general. In particular, it should minimize employment barriers, particularly – but not exclusively – for women and low-wage earners. It should contribute to stabilizing the financial system, and it should have a role in the internalisation of externalities as well as with regard to the production or consumption of (de)merit goods (e.g. health or education). Not least, compliance costs and costs of tax collection should be kept as low as possible.

A tax system which aims at contributing to environmental sustainability should discourage consumption and production activities which contribute to climate change and environmental degradation. Moreover, it should encourage energy transition.

A socially sustainable tax system should reduce the increasingly unequal market distribution of income and wealth, and it should aim at contributing to equal opportunity. Related is the objective to contribute to the reduction of gender gaps. Also from the perspective of social sustainability tax systems may be used to further or to curb, respectively, the consumption or production of (de)merit goods. A socially sustainable tax system should also minimise tax flight and be as transparent and simple as possible to ensure acceptability and legitimacy of taxation.

Altogether, many of the objectives mentioned above contribute to more than one dimension of sustainability; as – for example – the internalisation of negative externalities or the containment of tax flight.

3. The role of indicators

Analogously to GDP, which often serves as the central indicator to measure economic and societal success and progress of an economy, the overall tax ratio (i.e. total tax revenues in relation to GDP) is often used as the most important indicator to assess a country's tax system. As GDP, the overall tax ratio has the advantage that it is easily available, also in an international comparison and over long periods of time, and easily communicable. Analogously to GDP, however, the overall tax ratio is of rather limited value to assess a tax system in general and its contribution to sustainability in particular. The overall tax ratio does not give any indication on the social and environmental impact of a tax system. It also does not convey any specific information on potential economic effects of a tax system, as these depend on the overall tax structure and on the concrete design of individual taxes contributing to overall tax revenues. As ample empirical evidence shows, there is no clear-cut relationship between the level of the overall tax ratio and economic growth. The existing empirical results allow to conclude safely only that further tax increases will harm economic growth when the total tax burden has reached a very

high level already.⁴) With respect to fiscal sustainability, the overall tax ratio can be seen as a snapshot indicator to gauge – in comparison to public expenditures – whether the state receives sufficient funds to fulfil its tasks or whether there is a shortcoming of tax revenues which needs to be compensated by new government deficit. However, to evaluate a tax system's contribution to fiscal sustainability in the longer run, additional indicators (e.g. overall revenue elasticity or the tax gap) are needed.

3.1. Purpose of indicators to assess the sustainability of tax systems

From what has been said above, it should have become clear that in the context of efforts to improve the sustainability properties of tax systems indicators beyond the tax ratio (similarly to indicators beyond GDP) are required. These are needed for several purposes. Firstly, they are necessary to assess the overall sustainability of a given tax system at a given point in time, also in an international comparison. Secondly, they should help to identify specific sustainability gaps in a given tax system. Thirdly, indicators are needed to measure progress over time on the way to a sustainable tax system. Fourthly, they should help to capture incentive effects and the incidence of individual taxes or whole tax systems which may be relevant for all or selected dimensions of sustainability. Thus they should provide adequate information as well as guidance for political decision-making aiming at achieving progress towards sustainable development of countries or regions. Fifthly, indicators are an important communication instrument directed not only at policy-makers and stakeholders, but also at the general public. Overall, a set of indicators would be useful to grasp the complexity of whole tax systems and to account for the three sustainability dimensions when trying to assess overall tax systems. In this respect, a set of indicators is much more useful and appropriate than the attempt to derive one composite index aiming at grasping the potential overall sustainability impact of a tax system.

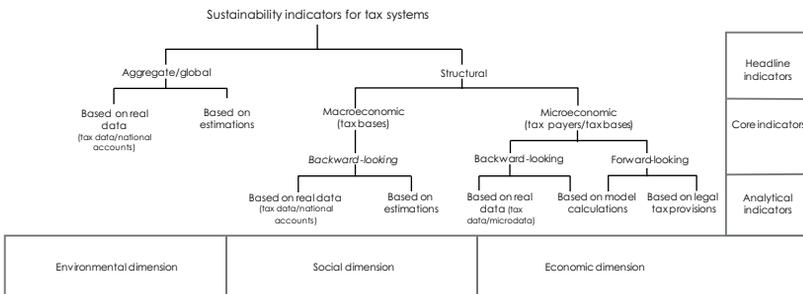
4. See for recent overviews about the current state of the empirical literature *Arnold (2008)*, *Myles (2009)* and *European Commission (2010)*.

3.2. Types of sustainability indicators for tax systems

In general, indicators used to gauge the sustainability properties of a tax system should meet the usual requirements guiding the selection of indicators. In particular, an indicator should be easily communicable and globally available, also in an internationally comparable form. An indicator should also permit a clear and broadly accepted normative interpretation, i.e. there should be consensus about the desirable development of the indicator. And finally, an indicator should be valid (i.e. it should really measure what it is intended to measure) and reliable (i.e. it should measure the phenomenon of interest reliably).

In the context of an assessment of a tax system’s contribution to sustainability, various types of indicators can be distinguished (Figure 1).

Figure 1. Sustainability indicators for tax systems



Source: own.

3.2.1. Aggregate/global indicators versus structural indicators

Aggregate indicators convey a global picture of the overall tax system. They can be based on real data (taken from tax statistics or national accounts) or can be the result of estimations. The tax ratio is the most encompassing aggregate indicator. The picture it conveys, however, is limited to the total amount of tax revenues in relation to GDP. The tax ratio does not give any indication about the structure of overall tax revenues, i.e. about their sources with respect to tax bases and tax payers, and about the distribution of overall tax revenues among the overall group of tax payers. The only differentiation possible on this global level is to distinguish between the tax ratio including and excluding social security

contributions. This differentiation is important insofar as financing social security systems via genuine taxes may impact differently on sustainability compared to social security contributions levied on labour incomes. To get a more in-depth and detailed impression about tax revenue sources and about their potential impact on the different sustainability dimensions, however, structural indicators are needed. The same holds true for a second, important macroeconomic indicator: namely the overall revenue elasticity of a tax system, which is a first indicator for the sufficiency of tax revenue to finance public expenditures and thus gives some idea about a tax system's contribution to fiscal sustainability in the longer turn, but does not offer any details about the contribution of individual taxes.

Naturally, tax gap indicators, which capture the difference between the amount of tax revenues that should be collected based on the existing tax provisions and the amount that is actually collected, have to be determined by estimations. The total tax gap is the result of legal tax avoidance and illegal tax fraud (criminal attacks, tax evasion and "hidden economy"); it indicates tax revenues foregone in relation to overall tax revenues actually collected.

3.2.2. Macroeconomic versus microeconomic indicators

Macroeconomic indicators relate to macroeconomic tax bases and are based on macro data (tax data or data from national accounts). Macroeconomic indicators may capture structural characteristics of the overall tax system from a macroeconomic perspective (most important the composition of overall tax revenues⁵) or the effective tax burden on macroeconomic tax bases (e.g. the effective macroeconomic tax burden on labour, on consumption, on capital and energy as calculated regularly by Eurostat in its annual publication "Taxation Trends in the European Union"). Microeconomic indicators are directed at the individual level, at individual subjects, i.e. towards a "typical" individual representative tax payer⁶ or an individual representative tax base,⁷ and build on micro data. They give an indication about the

5. The most important data sources are Eurostat's annual publication "Taxation Trends in the European Union" and the OECD's annual publication "Revenue Statistics".

6. E.g. the marginal and average labour tax rates regularly calculated for different household types by the OECD in its annual publication "Taxing Wages".

tax burden individual tax payers (e.g. specific household types) or individual tax bases (e.g. specific investment projects) are carrying. As due to their different socio-economic situations men and women are affected differently by tax policy on the one hand, and as on the other hand sustainable tax systems should be designed in a gender-sensitive way, microeconomic indicators should – if they address tax payers – be gender-differentiated.

3.2.3. Forward-looking versus backward-looking indicators

Backward-looking indicators depict past developments within tax systems. They may be based on real data coming from tax statistics, national accounts (macroeconomic indicators) or micro data sources (tax data, other micro data, e.g. firm data bases), or they may be the result of model calculations. As already mentioned above, it is in the nature of some specific tax-related phenomena – namely those having to do with legal or illegal tax avoidance – that there are no real data showing their quantitative dimension. This calls for the use of estimates (e.g. to quantify tax gaps⁸).

Backward-looking indicators comprise indicators depicting the structural characteristics of the overall tax system from a macroeconomic perspective (e.g. the share of labour, property or environmental taxes in overall tax revenues) as well as indicators reflecting the effective tax burden on a macroeconomic level (e.g. the effective macroeconomic tax burden on labour) or on a microeconomic level. Forward-looking indicators are based on current or future tax provisions. They range from nominal tax rates (e.g. corporate tax rates, personal income tax rates) as the simplest indicators to rather complex indicators derived from model calculations (e.g. effective company tax rates or effective tax rates on labour incomes for specific household types). Generally, these forward-looking indicators are directed at the microeconomic level.

Another aspect is important when distinguishing between forward-looking and backward-looking indicators: Forward-looking indicators – when capturing the marginal tax burden on an indi-

7. E.g. the effective marginal and average corporate tax rates for model investment projects calculated by ZEW for the European Commission.

8. E.g. the VAT tax gaps presented by the European Commission in its regular publication “Tax Reforms in EU Member States” or the estimates of corporate tax losses by profit shifting undertaken by Zucman (2014).

vidual level (e.g. effective marginal company tax rates or the marginal tax wedge on labour incomes) – are useful to evaluate the incentive effects of taxation and thus are particularly relevant with regard to the economic dimension of sustainability, as they influence economic decisions. Backward-looking indicators capturing the average tax burden for individual tax payers are more relevant to gauge the distributive effects of taxation and thus for the social sustainability dimension.

3.2.4. Indicators at various hierarchical levels

Finally, indicators may be differentiated according to hierarchical levels (Kettner *et al.*, 2012). Headline indicators address high-level policy making and the general public. Core indicators serve to evaluate core policy areas and are used for communication between experts, politicians, and the wider public. Further in-depth policy analysis and a thorough understanding of specific issues require analytical indicators.

3.2.5. Potential impact of individual tax categories on different dimensions of sustainability

To gauge the sustainability properties of tax systems, input indicators are required. These input indicators refer to the design of a tax system and aim at capturing its (potential) impact on various dimensions of sustainability. Thus these indicators may serve to assess the ambition of tax policy makers dedicated to the sustainability impact of tax systems. In a next step, the outcome in the various sustainability dimensions should be determined, by applying quantitative methods to identify systematic relationships between sustainability – relevant features of a tax system (e.g. share of environmental taxes) and sustainability – relevant outcomes (e.g. development of greenhouse gas emissions). This requires the identification of output indicators which specify the various sustainability dimensions.

Table gives a first qualitative indication on the potential impact different individual tax categories may have with regard to the three sustainability dimensions according to conventional textbook wisdom. It is obvious at first sight that the potential impact we assign to the individual tax categories may be disputed in several cases, as neither theoretical nor empirical relationships

between individual tax categories and sustainability dimensions are always clear-cut. Moreover, the direction of the relationship may be ambiguous: For example, environmental taxes may on the one hand impact on the level of greenhouse gas emissions; it might as well be the case, on the other hand, that policy-makers increase environmental taxes to react to undesirably high levels of greenhouse gas emissions. Also the individual sustainability dimensions may include several contradictory aspects, which may preclude clear statements about the impact of a specific tax category on the sustainability dimension in question: For example, sin taxes on alcohol and tobacco consumption may positively impact on individuals' health and thus on social sustainability, whereas their regressive distribution effects hamper social sustainability. These potentially conflicting effects on a specific sustainability dimension should be disclosed; it is then up to tax policy-makers to decide which specific effect should be prioritized.

Table. Qualitative assessment of potential impact of different tax categories on different dimensions of sustainability

	Economic sustainability	Social sustainability	Environmental sustainability
Inheritance and gift tax	+	+	0
Net wealth tax	+	+	0
Real estate tax	+	+	0
Capital transfer taxes	-	+	0
Environmental taxes	+	-	+
Sin taxes (tobacco, alcohol)	+	?	0
Value added tax	-	-	0
Personal income tax	-	+	0
Social security contributions	-	-	0
Corporate income tax	-	+	0
Tax exemptions	-	?	(-) ¹

Source: Own. + positive impact. - negative impact. - 0 neutral. - ? impact unclear/ambiguous. - 1) in case of environmentally harmful tax exemptions.

Nonetheless this exercise conveys a first impression that many tax categories may impact on more than one sustainability dimension, and that while the impact may be positive regarding one sustainability dimension, it may be negative regarding the other(s), suggesting trade-offs and conflicts, respectively. At the same time, it can be assumed that a number of indicators positively impact on different sustainability dimensions simultaneously, which indicates the existence of synergies. In any case, the indica-

tors to be developed need to be based on solid empirical evidence on the impact of tax structures and individual tax categories on the various dimensions of sustainability.

4. The European Commission's indicator-based approach

Indicator-based approaches to assess (economic) policy in general seem to have gained in popularity (again) in the last few years. This development has probably been inspired, *inter alia*, by the already mentioned work on indicators beyond GDP and the ensuing efforts to evaluate (economic) policy not only with a focus on its growth implications but based on a much broader view of overall sustainability. However, as elaborated on above, the evaluation of individual tax categories or specific tax policies often is more or less explicitly based on selected indicators, but up to now no encompassing system of indicators exists to evaluate the (potential) sustainability impact of whole tax systems.

The most comprehensive indicator-based approach to assess tax systems has been presented recently by the European Commission. Two key issues guide the selection of indicators in this recent work, namely "... the need and scope for either consolidation on the revenue side or shifting taxes away from labour." (Wöhlbier, Astarita, and Mourre, 2014) More concretely, the European Commission in the context of the use of tax policy for fiscal consolidation is mainly concerned about two issues: Firstly, about the high tax burden on labour prevailing in many EU member states, particularly for low-skilled workers and second earners in couples. According to recent empirical research identifying a "tax-and-growth-hierarchy", a shift away from direct taxes and especially from high labour taxes towards more growth-friendly taxes – consumption taxes including "sin taxes" on tobacco, alcohol and polluting activities as well as recurrent taxes on property including inheritance taxes – can be expected to increase the overall growth-friendliness of tax systems in the long run and price competitiveness in the short run.⁹ The European Commission's second concern is – departing from the fact that many countries for several reasons have not been relying exclusively on spending cuts in their fiscal consoli-

9. See Wöhlbier, Astarita and Mourre (2014) and the literature cited therein.

dation efforts to reign in rapidly expanding debt ratios in the aftermath of the financial and economic crisis – that these tax increases should be designed as growth-friendly as possible, again according to the “prescriptions” that can be derived from the above-mentioned tax-and-growth-hierarchy.

Both these issues focus on growth- (and actually employment-) friendliness of tax systems, and thus primarily on the economic dimension of sustainability. If growth-friendly tax categories are favourable also from the perspective of environmental and/or social sustainability, then this appears to be welcomed as a positive side effect. However, there seems to be a clear hierarchy favouring economic sustainability vis-à-vis environmental and social sustainability. Accordingly, the indicators used (mostly backward looking indicators) mainly focus on economic sustainability, although quite a few of them may also capture the social and the environmental dimension of sustainability, even if these are not explicitly mentioned.

The European Commission’s regular assessment of EU member states’ tax systems, which is one key element of the European Commission’s monitoring activities through the European Semester, is characterized by a broader approach.¹⁰ In its most recent evaluation (European Commission, 2014), the European Commission widens its focus to include – as the Europe 2020 strategy aiming at smart, inclusive and sustainable growth and therefore at all three dimensions of sustainability does – also the social and the environmental dimension of sustainability. The choice of the indicators used in this screening exercise is guided by a selection from those headline indicators formulated to operationalize the Europe 2020 strategy. Insofar the European Commission attempts to relate input indicators, which are used to capture certain sustainability properties of member states’ tax systems, to those Europe 2020 headline indicators the European Commission expects to be influenced by those structures and features of national tax systems captured by the input indicators. The headline indicators selected by the European Commission to be related to member states’ tax systems include employment rates

10. The so-called European Semester is the yearly cycle of economic policy coordination and monitoring of member states’ progress towards the Europe 2020 targets.

(total as well as for males and females), covering economic sustainability; and greenhouse gas emissions, covering environmental sustainability. Instead of the headline indicators used within the Europe 2020 strategy in the realm of poverty and social exclusion, i.e. the social dimension of sustainability, namely people at risk of poverty or social exclusion, several core and analytical indicators are used as output indicators. Also within the economic and the environmental sustainability dimension the headline Europe 2020 indicators applied in the European Commission's screening exercise are complemented by additional core and partially analytical indicators, as for example employment rates for specific labour market groups (second earners, low-skilled and young people) or the consumption of petrol and diesel as propellants.

Altogether, the European Commission pursues, compared to the bulk of theoretical and empirical literature mostly addressing specific aspects and subareas of tax systems in a rather narrowly focused way, a relatively broad approach to assess, based on input and mainly backward looking indicators, the potential contribution EU member states' tax systems may make to the three sustainability dimensions. However, this approach has its limitations.

These are, first of all, grounded in the break-down of sustainable growth and development into selected headline indicators within the Europe 2020 strategy that capture only partial aspects particularly of the social and the environmental dimension of sustainability. It seems that this is an especially severe restriction when trying to comprehensively assess the sustainability properties of tax systems: These – intentionally or not – affect quite a few sustainability aspects not addressed in the Europe 2020 strategy and its headline indicators. Just to name a few examples: Social sustainability does not only include preventing and combating poverty as well as a “fair” income distribution. It also comprises the distribution of wealth, including inheritance; the distribution of resources among men and women and equal social participation of women and men; equality of opportunity; intergenerational equity; as well as health aspects. Environmental sustainability is not only about green house gas emissions, the use of renewable energy and about primary energy consumption, but also about resource use in a broader sense. This neglect of certain sustainability aspects auto-

matically precludes certain taxes and tax categories as well as tax design options from being considered in a sustainability check – as for example inheritance taxes or resource taxes. Related is the danger that certain sustainability deficits inherent in member states' tax systems – which may perhaps be even more harmful to sustainability than those identified based on the indicators applied for the European Commission's screening – remain undetected.

This limited perspective is restricted further in the European Semester process. The starting point of the European Semester is the European Commission's Annual Growth Survey which puts forward priorities for the respective upcoming European Semester for various policy fields and thus also for tax policy. Again the main focus are growth-friendly reforms, and thus the tax priorities for the 2014 European Semester as formulated in the *Annual Growth Survey 2014* (European Commission, 2013) are broadening tax bases and removal of ill-targeted exemptions; shifting the tax burden away from labour – in particular for the low skilled and young workers – towards consumption, property and pollution; improving tax compliance through fighting tax fraud and tax evasion; reviewing tax schemes which lead to debt biases in taxation.

Secondly, the European Commission's assessment of member states' tax systems is based not only on an incompletely defined concept and operationalization of sustainability, but also by a set of indicators which is incomplete insofar as the European Commission does not necessarily use the "best needed" indicators, but rather the "best available" indicators.¹¹ One example is the impact of tax systems on income distribution, which is measured by the difference of the Gini coefficient for the income distribution before and after taxes and transfers. When focusing on the redistributive impact of tax systems, this indicator is too rough, as it does not allow to identify separately the contribution of the tax system (which compared to the transfer system in many countries is rather limited) to the extent of redistribution organized via public sector activities.

Thirdly, there is a striking neglect of the recognition of links and interrelations between the three sustainability dimensions.

11. See for this distinction Kettner *et al.* (2012).

With the exception of environmental taxes and recurrent taxes on immovable property, which are considered as growth-friendly alternatives to high labour taxes to improve the economic sustainability of tax systems, a comprehensive assessment of the impact of individual tax categories on all three sustainability dimensions is missing. As a consequence, synergies as well as conflicts which may arise from the use of certain taxes/tax categories with regard to the individual sustainability dimensions do not receive adequate attention.

5. Next steps and open questions

This paper can be seen as a first step towards the development of a consistent set of indicators to capture the potential sustainability-related impact of tax systems. Further research should aim at analysing the usefulness of important and often-used existing indicators, some of which are mentioned as examples in this paper, taking into account recent empirical results on the impact of tax structures and tax categories, respectively, on the individual dimensions of sustainability. In this respect, it is also a task of future research to identify the need for additional or alternative indicators, respectively, and to formulate these, to overcome potential gaps between “best available” indicators, which can be filled with existing data, and “best needed” ones. Hereby specific attention needs to be given to links between individual indicators and to indicators addressing more than one sustainability dimension.

The deliberations in this paper have been limited to input indicators. Further work on the sustainability impact of tax systems should identify also output/outcome indicators: i.e. indicators to measure the degree of sustainability achieved in a given sustainability dimension (e.g. CO₂ emissions, labour market performance indicators, or GINI coefficients before and after taxes) which can be influenced by taxation. Actually, the development of adequate input indicators should be guided substantially by an output/outcome perspective.

A further interesting exercise would be to assess the overall sustainability of European tax systems, going beyond the recent evaluations undertaken by the European Commission discussed above. Various approaches are conceivable. A given tax system

may be evaluated with respect to its development over time. In this case, the evaluation may focus on the development of relevant sustainability indicators – e.g. the share of environmental taxes in overall tax revenues – over a certain period of time to identify developments within the country analysed. However, it may be more meaningful to put a specific country within a comparative context, i.e. to benchmark the country under evaluation against a group of other countries. This approach is pursued by the European Commission in its indicator-based approach presented above (Wöhlbier, Astarita, and Mourre, 2014): The countries involved in the benchmarking exercise are divided into three groups according to the concrete value of a given indicator representing a specific tax policy area, and a country is considered to do well (badly) if it is amongst the “best” (“worst”) third. Alternatively, the countries are just ranked based on a simple ordinal approach. Obviously, one question this benchmarking approach raises (even if internationally comparable data are available, which in itself will be problematic for numerous indicators) is the issue of comparability of the countries involved. The EU is a very heterogeneous group of countries, and how serious the potential negative impact of a country’s position in the group of worst performers with respect to a specific indicator is will also depend on the general socio-economic conditions as well as the concrete challenges the country is facing in the respective policy area. Related is the question whether there are specific threshold values above/below which a country’s tax system or specific taxes/tax categories can be expected to impact positively or negatively on overall sustainability. Or to put it differently: Can/should a tax system’s potential impact on sustainability be measured in relative or in absolute terms – and if the latter is the case: How do we arrive at appropriate threshold values? And if we consider a one size fits all-approach as inadequate: How do we arrive at country-specific threshold values?

In general, regardless of whether we analyse a specific country for itself or its position within a larger group of countries, there are numerous open questions and problems work on indicators for the sustainability impact of tax systems is confronted with. First of all, synthesising a country’s respective positions with regard to individual indicators to arrive at a bigger and consistent picture is a great challenge, which poses the question of which weight should

be given to individual indicators. A second, related question is how to deal with inter-linkages (trade-offs versus synergies) between the different sustainability dimensions and or/indicators. For example, higher environmental taxes may strengthen a tax system's sustainability with regard to the environmental dimension, but may at the same adversely affect social sustainability due to the regressive distributionary effect of many environmental taxes. Third, there is the question how comprehensive a set of indicators to capture the potential sustainability impact of tax systems should be: there is certainly a trade-off between accuracy and level of detail on the one hand and manageability and communicability on the other. A fourth question is whether to use quantitative indicators only, or whether to complement the quantitative picture by qualitative indicators, e.g. indicators giving an indication in how far the tax system is perceived as fair, or about the degree of trust in the tax system. Fifth, a meaningful interpretation of individual indicators and their (desirable) development requires relatively clear-cut empirical evidence about the impact of respective taxes/tax categories on the various dimensions of sustainability, which is not always available.

Finally, the analysis of the potential sustainability impact of a tax system needs to be embedded in a bigger picture. The effectiveness of specific tax policies – as captured by appropriate indicators – depends inter alia on other policy instruments and their coordination with tax policy. And certainly the debate about a tax system's potential sustainability impact needs to be embedded into a broader perspective of the overall contribution of the public sector (particularly public expenditures) to sustainable development.

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THE SCOPE FOR PROGRESSIVE TAX REFORM IN THE OECD COUNTRIES

A MACROECONOMIC PERSPECTIVE WITH A CASE STUDY FOR GERMANY¹

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The trend of increasing inequality in the distribution of income and wealth in most developed countries has led to calls for corrective tax increases for the rich and wealthy. Such calls are often confronted with the claim that higher taxes on top personal incomes, corporate income and wealth are detrimental to growth and employment and/or will foster tax avoidance. This paper argues that even the dominating theoretical framework leaves substantial leeway for redistributive taxation. Furthermore, from a Keynesian macroeconomic perspective redistribution may even be systematically conducive to growth and employment. At the same time a change towards such a policy of redistribution may for some economies, particularly the German one, well be the prerequisite for compliance with the European Fiscal Compact if an increase of the macroeconomic imbalances that have come to be seen as a root cause of the global financial and economic crisis 2008/2009 and also the euro crisis by many observers is to be avoided. Therefore, besides attempts at international tax coordination and harmonisation, national tax policies should actively use their room of manoeuvre for progressive taxation to correct the disparities in the income distribution and at the same time to increase the fiscal space.

Keywords: macroeconomic effects of taxation, redistribution and macroeconomic performance, macroeconomic imbalances.

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1. Introduction

In most OECD countries, the redistributive effect of the tax system has been substantially weakened by deliberate tax policies over the last decades. However, the trend of increasing inequality in the distribution of income and wealth in most developed countries, has led to calls for corrective tax increases for the rich and wealthy. Such calls are often confronted with the claim that there was a serious trade-off between equity and efficiency: according to the dominant view, higher taxes on top personal incomes, corporate income and wealth are detrimental to growth and employment and/or lead to increased tax avoidance. In fact, within the field of public economics usually a more or less strong trade-off between (re-)distribution and efficiency is assumed.

First, this paper argues that even the dominating theoretical framework offers substantial leeway for redistributive taxation. In the light of the standard – and above all the recent – literature the arguments against raising marginal personal or corporate income tax rates because of allegedly negative effects on work intensity, career decisions, tax avoidance and other behavioural responses are not convincing neither from a theoretical nor from an empirical point of view.

Second, it will be demonstrated that a macroeconomic perspective may even systematically change the picture and make the whole trade-off disappear. Redistribution may be conducive to output and employment both in the short and in the long run. In addition, if (part of) the generated revenue is used to increase public expenditure recent empirical estimates suggest that the balanced budget multiplier may be substantially positive leading to strongly positive growth and employment effects. These results are highly relevant, because they suggest, that a change towards a policy of redistribution may well be the prerequisite for compliance with the constitutional debt brakes that are called for by the fiscal compact if an increase of the international macroeconomic imbalances that have come to be seen by many observers as a root cause of the global financial and economic crisis 2008/2009 and also the euro crisis is to be avoided.

Third, in a brief case study applying some of the results to Germany it will be argued that the regressive German tax reforms and the concomitant revenue losses in the early 2000s may be seen as a major reason for the German stagnation until 2005. The impressive recovery of the German economy was only possible because the expenditure side consolidation strategy was given up. For the future, using the revenues generated by progressive tax reforms may be used to finance major investment projects thereby boosting domestic demand and contributing to the necessary rebalancing within the Euro area. This insight is of particular importance in the current situation in which both France and Italy seem to be trying to copy the opposite strategy of cutting taxes and expenditures simultaneously – although it failed spectacularly in the German example.

We start with an overview of the regressive taxation trends since the 1980s in section 2, and show that despite some progressive changes in current trends and policy proposals there are no signs of a comprehensive trend reversal. In section 3 we turn to the scrutiny of the standard wisdom regarding the negative economic effects of progressive tax reforms. After having enriched the analysis by the macroeconomic perspective in section 4 we turn to a brief case study trying to apply some of the findings to the German economy in section 5. In section 6 we draw some conclusions for future tax policy on the national and international level.

2. Taxation trends since the 1980s: Traditional standards of tax justice under pressure²

Matters of income distribution and redistributive taxation require normative standards of equity or tax justice. Although the traditional distributional goals of taxation were never uncontested, there used to be a widespread consensus as to employing the “ability to pay” principle in the determination of the tax burden. The criterion of horizontal equity implies that tax payers with the same ability to pay should be treated equally by the tax system. The ability to pay can be measured in terms of income, wealth, and expenditure. According to the Haig-Simons definition “income is

2. For a more extensive overview see Godar and Truger (2015a).

the money value of the net increase in an individual's power to consume during a period" (Rosen and Gayer, 2008, p. 382), i.e. also savings and capital income are included in the determination of the ability to pay, as they represent an increase in potential consumption. Although difficult to apply in practice in a completely consistent manner (Boadway, 2004, p. 3), this was interpreted to call for the comprehensive income approach to taxation excluding systematic tax privileges for specific sources of income. According to the sacrifice approach used to operationalize the dimension of vertical equity (Prest, 1960, pp. 115) a tax system should impose the same sacrifice on the taxpayers whose individual utility is reduced by the tax. Due to the diversity of possible sacrifice approaches no overall conclusion can be drawn for the desirability of progressivity, so that an additional value judgement is required (Prest, 1960, p. 117). However, in the past it was widely accepted that some – and indeed a high – degree of progressivity was socially desirable in rich industrialised countries.

However, since the 1980s, the distributive goal of fiscal policy was increasingly seen as an obstacle to efficient tax design rather than a goal by itself. Indeed, according to the OECD (2011, pp. 267) since the mid-1980s market incomes have become more unequal in most OECD countries (Table 1). Additionally, on average redistribution by the state has become less effective since the mid-1990s. The redistributive impact of the tax and transfer system can be estimated by comparing the development of Gini values for market incomes (G_m) and the Gini value for disposable income (G_d). As can be seen in column 7 "between the mid-1980s and the mid-1990s, redistribution systems compensated nearly three quarters of the increase in market-income inequality" (OECD, 2011, p. 268). Even though the rise in market-income inequality was less pronounced in the following decade (columns 1 and 2), the redistribution "became less effective at offsetting growing inequalities" (Ibid.). Consequently, taxes and transfers compensated only 53 percent of the total increase of inequality between the mid-1980s and the mid-2000s.

**Table 1. Redistribution: general country trend
Inequality before and after taxes and transfers¹**

		Market income		Disposable income	Redistribution			
		Gm	Change, % of base-period	Gd	Gm-Gd	% of Gm [4]/[1]	Change, % of base-period Gm	[6]/[2]
		[1]	[2]	[3]	[4]	[5]	[6]	[7]
12-country average²	mid-1980s	36.2		26.7	9.5	26.4		
	mid-1990s	39.2	8.2	27.4	11.7	29.9	6	73
	mid-2000s	39.8	9.8	28.3	11.4	28.7	5	53

1. Households headed by a working-age individual (15-64, except in Sweden where 25 was chosen as the cut-off age in order to minimise the impact of a change in the definition of a household that occurred in the mid-1990s). Gini values (G) are shown in percent. All measures are based on equivalised household income using the square-root equivalence scale. Standard LIS practice was followed for top- and bottom-coding (see www.lisproject.org).

2. Countries with full tax and benefit information for mid-1980s, mid-1990s and mid-2000s: Australia, Canada, Denmark, Finland, West Germany, Israel, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States.

Source : OECD (2011, p. 268).

It is impossible to trace exactly to what extent the changes in the tax systems are responsible for the fall in redistribution for all OECD countries in a consistent manner. However, the general taxation trends as reflected in some important indicators can be used to establish a plausible connection: Strongly falling trends in the top marginal income tax rate, in the corporate income tax rate, as well as an increasing trend of dualisation of the income tax, i.e. increasing privileges for capital income and a lower tax burden on wealth, demonstrate that the traditional standards of tax justice have come under severe pressure in recent decades Godar *et al.* (2014, pp. 96).

In the face of rising inequality and strong budgetary pressures, in many OECD countries since the Great Recession there have been some signs that the downward trend in redistributive taxation may have come to a halt, recently.³ At the same time, a number of international institutions have commented in a roughly progressive way on how to respond to the need for fiscal consolidation in terms of socially acceptable tax reforms. Whereas those recent developments are steps in the direction of increased tax justice, some steps in the other direction must also be noticed: since 2009 many European governments have raised their value added tax and excise tax rates in order to generate additional revenues (EC, 2013a,

3. For a more extensive overview see Godar and Truger (2015a).

p. 31; IMF, 2013, p. 26). As pointed out by the European Commission (EC, 2013a., p. 30), the revenue increasing measures since 2009 have heavily focused on usually regressive consumption taxes – a clear move away from tax justice and redistribution.

Within the last few years many important international institutions have presented proposals on how to respond to the need for fiscal consolidation in terms of socially acceptable tax reforms. While it seems to be a widely-held view that combating tax evasion, limiting tax avoidance and the introduction of a financial transaction tax should enjoy high priority, opinions differ much more when it comes to the need for truly progressive tax reforms. The trade unions, ILO, UNCTAD and some NGOs more or less call for such reforms whereas the dominant mainstream institutions European Commission, IMF, and OECD are very reluctant if not openly opposed to such reforms.⁴

Based on de Mooij and Keen (2013) and IMF (2010a, 2010b), the IMF (2013, p. 25) states its understanding of the conventional wisdom regarding revenue side consolidation in the sense of broadening the tax base of the value added tax as well as the personal and corporate income tax, increasing recurrent taxes on residential property as well as increasing environmental taxation. Obviously, the focus is primarily on raising additional revenues without affecting low-income households too much, a view exactly shared by the OECD (2012c). Although some of the proposed measures may be able to reduce the disparity in the income distribution or at least show a concern for negative distributional side effects; it is striking that more fundamental reforms, i.e. a direct reversal of the downward trend in tax rates is not called for: increasing the tax rates of personal and corporate taxation as well higher general taxation of wealth are not on the agenda, although the former is discussed extensively and not ruled out per se by the IMF (2013, pp. 33). The major reason for not proposing such a more fundamental change consists in the perceived trade-off between equity and efficiency: as the OECD (2012d, p. 39) puts it: “Simply raising marginal personal income tax rates on high earners will not necessarily bring in much additional revenue, because of effects on work intensity, career decisions, tax avoidance and other behavioural responses.”

4. For a more extensive overview see Godar and Truger (2015b).

3. Standard arguments against progressive taxation under scrutiny⁵

As the above statement suggests the standard arguments against progressive taxation rely on negative incentive effects on private households' and firms' decisions and on an increase in tax avoidance. There can be no denying that those effects may potentially pose a serious threat to a comprehensive move towards more progressive taxation. However, on the basis of standard mainstream textbook knowledge (e.g. Rosen and Gayer, 2008; Salanié, 2011) and literature, it can be argued that these effects need not necessarily be large so that the equity efficiency trade-off alluded to may actually be rather small. In addition, government spending financed with the additional revenue may offset or even overcompensate for the negative effects of taxation on output and employment.

Analysing first the private household sector, the most important negative incentive effects discussed refer to labour supply, savings and – more recently – tax avoidance. The typical argument raised against progressive income taxation is that taxes reduce the hourly compensation for work and thus lower the opportunity cost of leisure. Theoretically however, the overall effect on labour supply is indeterminate: it can decrease because leisure time becomes relatively more attractive (substitution effect) or it can increase because for the same amount of hours worked the overall income will be lower and the economic agent may want to compensate for this loss (income effect) (Salanié, 2011, pp. 18). Since high-income earners are often assumed to be high-productivity workers, Salanié argues that discouraging their labour supply may cause a greater welfare loss than discouraging the labour supply by the low-productivity worker (*ibid.*, pp. 88). However, the idea that top executives really face the type of decision may be unrealistic. As Corneo (2005, p. 17) puts it: the substitution effect is only relevant as long as a person's working potential is not exhausted. In general the preoccupation with labour supply seems exaggerated.

Therefore, it hardly comes as a surprise that empirically, the labour supply seems to be rather inelastic with respect to wages.

5. For a more extensive overview and discussion see Godar and Truger (2015c).

In a meta-study Evers *et al.* (2008) review empirical estimates of the uncompensated wage elasticity of labour supply. The mean of the empirical distribution of estimated elasticities for the labour supply of men is 0.07 and the median is 0.08. The respective values for women are 0.43 and 0.27 or 0.34 and 0.26 excluding outliers (pp. 32). This would imply that on average, a percentage change in the net hourly wage rate, *ceteris paribus*, leads to a 0.07 percentage change in hours worked by men and 0.43 (0.34) by women. The evidence that female labour supply is more sensitive to the wage can partially be explained by the fact that on average women still “undertake a much higher load of unpaid work than men” (OECD, 2012e, p. 73). According to the OECD, in countries with high child-care cost women are much more likely to work part-time (*ibid.*, p. 84). In addition, Alvaredo *et al.* (2013, p. 9) suggest that the model of pay determination used in much of the optimal tax literature may be oversimplified. They consider the possibility that top income earners’ growing bargaining power may help them to increase their compensation at the expense of other income groups. From this perspective lower top marginal tax rates provide an incentive to increase bargaining efforts which have nothing to do with productivity enhancing work efforts. Higher top incomes may thus be the result of redistribution in between income groups rather than of additional economic activity. Including the effect of top marginal tax rates on bargaining efforts may allow for a higher marginal tax rate as discouraging bargaining efforts can have positive effects on economic efficiency. This is the case if due to their bargaining power, top income earners manage to raise their remuneration above marginal productivity and at the expense of the remaining incomes. As Kleven *et al.* (2010), and Young and Varner (2011), point out, despite individual examples of migrating millionaires, it is also improbable that rich households will try to avoid taxation by changing their country of residence.

Although it is often argued that taxes on capital income discourage savings and therefore investment and growth, economic theory does not provide clear results supporting this view. This is not astonishing since even in a simple life-cycle model of consumption the income effect can outweigh the negative substitution effect of taxation on saving (Salanié, 2011, p. 289). Banks and Diamond (2010) review different versions of

models, commonly applied in optimal tax theory, which predict that the optimal tax rate on capital income is zero. They find that “at present, the literature has only little to say about how to combine the two sources of income to determine taxes” (ibid, p. 6).

Instead of actually changing behaviour in real terms, another way of responding to high taxes, especially for wealthy households, is to avoid the tax for example by formally becoming a resident of a tax haven or by opening a bank account in a tax haven sheltered by intricate legal structures to conceal its true ownership. Apparently, tax planning and tax evasion might represent a certain threat to the governments’ ability to effectively redistribute income and wealth. However, Piketty *et al.* (2011) estimate an average long-run elasticity of top incomes with respect to the net-of-tax rate of about 0.3-0.4. In order to compute the optimal top marginal tax rate they develop a model integrating three different components of this overall elasticity: a supply side effect (real behavioural adjustments), a tax avoidance effect, and a compensation bargaining effect. For the U.S. Piketty *et al.* (2011) estimate that the top marginal tax rate is well below its revenue maximising point, suggesting potential for much higher tax rates. With a similar approach, the IMF (2013, pp. 34-37) calculates a range of revenue-maximising top personal income tax rates for 16 OECD countries. In 12 countries the actual top rate is below or in the lower half of that range indicating substantial leeway for increased tax rates.

The tax that according to standard mainstream reasoning is seen as the most detrimental to economic growth is the Corporate Income Tax (CIT). “Corporate income taxes are the most harmful for growth as they discourage the activities of firms that are most important for growth: investment in capital and productivity improvements” (OECD, 2010, p. 20). Furthermore high corporate tax rates are supposed to induce firms to move their production abroad and thus decrease domestic employment. The theoretical mechanism behind these effects runs through the effect of the CIT on the cost of capital: “As a broad rule of thumb, a lower cost of capital encourages investment, while a high cost of capital discourages it” Vermeend *et al.* (2008, p. 150). The basic neo-classical argument is that “firms accumulate capital as long as the return to investment exceeds the cost of finance and depreciation. Due to decreasing returns to scale, there is a marginal project that just

breaks even, i.e. which earns a return that precisely matches the costs (pre-tax rate of return on the marginal investment project is defined as the cost of capital)" (de Mooij and Ederveen, 2008, p. 684). As it turns out, however, this standard approach relies on some very narrow theoretical assumptions. The fact that firms invest as long as the return to investment is *higher* than the cost of capital does not offer any answer to the question of *how much* higher the return on investment must be. The neoclassical break-even point is only reached under perfect competition and it implies that firms do not realise profits on their marginal investment project. However, with imperfectly competitive markets firms realise more than zero profit on the marginal investment project so that, as long as the corporate tax does not completely deplete this economic profit there will still be an incentive to invest.

Furthermore, as Musgrave and Musgrave (1989, p. 306) point out, the effects of corporate taxes on investment depend on the specification of the investment function, i.e. on the underlying theory of investment. Although investment may, *ceteris paribus*, depend inversely on the interest rate and therefore on taxation through its effect on the cost of capital, relaxing the *ceteris paribus* assumption a multitude of other variables, including past sales, the business climate or unit labour cost, also play a role and on their part may positively be affected by sound public finances. Therefore, for example the potentially positive long-run effects of public funding of R&D expenditures and human capital accumulation should be considered; as well as potential positive agglomeration effects that may compensate for the negative effects of taxation Brühlhart *et al.* (2012).

Empirical evidence suggests that investment behaviour is affected by corporate taxation but it is hard to get reliable estimates of the magnitude and thus the relevance of this effect. There is not much empirical evidence of tax effects on aggregate real investment. Evidence from micro-level studies hints at negative effects of taxes on investment ranging from rather inelastic (-0.25) to more elastic (-1) responses of investment but it is difficult to transfer these results to aggregate investment on the macroeconomic level (Hanlon and Heitzman, 2010, p. 148). A meta-study, by de Mooij and Ederveen (2008), on the impact of taxation on foreign direct investment shows varying effects: on average "a 1-percentage point

increase in a tax measure in a certain location reduces foreign capital by 3.3 per cent” (p. 689). However, the standard deviation of 4.4 is high and foreign direct investment cannot be used as a proxy for aggregate real investment as it also includes portfolio investment. Two recent studies trying to assess investment effects of corporate tax cuts in Germany (Reinhard and Li, 2011), and the UK (Maffini, 2013), come to the sobering result that there is no convincing evidence that the goal of encouraging investment was reached. Reinhard and Li (2011, p. 735) even conclude that “market opportunities and competitive pressures appear to be more important for investment decisions than domestic tax changes”. In a different strand of the literature on the effects of the tax mix on long term growth the CIT is usually estimated to have the most negative effect (IMF, 2013, p. 30). However, the IMF (2013, p. 30) stresses citing Xing (2012) that these results are not robust and that Acosta-Ormaechea and Yoo (2012) find almost no negative effect of a tax mix relying more on the CIT.

Besides the real behavioural reactions to taxation discussed in the literature, a much debated issue today are firms’ avoidance strategies which aim at manipulating the tax base without actually changing the level of economic activity in a country. According to the OECD (2013b) multiple opportunities exist for corporations to shift income among entities and thereby to countries where lower tax rates or special exemptions are applied. Examples for such opportunities are using licences for brands, patents, or other financial services provided by a foreign subsidiary in a low tax jurisdiction as well as the manipulation of transfer pricing. Although there are no reliable numbers about how much profit shifting actually occurs (Ibid., p. 15), the existence of profit-shifting activities is “largely unquestioned” (Heckemeyer and Overesch, 2013, p. 1). Heckemeyer and Overesch (2013), review the empirical literature on profit-shifting behaviour of multinational firms. On average, the 25 studies estimate a semi-elasticity of reported profit or earnings before interest and taxes with respect to the international tax differential between a country and other subsidiary locations of 1.55 with a relatively high standard deviation of 2.23. (ibid. p.8). Although at first sight the number seems substantial, it implies that on average a country with an overall tax rate on corporate profits of 20% may increase its rate by 5 percentage points or

one quarter at a cost of losing only 7.75% of its tax base. Hence it would not receive the full revenue benefits of the tax increase in the absence of tax avoidance, but after all, more than two thirds of it.

All in all, therefore, the case against progressive taxation turns out to be substantially weaker than often claimed. Both from a theoretical and an empirical point of view, the negative effects on growth and employment and the erosion of the tax base may not be large. And although we cannot know the counterfactual, average growth rates in many industrialised countries tended to decrease over the last three decades, despite all the cuts in the tax rates. Furthermore, factors other than taxation (cyclical condition of the economy, infrastructure investment, research and development expenditures, the educational system as a provider of a qualified workforce) may be much more important for the overall economic effects of taxation. If those factors can be enhanced by government expenditures financed through progressive taxation then the overall economic effect of the latter may well be positive.

4. Macroeconomic arguments in favour of progressive taxation

The trade-off between progressive taxation and growth and employment need not be too important even from a neoclassical microeconomic perspective. However, the problem remains that within neoclassical microeconomic tax theory, progressive taxation is always automatically in a defensive position as the standard assumption is that progressive taxation is detrimental to growth and employment. The picture may change, however, from a more Keynesian macroeconomic perspective. In what follows, therefore we briefly sketch a macroeconomic view that may lead to completely different results as progressive taxation may be systematically conducive to growth and employment both in the short and in the long run under certain conditions.

4.1. Inequality, progressive taxation and private consumption

The conflict between equity and efficiency derived in neoclassical public finance is by no means necessary if one goes back to the traditional stabilisation branch of public finance as Musgrave (1959), and takes into account the essential role of aggregate

demand. According to Keynes (1936, chapter 2; 1937, pp. 219) effective demand consists of private consumption demand and investment demand. Keynes put particular emphasis on the importance of investment demand, because he was convinced that its high volatility in combination with the multiplier process was the most important source of fluctuations in overall economic activity (Keynes 1937; 221). Investment demand depends on the fluctuating subjective expectations of firms in terms of profitability of real investment and the monetary interest rate, which in turn is influenced by the fluctuating liquidity preference of economic agents. However, private consumption also plays a central role in the argument, especially the fact that it is assumed to be dependent on current disposable income. Keynes assumes that private consumption is positively related to overall disposable income in the economy. The marginal propensity to consume indicates how large the part of income is which flows into additional consumption, and thus, automatically, how large the residual is that goes into savings. If overall income increases because of an increase in investment activity, then this leads to an additional increase in private consumption according to the marginal propensity to consume, which in turn leads to an additional increase in income, etc. The induced multiplier process will be the stronger the higher the marginal propensity to consume and hence, the lower the marginal propensity to save.

Based on these theoretical assumptions one can obviously derive a negative relationship between the degree of inequality in the distribution of income and private consumption. Since the marginal propensity to consume tends to decrease with increasing disposable income at the household level, redistribution from households with lower incomes to households with higher incomes should result in a lower rate of consumption in the aggregate, or a higher savings rate vice versa. In this case, the increasing inequality in the recent past would have led to a weakening of private consumption. Conversely, a (tax) correction of the disparity in income distribution would lead to a strengthening of private consumption and hence, *ceteris paribus*, to an increase of growth and employment. If the increase of demand has also a positive impact on firms' sales and profitability expectations, one can

additionally expect investment to increase and thereby even further reinforce the positive growth dynamics.⁶

There is a second aspect of redistribution and inequality that may also lead to negative growth and employment effects which is related to the functional income distribution. Of course, the negative trend in the labour income share to be observed within many economies may also show up in increased disparities in the personal income distribution. Additionally, in post-Kaleckian models of distribution and growth usually redistribution from workers to capitalists is seen as detrimental to growth because the propensity to consume out of profit income is assumed to be lower than the propensity to consume out of labour income (see e.g. Hein 2008 and 2012). As Behringer and van Treeck (2013) and Belabed *et al.* (2013) have argued this result may critically depend on retained profits and the existence of the 'corporate veil' which prevents an increase in capital owners' wealth from increasing their private consumption expenditures. Also there seems to be a systematic relationship according to which countries with a more stable personal income distribution – mostly in continental Europe – also tend to be those countries with the strongest decline in the labour income share, whereas the countries with a large increase in income dispari-

6. The underlying assumptions of this result regarding private consumption behaviour are certainly not uncontroversial (see van Treeck and Sturm, 2012, especially pp. 13). The validity of the Keynesian consumption function is assumed, which states that private consumption depends on current real disposable income. In addition, it is assumed that the marginal propensity to consume or to save in different income classes remains unchanged with a change in income distribution. However, other consumption theories could certainly lead to different results. If one follows Friedman's (1957) permanent income hypothesis, it would depend on whether the increase in inequality is permanent or temporary. Only in the latter case, private households would under risk aversion reduce their marginal propensity to consume. In the former case, however, households would leave their consumption behaviour unchanged. If the validity of Duesenberry's (1949) relative income hypothesis is assumed, private households which are affected by a relative reduction of their income will increase their marginal propensity to consume, in order not to fall too far behind the example given by the consumption of higher income classes. The expected result of the Keynesian consumption hypothesis, a fall in private consumption due to an increase in inequality, would at least be mitigated, avoided or in the extreme case even overcompensated. Indeed, there is some evidence for the validity of the relative income hypothesis, especially for the United States (Frank, 2005; Frank *et al.* 2010). Overall, the response of private consumption to increasing income inequality seems to depend on country-specific factors, mainly the access of lower and middle income groups to credit (van Treeck and Sturm 2012). However, it is hardly conceivable that a paradoxical positive relationship between inequality and private consumption will go on forever, as lower income households would ultimately be forced into piling up debt and there are limits to the sustainable debt level in the long run. Moreover, in countries in which the traditional Keynesian consumption function holds, increased disparities in the income distribution will be directly detrimental in growth terms due to their negative effect on private consumption.

ties tend to have experienced a less dramatic shift in the functional income distribution. Therefore, theoretically both an increase in the personal as well as the functional income distribution may lead to a decrease in private consumption. Accordingly, a more progressive taxation of personal income as well as higher taxes on corporate profits may be growth enhancing.

4.2. Exploiting the balanced budget multiplier

In the preceding section, a revenue-neutral shift of the tax burden away from the lower and middle income households towards high income households has been assumed. The relatively higher marginal propensity to consume of the lower and middle income classes can then lead to an increase in private consumption and therefore also to higher growth and employment. Alternatively, the increase in the tax revenue due to more progressive taxation could also be used to finance additional government spending. Following the standard textbook example of the Haavelmo-Theorem this policy should be expansionary as usually the multiplier of additional government spending can be assumed to be higher than the negative revenue multiplier – a result that is broadly confirmed by most empirical multiplier estimates (see Bouthevillain *et al.* 2009; Gechert and Will 2012, and section 5.6). As the multiplier for government spending on investment and consumption is most probably larger than the multiplier for tax cuts and transfers for low and middle income households, the expansionary effect would most likely be even stronger than by revenue-neutral redistribution within the tax system. Of course, one may question the effectiveness of fiscal policy due to Ricardian equivalence or even non-Keynesian effects. However, these counterarguments have certainly not gained much strength in recent times (see section 5.6) and it is questionable whether they apply to revenue neutral shifts in taxation or fully compensated increases in government spending.

4.3. Inequality as a root cause of macroeconomic imbalances and the crisis

Especially current account imbalances, large deficits as well as surpluses, quickly moved into the centre of criticism after the global financial and economic crisis, as a cause of the crisis or at

least as an accelerator.⁷ In this view, above all China, Japan, Germany and the oil-producing countries can be seen as main representatives of surplus economies, while the United States can be considered as the main representative of the deficit countries, together with the United Kingdom and Spain. The U.S. produced significant imbalances since the early 1980s under the surface of a seemingly robust and dynamic development, which were essential for the deepness of the global financial and economic crisis and the speed of its spreading. Despite weak private investment demand after the collapse of the New Economy boom in 2000/2001, the balance of the private sector was negative, which is evidence for a debt financed consumption boom. The government balance was negative, also because of deliberately countercyclical fiscal policy. Consequently, the balance of the external sector had to be positive. High and rising current account deficits meant increasing capital inflows which financed the U.S. consumer boom and the government deficits. Such a situation, however, is extremely fragile because it relies on steadily rising asset prices in the domestic economy, thereby allowing increasing consumer demand under conditions of low wages and high inequality of household income through an expansion of household debt. Externally, a drastic devaluation of the U.S. dollar has to be prevented, which would have been required to improve the international price competitiveness of U.S. producers and thus the current account under normal circumstances. In that way, steady capital inflows were provided without the need to significantly increase domestic interest rates, which in turn would have involved the danger of the collapse of domestic demand. If such a fragile situation finally collapses, not only the U.S. and other deficit countries are affected but also the rest of the world. After all, the surplus countries have to suffer twice. First, capital exports, which are associated with current account surpluses, were devalued in the highly speculative U.S. market within the financial crisis. Therefore the financial crisis rapidly affected the surplus countries. Second, they will also be quickly affected by the real crisis due to the collapse of export markets. While the dynamic model, driven by the consumption of the U.S., was dependent on the will and the ability of households to

7. The argument in this section is based on Hein and Truger (2011, section 3). See in more detail the monograph by Hein (2012) and van Treeck and Sturm (2012).

go into debt, as well as on the will of foreign countries to lend, the (stagnating) export-driven model of the surplus economies like Germany and Japan was based on the will and ability of foreign economies to go into debt. The export-driven model was therefore just as fragile as the American one. On the one hand the only moderate growth rates were already reliant on dynamic export markets and thus the expansion of the world economy. On the other hand increasing capital exports to more dynamic economies brought the risk of contagion in the event of financial crises in these markets. During the global economic and financial crisis, these two dependencies and their associated transmission channels for the crisis were visible in a dramatic way. The extreme increase in inequality in the US thus went hand in hand with a strong long term debt-financed development of private consumption and a significant increase in household debt which triggered the financial market bubble, until it burst. However, in countries with less accessible credit markets, where households with relative losses were unable to get credit due to credit rationing by banks, the Keynesian consumption theory seemed to hold, even in the short term.

From this perspective a decrease in inequality would be necessary both for the surplus economies to boost domestic demand and for the deficit economies to dampen domestic demand and the tendencies towards a debt-led consumption boom – all of this with the goal of mitigating the global economic imbalances.⁸

4.4. Theoretical considerations: the macroeconomic relevance of changes in aggregate demand

The potential harmony of redistribution via taxes and fiscal policy on the one hand and growth and employment on the other hand depends on increases in aggregate demand. This raises the question under which conditions such an increase in demand will actually be transformed into higher overall economic activity. Obviously the answer to this question depends very much on the underlying macroeconomic paradigm.

8. In the case of the deficit economies, however, this is most probably only a second-best strategy, as the first-best strategy would consist in reregulating financial markets and in removing the factors that led to the unsustainable consumption boom in the first place.

In the microeconomic view of the New Public Finance the question is not even an issue, the economy is ultimately modelled as a pure barter economy in which Say's law inevitably applies and aggregate demand does not appear as a relevant category (see Hein 2008, pp. 30). In the neoclassical paradigm the situation is quite similar, higher private consumption could result at best as an outcome of private households' increased preferences for present consumption and would merely change the composition of overall output in favour of consumption and at the expense of investment.⁹ Also a tax-financed increase of government spending would remain without any expansionary effect for the level of output and would, at the most, modify its composition.

Different results may be derived from the currently dominating literature, the so called New Consensus Macroeconomics (NCM) (Clarida *et al.*, 1999; Woodford, 2003; Carlin and Soskice, 2006 and 2009; critique by Arestis, 2011). These approaches combine a function of aggregate demand (IS curve), which is negatively dependent on the real interest rate, and decreasing short-run Phillips curve – due to nominal wage rigidities (for example due to duration of collective agreements) – with a central bank reaction function. In the long-run, the Phillips curve is vertical at the so-called NAIRU (non-accelerating inflation rate of unemployment) and the associated output and employment equilibrium.

However, the limitation of the effectiveness of demand side changes in the NCM approach depends on very restrictive and sometimes unrealistic assumptions. If one modifies these assumptions, the scope for demand-side effects increases significantly. The first modification deals with the assumptions underlying the NAIRU model and its short-run trade-off between inflation and unemployment (Hein, 2002, Lavoie, 2009). The implied wage bargaining behaviour of workers and/or unions assumes that any positive or negative deviation from the NAIRU mechanically immediately causes lower or respectively higher real wage demands, which then lead to cumulative deflationary or inflationary processes in the absence of central bank intervention. However, if the bargaining parties follow a macroeconomic wage

9. In the long term however, once lower investment has reduced effective capacities, future production will decrease due to a lower capital stock.

policy, taking as a guideline the development of productivity and the target inflation rate of the central bank for example, the NAIRU would not be one unique equilibrium point, but there would be a whole range of unemployment rates that are consistent with a stable inflation rate.

If there is hysteresis, for example due to processes of disqualification of the long-term unemployed, an increase in the actual unemployment rate automatically leads to a partial increase of the NAIRU and vice versa. The consideration of both modifications lead to the recommendation of a less restrictive monetary policy, which in turn leaves more room for positive demand side effects by redistributive tax and fiscal policy.

The second type of modifications questions the central bank's ability to control the economy through interest rate policy. First, the central bank might not be legally responsible for the national inflation and demand policy of the economy, as in a monetary union for example (Allsopp and Vines, 2005). Second, the effectiveness of the central bank's interest rate policy may be asymmetric: while the central bank may be able to fight any expansionary process by corresponding increases in interest rates, there is absolutely no guarantee that it is actually able to effectively combat a downturn: the monetary transmission mechanism may be disrupted if banks do not pass on lower costs induced by interest rate cuts by the central bank due to higher risk premiums or pessimistic expectations decrease creditworthy demand for loans. In addition, investment demand may collapse due to pessimistic expectations of investors. If the key interest rate is already at (near) zero, and/or when the economy slides even further into deflation, the interest rate policy of the central bank has completely lost its ability to stabilise the economy. This situation is dramatic within the NCM approach because the economy loses its central stabilization mechanism and moves further away from equilibrium via cumulative inflationary or disinflationary processes. In such a situation, the economy is dependent on tax and fiscal policy measures in order to effectively support the level of aggregate demand.

4.5. Empirical considerations: traditional and more recent estimates of the multiplier

Maybe one of the very few and small positive side effects of the Great Recession and austerity crises in many countries is that it has strongly encouraged empirical research on fiscal policy effectiveness and the size of the multiplier. And, in fact, many of the recent studies support the more Keynesian views of a sizeable multiplier. Firstly, the case for expansionary consolidation has severely been damaged by Guajardo *et al.* (2011) and Perotti (2012). Secondly, especially under the current conditions in the euro area with monetary policy at the lower bound, fixed exchange rates within the currency union and simultaneous consolidation, the multiplier tends to be large and (sometimes well) above one (Auerbach and Gorodnichenko, 2012; Batini *et al.*, 2012; Blanchard and Leigh, 2013; Baum *et al.*, 2012; Coenen *et al.*, 2012; DeLong and Summers, 2012; Holland and Portes, 2012). Thirdly, as suggested by the standard Keynesian textbook models and the Haavelmo-Theorem, the expenditure multiplier tends to be larger than the revenue side multiplier (Auerbach and Gorodnichenko, 2012; Batini *et al.*, 2012; Gechert and Will, 2012). Fourthly, multipliers tend to be higher during strong recessions (Auerbach and Gorodnichenko, 2012; Batini *et al.*, 2012; Baum and Koester, 2011; Baum *et al.*, 2012; Creel *et al.*, 2011; and Fazzari *et al.*, 2012). According to Batini *et al.* (2012, p. 23), the expenditure multiplier during recessions may be in the range of 1.6 to 2.6 whereas the tax multiplier only in the range of 0.16 to 0.35.

Of course, the recent studies are interesting in themselves and they may even constitute considerable progress from an econometric or methodological perspective. However, it should be noted that most of their conclusions – most notably that there tend to be sizeable multipliers and that expenditure multipliers are larger than revenue side ones – could easily also have been drawn on the basis of the earlier literature well before the crisis (see e.g. the overviews by Hemming *et al.*, 2002, Arestis and Sawyer, 2003, Bouthevillain *et al.*, 2009, and Creel *et al.*, 2011).

However, there is still a central point missing within the empirical literature on multiplier values: to our knowledge, there are no comprehensive studies on macroeconomic effects of redistributive tax policies. With respect to revenue-side multipliers the empirical

literature provides not many results for different tax categories. Coenen *et al.* (2012) as an exception state average multipliers of their results from 7 widely used DSGE models for changes in consumption, corporate and labour taxes for the United States (US) and the European Union (EU) and find that a change in the consumption tax rate yields a first-year multiplier of 0.61 for the US and 0.66 for the EU. According to Coenen *et al.* (2012) the corporate tax multiplier is 0.24 in the US and only 0.15 in the EU. So, a corporate income tax increase would only have a small negative effect on GDP, especially in countries of the EU. A different picture arises with respect to their labour income tax multiplier, where they calculated 0.23 for the US and 0.53 for the EU. Coenen *et al.* (2012) also present values for transfer shocks. They differentiate between general and targeted transfers and found a magnitude of 0.42 for the US and 0.29 for the EU with respect to the former and values as high as 1.30 for the US and 1.12 for the EU regarding the latter. Using a macroeconometric model for Germany Truger *et al.* (2010), also differentiate between tax categories. For Germany, they estimated a value added tax multiplier of 0.8. A one percentage point change of indirect taxes will have an GDP effect of 1.0%. However, they found a lower effect for income taxes with 0.3 to 0.7. Moreover, Truger *et al.* (2010) calculated a multiplier for contributions to social security with 0.8 and government transfers with 0.4 to 0.9.

Future research should focus more on the comparative effects of increases of the tax burden for the rich and a simultaneous reduction of the tax burden for households at the lower end of the income distribution. Nonetheless, as pointed out by Coenen *et al.* (2012, p. 52) tax multipliers are very much dependent on the degree and the behaviour of financially constrained households within an economy and these, usually low income households, have a higher propensity to consume out of their income, thus one can expect in line with their results high positive output effects from a redistributive policy from high to low income households. Nevertheless, from the empirical perspective the output effects of redistributive tax policies among different classes of income remain a rather open question.

5. Tax policy, macroeconomic performance and perspectives of rebalancing under the debt brake in Germany

Although the disparity of income distribution in Germany is still far away from the degree of inequality in the United States, it has grown strongly over the last decade (OECD 2008, 2011a). The top income range has achieved particularly strong gains Bach *et al.* (2009), which seem to have been caused by significant tax cuts in the recent past (Haan and Steiner, 2004; Truger, 2004 and 2009; Bach *et al.*, 2011). In what follows we try to connect two of the aspects raised in the previous section for the German case. In particular, firstly, we argue that the regressive German tax reforms and the concomitant revenue losses in the early 2000s may be seen as a major reason for the German stagnation until 2005 through the working of the balanced budget multiplier. Secondly, for the future, the revenues generated by progressive tax reforms may be used to finance major public investment projects thereby boosting domestic demand and contributing to the necessary rebalancing within the euro area.

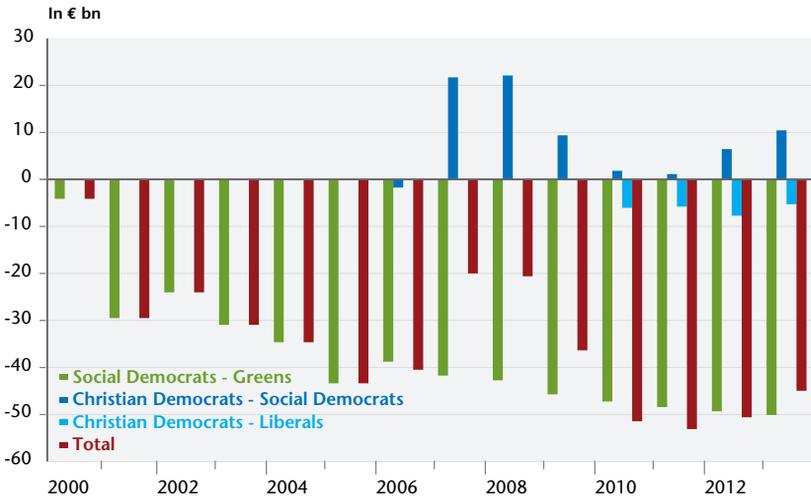
5.1. Tax cuts, induced expenditure cuts and the sick man of Europe

It is often forgotten today, that not too long ago Germany, currently seemingly the “economic powerhouse” of the euro area, used to be the “sick man” of Europe, namely in the long stagnation period from 2001 to 2005 with strongly rising unemployment and the famous “Agenda 2000” reforms of the red-green government in order to overcome what was perceived as a deep structural crisis by way of deregulation and dismantling of the welfare state. We have argued elsewhere that this view of the German crisis is seriously flawed and that, instead, a macroeconomic explanation in terms of the restrictive effects of the ECB’s monetary policy, slow wage growth and a procyclically restrictive fiscal policy is much more plausible (Hein and Truger, 2005). An important part of this restrictive policy mix, namely fiscal policy, can in turn be explained by the inadequate and rather aggressive tax cuts (Truger, 2004 and 2009).

German government budgets had, from 2001 to 2005, been weakened by drastic, permanent tax cuts – particularly in the personal as well as the corporate income taxes. Figure 1 shows the net fiscal effects in 2000-2013 of the changes made in the tax laws

since 1998, and assigns them to the particular federal government in office at each date. The effects were calculated by adding up and projecting the data from the finance table published by the Federal Finance Ministry. These are indeed net effects – i.e. tax increases introduced in the meantime are taken into account and are offset against the quantitatively much larger tax cuts.

Figure 1. Impact of tax law changes by the various coalition governments since 1998, 2000-2013

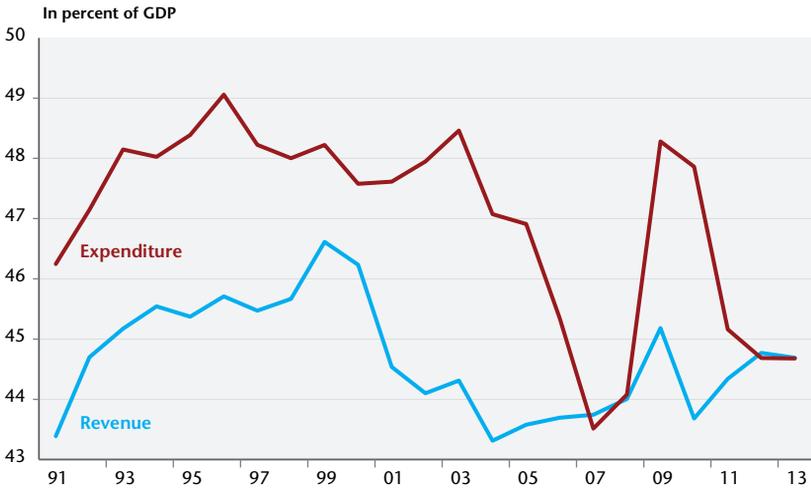


Sources: Federal Finance Ministry, authors' own calculations.

After drastic tax cuts by the Social Democratic-Green federal government, there were compensatory increased revenues from 2006 onwards, starting with the Grand Coalition's consolidation drive and primarily attributable to the increase in the value added tax by three percentage points from 16 to 19 per cent. If there had been no further changes, the revenue losses would have stabilized at about half the figure brought about by the Social Democratic-Green reforms. However, within the framework of the economic packages, further tax cuts were then adopted, so that by 2009, the revenue increases from the measures brought in by the Grand Coalition had almost all been eaten away again. Nevertheless, the Christian Democrat – Liberal Democrat coalition, which had taken office in the autumn of 2009, opted for further tax cuts via the so-called Growth Acceleration Law. Overall, the revenue loss to all levels of government from 1998 onwards, due to past tax-cutting policies,

was running at about €45bn (1.7 per cent of GDP) in 2013. Alongside transitory, cyclically induced declines in revenue, the drastic tax cuts described in the previous section are also the main cause of the budget deficits that have arisen over the past twelve years.

Figure 2. Overall government revenues and expenditures*, 1991-2012



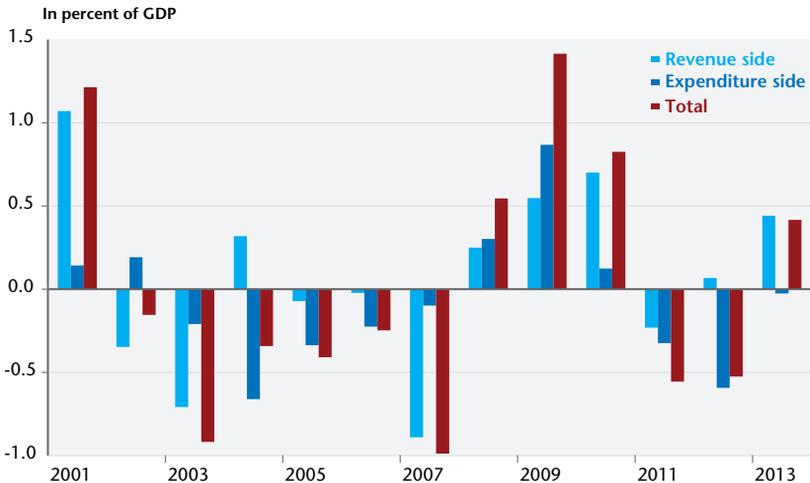
* Expenditure in 1995 excluding debt assumption by the Treuhandanstalt (privatization agency for Eastern Germany) and by the housing sector of the former GDR (totalling €119.6bn) and in 2000 excluding the proceeds from the auctioning of UMTS licences (€50.8bn)

Source: Federal Statistical Office.

What is most important for the German stagnation period under review is that the German government after some time lag reacted to the revenue losses caused by the economic crisis after the bursting of the dotcom bubble and by the tax cuts by increases in social security contributions and by sharp expenditure cuts in order to control the budget deficit. As Figure 2 shows, the overall government revenue ratio has dropped dramatically since 2000 (due mainly, as has been seen, to tax-cutting policies), and this led to a rise in the overall government budget deficit. Hence an even steeper drop in the expenditure ratio from 2003 onwards, i.e. in order to consolidate the budget, the State – except during the brief economic package phase in 2009 and 2010 – made a lasting reduction of some three percentage points in its claims on GDP, from around 48 per cent in the early 1990s to only about 45 per cent since 2005.

The negative and pro-cyclical fiscal policy stance as a reaction to the crisis and the self-inflicted revenue losses can be shown more clearly and in more detail both by looking at the discretionary stance (Figure 3). From 2003 the expenditure side stance turned negative with the most severe cuts in 2004. We already used the argument at the time (Jacoby and Truger, 2002 and Truger, 2004) and elaborated on it in Truger *et al.* (2010). Using standard multiplier values and simulations with a macroeconomic model, it can be shown that the result of this simultaneous exercise in tax and expenditure cuts during a recession/stagnation period was bound to produce severely and often overlooked negative effects for the German economy. Interpreted in the light of the new results from the multiplier literature, maybe the argument should be better understood today than it was a few years ago. The recovery was only allowed to gain momentum when the strong expenditure side consolidation strategy was loosened and government consumption and above all investment started to recover in 2006.

Figure 3. Discretionary fiscal stance, 2001-2013



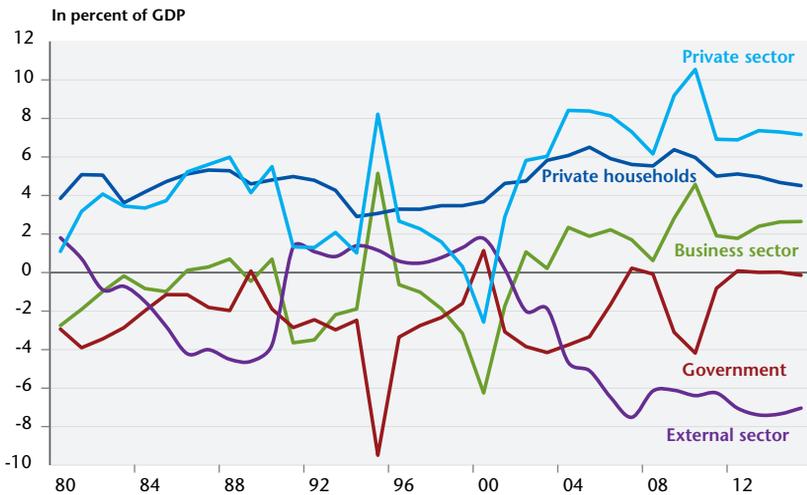
Source: Horn *et al.* (2013, p.18).

5.2. Redistribution and perspectives of rebalancing under the debt brake

The potential macroeconomic advantage – or given the constraints of the debt brake probably the necessity – of a more

progressive taxation in Germany can be illustrated by the development of the financial balances of economic sectors (Figure 4). By definition, the sum of the balances of the private sector (consolidated balance of private households and firms), the public sector and the external sector must – apart from statistical discrepancies – always be zero. Over the period from 1980 to 2013, the balances show the usual economic fluctuations. The balance which developed most constantly over time has been the one of the public sector which is usually in the focus of public debate. Apart from the exceptional years 1995 and 2000 (inclusion of debt related to German unification into the government sector and UMTS auction revenues), the government budget balance ranged from 0 to -4% of GDP and moved quite smoothly around an average deficit of 2% of GDP.

Figure 4. Sectoral financial balances in Germany, 1980-2015



Source: Ameco database of European Commission, Spring 2014; Authors' calculations.

However, the balance of the private sector has undergone a rather spectacular development. After a period of temporarily low surpluses of about 1% of GDP in the wake of German reunification, the private sector balance has increased steeply since the economic slump at the beginning of the new century varying around values of 8% of GDP since then. This is due to both an increase of the surplus of private households from previously 4% to over 6% of GDP as well as the transformation of the traditional deficit making

firm sector to a sectoral balance with a surplus of just over 2% of GDP.

The increase of private household surpluses since the beginning of the new century can be explained plausibly with the accelerating increase in the disparity of income distribution since then (Bach *et al.*, 2009; OECD, 2008 and 2011) and the consequential increase in the savings rate. The hypothesis that the increase in income inequality in Germany had a negative impact on private consumption was raised by various authors (Deutsche Bundesbank 2005, p. 26; ARGE, 2006, pp. 263; Meinhardt *et al.*, 2009, pp. 57). Therefore, it is reasonable to expect an increase in consumer spending via a (fiscal) reduction of income inequality in Germany. There has also been a massive shift in functional income distribution at the expense of (low) labour income and in favour of profits which is observable in the labour income share. As one could have expected, all this had a negative effect on private consumption demand: private consumption to GDP crashed by about 3 percentage points compared to the situation at the beginning of the century and has not reached its former level since then.

What is much more difficult to interpret is the amazing development of the business sector balance over the same switching from a previously typical deficit to persistent surpluses. Apparently, a substantial proportion of rising profits of companies, which can be derived from the declining labour income share, have not been distributed to households, which in turn is likely to have weakened private consumption even further. But most importantly, the increase in retained earnings – differently as one could expect from the neoclassical perspective – was accompanied by a clear weakness of real investment, which in parallel to the drop in private consumption also barely made positive growth contributions anymore.¹⁰

Since the mid-1990s, and especially after the recession in 2000/01 to 2006/2007 domestic demand and thus growth and employment in Germany has been very weak and it has been intensified by a dysfunctional macroeconomic policy (Hein and Truger, 2005,

10. This development can be seen in the context of the so-called process of “financialisation”, i.e. an increasing importance of financial markets within and for the real economy (see Epstein and Power, 2003, Epstein and Jayadev, 2005).

2007, 2009). Labour market deregulation and pressure on unions led to extremely moderate wage increases, thus contributing to inflation rates below the euro area average which then led to unusually high real interest rates. This made Germany particularly sensitive to the restrictive monetary policy of the European Central Bank (ECB). Attempts of fiscal policy to balance the budget in times of weak private demand via spending cuts led to a further weakening of domestic demand, however, without achieving the original goal of consolidation (Truger 2004 and 2009). This left the high and ever-increasing export surpluses as the only driving force of the weak growth environment. The current account surplus (=deficit of the foreign sector) quickly reached values of more than 4% of GDP after the recession of 2000/2001, at its peak in 2007 it rose to 7.5% of GDP. The reason behind the increasing export and current account surpluses was on the one hand the extreme wage restraint, which significantly improved the price competitiveness of German companies, and on the other hand the low domestic demand, which dampened imports compared to exports. From a financial balances perspective, the huge surpluses of the private sector were not absorbed domestically due to the lack of willingness of the public sector to take on debt, which in the end led to correspondingly severe deficits of foreign countries against Germany, currently still more than 6% of GDP.

For these reasons, the current sectoral balance structure of the German economy (Figure 4) is most likely not sustainable and economic policy alternatives must be considered in order to reduce the persistently high current account surpluses¹¹. There are only two ways to achieve this. First, with consistently high surpluses of the private sector, a greater part of them could be absorbed by a larger public budget deficit. However, this solution is precluded due to the debt brake in the German Constitution and also the Stability and Growth Pact on the European level. The debt brake even further intensifies the problem, because it limits the average government budget deficit to only 0.35% of GDP over the economic cycle, which is almost 2 percentage points lower than the average of the last three decades. That leaves only the possi-

11. The hope that a sustainable balance will be reached through automatic adjustment processes is quite low from a Keynesian point of view (see Sawyer, 2011).

bility of a significant reduction of the surplus of the private sector, whether it is the balance of private households or firms or both.

The exact consequences of a policy designed to correct the sectoral balances cannot be determined precisely without an explicit macroeconomic model.¹² However, it seems clear that progressive redistribution policies and mechanisms described in Section 4 should be used for the correction of the sectoral balances. A revenue-neutral tax reform, which increases the tax burden on high incomes and wealth as well as corporate profits, and reduces the tax burden on low and middle incomes, would reduce the surplus of the private sector via the expected reduction of the savings rate. If redistribution leads to higher private consumption, it can be associated with increasing demand and profit expectations of firms which will also lead to a strengthening of firms' real investment, hence once would even reduce the surplus of the corporate sector. The increase of domestic demand would lead to a partial improvement of the government budget balance, but also to a reduction of current account surpluses. If at least part of the gained revenue from a progressive tax reform was used to expand public investment, purchases of goods and services as well as transfers, one could expect stronger domestic growth due to higher expenditure-side multipliers, which should also lead to a correspondingly stronger correction of sectoral balances.

6. Conclusions for tax policy¹³

The perspectives for a truly progressive reform of the tax system, i.e. reversing the long run international trend of decreasing tax justice and increasing disparities in the distribution of income and wealth, while at the same time raising urgently needed revenues for government budgets, have developed in a rather favourable way over the last few years. There are some signs that the downward trend in redistributive taxation may have come to a halt recently. At the same time, a number of international institutions have commented in a more or less progressive way on how to

12. However, the role of redistribution in the development of international macroeconomic imbalances is now analysed in extended NCM models as well (see Kumhof *et al.*, 2012).

13. For a more extensive discussion of reform proposals and alternatives, see Godar and Truger (2015b).

respond to the need for fiscal consolidation in terms of socially acceptable tax reforms. Against this background the conclusions to be drawn from this paper for tax policy are at least twofold.

First, on the international level the widespread consensus as to the need for combating tax evasion and limiting tax avoidance as well as the introduction of a Financial Transaction Tax should be used to implement reforms in the most ambitious way possible. The EU commission's revision of the Savings Directive making "financial products that have similar characteristics to debt claims" and income from investment funds subject to an automatic exchange of information among member states (EC, 2014) as well as the new global standard of automatic information exchange as suggested by the OECD and the G20 (OECD, 2014, p. 3) are important steps against tax evasion by individuals. In the area of corporate taxation, the same applies for the OECD Action Plan in Base Erosion and Profit Shifting (OECD, 2013c).

However, much more could be achieved, for example by the more comprehensive approach of Unitary Taxation which would make multinational companies submit their worldwide consolidated accounts (covering all parts of the company engaged in a unitary business) to local tax authorities so that their internal transfers would no longer be of interest (Picciotto, 2012). This should be complemented with minimum tax rates to prevent harmful tax competition. In general, the harmonisation of tax rates, especially with respect to capital income, would be extremely helpful in reducing the pressure for national tax policies. A global wealth tax as proposed by Piketty (2013, chapter 15) could be the ultimate goal for the international taxation of extremely rich private households. A Financial Transaction Tax covering both spot and derivative assets could help reduce size and volatility of financial markets while at the same time generating substantial revenue (Schulmeister *et al.* 2008). However, as has become clear especially with the Financial transaction tax (Schulmeister, 2015), for all of these proposals there is the serious danger that they will be delayed, watered down or not be implemented at all due to political pressure by some individual states or partisan interests.

Second, quite independently of the success of the measures on the international level, national tax policies should seek to achieve a substantially higher level of redistributive taxation even without

international coordination. The scope for redistributive tax policies on the national level has been shown to be considerably larger than claimed by the dominant mainstream view and institutions. Therefore, there is no need for national tax policies to restrict their efforts to the rather faint-hearted measures proposed by many influential international institutions like broadening the tax base and increasing taxation of residential property. Instead, for many national governments, there seems to be substantial leeway to increase top personal income tax rates, the corporate income tax and the taxation of capital in general. This leeway can substantially be increased by determined efforts at increasing tax compliance. National governments should use this leeway, as it would increase revenues for essential public uses, decrease inequality while at the same time encouraging progressive reforms on the international level.

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THE GREAT TAX REFORM, A FRENCH MYTH

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The need for a great tax reform is often debated in France, although the content and objectives of such a reform are never clearly specified. There is no unanimity on how the tax reform should be designed, some advocating that the reform should aim at cutting taxation (which implies further public spending cuts) while according to some others the tax system become more progressive. The French tax-to-GDP ratio is 46%, and primary public expenditure amount to 50% of potential GDP. This high level of public spending reflects a choice of society, which should be maintained. The French tax system is already very progressive, similar taxation applies to capital and labour incomes. France is one the very few countries where inequalities have not risen in the recent past.

The paper addresses, for each category of tax, the reforms which could be introduced, and discusses whether they would be appropriate. In particular, the paper shows that replacing employers' social contributions by VAT would be useless. It is desirable but difficult to raise environmental taxation; French taxation should remain family-based, merging the income tax with the CSG is not desirable. Tax expenditures should be reconsidered, especially as concerns companies' and households' tax optimization schemes. Merging PPE and RSA is not obvious. A competitiveness shock (i.e. strong cuts in employers' social contributions and corporate taxation financed by a rise in CSG) should be implemented only in a European context.

Keywords: tax reform, French tax system.

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1. Introduction

French tax revenues increased by 60 billion euros (i.e. 3% of GDP) between 2010 and 2014. France ranks second in the world behind Denmark in terms of tax-to-GDP ratio. There seems to be a broad consensus according to which the French taxation system is not only heavy, but also unfair, complex and opaque. In the 2012 presidential election campaign, François Hollande had promised a great tax reform and has since then been widely criticized for not having undertaken it. Following protests related to the eco-tax introduction, and more generally, the rise in tax discontent, Jean-Marc Ayrault, Prime Minister, announced on 19 November 2013, that he would launch a great tax reform. In 2014, tax and social security contributions cuts were announced. But they were not part of a great tax reform, since they have no specified counterparts in terms of public spending cuts. The need for a great tax reform is often mentioned in economic debates in France, but the contents and objectives of such a reform are never clearly specified. There is a consensus on the need for a tax reform, but not on how it should be designed.

Taxation has three objectives: financing public and social expenditures, income redistribution, and economic incentives. According to some (see for instance, OECD, 2013), the tax system should have limited ambitions in these three areas; for some others, these ambitions should be strengthened.

Some are in favour of substantial tax cuts, expected to support the French economy by increasing domestic competitiveness, by giving firms incentives to invest and to create jobs, by giving people incentives to work more and to save more. But the implementation of tax cuts implies additional public spending cuts, although the Government is already committed to cut taxes by 50 billion euros before 2017.

Some propose to transfer the financing of social welfare from firms to households. Hence, the Medef (the French employers' organisation) requests company taxation to be cut by 137 billion euros. Should France step in tax competition in Europe through company taxation cuts, partly offset by higher households' tax burden and by public and social expenditure cuts?

Some advocate tax cuts on labour and capital incomes and tax increases on consumption, deemed less harmful to output, but others denounce the unfairness of indirect taxes, which hit more in proportion poorest people who consume almost entirely their incomes.

Others propose to share the tax burden more fairly between labour and capital incomes, to make French taxation more redistributive, to tax more heavily high incomes and wealth. But France is already one of the most redistributive countries, where richest people and capital incomes are more heavily taxed than elsewhere.

Some propose to abolish all tax expenditures, to widen tax bases and to cut tax rates. But they forget about the incentive role of taxation. Many tax schemes, even when they are complex, are justified for fairness reasons (such as the *quotient familial*), for jobs (such as social security contributions rebates on low wages, tax deductibility of child care expenditure, financial support to working poor (such as the *Prime pour l'emploi*, PPE), or incentives (such as tax relief for donations to charity, trade unions' membership, tax credit for maintaining historical buildings). It may be noted that some incomes are not taxed, such as some capital incomes (life insurance, *Plan d'épargne en actions*, PEA), unrealized financial gains (but it is difficult to tax non accrued gains), imputed rents (for owner occupied housing, but who would dare to tax these rents?). What is needed is a long and patient process to dismantle tax expenditures rather than a great reform.

French taxation should become more environmentally-friendly, but is there really a double dividend (environment and jobs) or do ecological gains induce costs in terms of jobs, purchasing power, or competitiveness? Can French environmental taxation be increased in the absence of a European (if not world-level) agreement which looks very unlikely today? How to reconcile environmental and tax revenues objectives? Ecological taxation is necessarily complex if ones tries to avoid to (too much) hit farmers, industrial sectors, poorest people, peripheral regions, etc. This is what the failures of the carbon tax (in 2009) or eco-tax (in 2013) have shown.

Tax evasion implemented by large companies and richest people should be combatted, but this requires taxation harmonisation at the EU level, and is not without danger, if this obliges France to

bring its tax rates in line with EU average tax rates (as concerns wealth tax, corporate income taxation and income taxation). As for all EU issues, one should oppose a tax harmonisation liberal project according to which tax revenues should be cut, and a project where the European social model should be preserved and developed. But where could these two projects be democratically debated?

A 'miraculous' project re-emerged in France: merging the income tax with the CSG (*Contribution sociale généralisée*, see Landais, Piketty and Saez, 2011). But, here also, neither the objectives nor the means of the project were clearly specified. Is the project expected to make our system simpler or more redistributive, to be fairer to families or to support women's autonomy?

There is a risk that the idea of a great tax reform is a fallacy, hiding the inability to tackle the real problems of the French economy: the difficulty to insert in the new international division of labour; the rise in inequalities in status and in primary incomes induced by globalisation and the financialisation of the economy; the inability of developed countries, especially in the euro area, to find a new growth path since the financial crisis.

The structure of the taxation system is probably not the main problem to address, but rather the economic policy mistake made at the euro area level, to add fiscal austerity on top of the depressive shock induced by the financial crisis and, in France, to increase taxation by 3 percentage points of GDP since 2010 in order to cut the public deficit entirely induced by the recession.

The French tax-to-GDP ratio is 46%; primary public spending amount to around 50% of potential GDP. This high level of public and social expenditure is a choice of society which should be maintained. The French tax system is already highly redistributive. France is one of the few developed countries where income inequalities did not rise strongly in the recent past. Certainly, some reforms are needed to make the tax system even more redistributive, to make it more transparent and more socially acceptable. However, inequalities should be reduced first and foremost at the level of primary incomes. There is no miraculous tax reform: the current system results from a long process of economic and social compromise and will be difficult to improve.

2. A social choice: a high level of public spending

In 2013, French public spending amounted to 57% of GDP, placing France third among OECD countries, after Finland and Denmark. The economic depression led this ratio to rise temporarily: primary public spending (excluding interest payments) account for 50% of potential GDP.²

This level corresponds to a French (and even European) choice of a mixed economy, a compromise between socialism and capitalism, where a significant share of households' needs are covered in a socialized way, either by benefits in kind (education, health, childcare), either by benefits in cash, such as universal benefits (family benefits), assistance benefits (old age minimum income, RSA, *Revenu de Solidarité Active*) or social insurance benefits (pensions, unemployment). There are no proposals from any political party or social movement to dismantle this model. Thus, the various pension reforms have not chosen to switch from a pay as you go to a pension funds system. Thus, under Sarkozy's Presidency, the RSA was introduced which extends further social protection.

Over the last 17 years, the weight of primary public expenditure increased in France (+2.8 percentage point of potential GDP against +0.7 percentage point in the euro area); primary public spending in volume increased by 1.9% per year, on average, but GDP grew by 1.5% only per year. This contrasts with the strong falls observed in Austria, Sweden and Germany (Table 1). But primary public spending rose substantially in several EU countries (Belgium, Ireland and the United Kingdom); this is also true for the United States and Japan. Two opposite trends took place in developed countries: rising social needs (education, health, pensions) induce a rise in public expenditure, whereas the liberal ideology pushes for less State intervention and for privatizing some of its functions. But private solutions are often more expensive, raise inequalities and undermine social cohesion. Thus, in the euro area as a whole, the share of public spending has increased slightly over the last 17 years despite the pressures from the Commission.

2. The GDP level corresponding to normal cyclical conditions, if we assume that such a level may be estimated.

Table 1. Public expenditure to GDP ratios

	Public expenditure, in % of GDP	Primary expenditure, in % of potential GDP	Public expenditure, in % of GDP	Primary expenditure, in % of potential GDP	Public expenditure, in % of GDP	Primary expenditure, in % of potential GDP	Change
	2013		2007		1996		2013/1996
Finland	58.5	56.9	47.4	51.1	60.2	56.7	+0.2
<i>Denmark</i>	57.2	55.0	50.8	52.9	58.9	56.0	-1.0
France	57.0	53.3	52.6	51.9	54.5	50.5	+2.8
Belgium	54.7	52.7	48.2	45.7	52.4	43.6	+9.1
<i>Sweden</i>	51.8	51.7	50.9	52.4	62.9	58.3	-6.6
Greece	58.5	39.6	47.5	38.0	43.8	32.9	+6.7
Austria	51.3	47.8	48.6	48.6	55.9	51.9	-4.1
Netherlands	49.7	46.4	45.2	45.7	49.4	44.4	+2.0
Euro area	49.8	45.7	46.0	44.9	50.5	45.0	+0.7
Italy	50.6	43.3	47.6	44.3	52.2	41.4	+1.9
<i>UK</i>	49.8	43.3	43.4	43.6	41.4	38.2	+5.1
Germany	44.6	42.7	43.5	41.9	49.0	45.6	-2.9
<i>Japon</i>	43.1	42.3	35.8	36.9	36.3	35.6	+6.7
Ireland	42.9	42.2	36.7	32.7	39.2	33.9	+8.4
Portugal	48.7	41.9	44.4	42.3	42.4	38.2	+3.7
Spain	44.8	39.8	39.2	39.6	43.2	37.9	+1.9
USA	41.9	35.5	37.1	35.3	36.6	32.0	+3.5

Note: Public expenditure to potential GDP ratios depend substantially on the output gap, which is particularly difficult to estimate for 2007 and 2013. In this table, we use the OECD figures. According to our own estimates, the French ratios would be 49.3% in 1996, 50.1% in 2007 and 2013, i.e. would have risen by 0.8 percentage point only. Source: OECD, *Economic Outlook*, November 2013.

France is one of the countries with the highest public spending to GDP ratio. Apart from regalian functions (armed forces, police and justice), the State provides free services to households (education, health); finances collective equipment, research, culture, substantial; allocates substantial transfers (family policy, minimum income) and organises a substantial collective insurance (pensions, unemployment). The ageing of populations generates an increase in health and pension expenditure, the technical changes generate a need for higher education and research spending, the rise in exclusion makes it necessary to increase solidarity benefits; the population wishes more collective equipment, more safety measures. Innovative companies like sectors in difficulty should be supported. Large military spending like large international aid

expenditures are necessary to play an important role at the international level. For all these reasons, there is a rising trend in public spending.

The high level of French public spending is especially clear in the area of social protection, which is 4% of GDP higher in France than in the euro area average (Table 2). France has made no choice between solidarity benefits, insurance benefits and universal benefits: it provides the three of them. The French health system is almost entirely public, there are universal family allowances, young child-care allowances to help working women who take a job, and allowances to help women who give up their job to care after their young children; unemployment benefits are relatively generous (accounting for housing benefits). There are also a RSA (*Revenu de solidarité active* – minimum income) and housing benefits. Last, there is relatively generous pensioner minimum income (accounting for housing benefits). The supplementary pensions system is public. Public expenditures dedicated to education are 1 percentage point of GDP higher in France than in the euro area, due to a larger proportion of young people in the population and to the low level of private education expenditure (Table 2).

Table 2. Public expenditure per function in GDP in 2012

Percent of GDP							
	France	Germany	Italie	Euro area	UK	Sweden	USA
General services	3.5	3.6	3.7	3.2	2.8	6.2	2.0
Interest payments	2.4	2.5	5.4	2.7	3.0	1.0	3.8
Defence	1.9	1.1	1.4	1.3	2.4	1.4	4.2
Public order	1.8	1.6	1.9	1.8	2.4	1.4	2.2
Functioning	9.6	8.8	12.4	9.0	10.6	10.0	12.2
Economic affairs	3.7	3.4	3.4	4.3	2.8	4.4	2.2
Environment	1.1	0.6	0.9	0.8	0.9	0.3	0.0
Housing, collective amenities	1.9	0.5	0.7	0.8	0.8	0.7	0.7
Culture	1.4	0.8	0.7	1.1	1.0	1.1	0.3
Health	8.3	7.0	7.3	7.4	8.0	7.1	8.7
Education	6.1	4.3	4.2	5.0	6.1	6.8	6.3
Social protection	24.4	19.4	21.0	20.6	18.0	21.4	8.1
Total	56.6	44.7	50.6	50.1	48.1	52.0	40.0

Source: OECD database.

So, any substantial cut in the public expenditure ratio implies privatising, in one way or another, expenditures directly benefiting households. Either public spending is fully privatised, at the expense of the poorer, or public spending is allocated only to the poorer, the rest of the population having to turn to private institutions. There is a risk that the society becomes a three-speed society, with free but low quality health or education for the poor; and higher-quality benefits for the richer who can afford to pay for them.

Besides, public spending is not a GDP component. A large number of public expenditure consist in transfers to companies and to households, which finance private consumption spending, themselves satisfied by private companies.

Many economists, politicians, liberal think-tanks (Institut Montaigne, 2012), and international institutions (OECD, 2013) consider that France should implement a competitiveness strategy, through sharp cuts in social benefits allowing to cut employers' social contributions. But such a strategy would weigh on households' incomes, households having to pay for private health insurances for instance. Such a reform would result in a more expensive (as shown by the US example) and unfair system (each family would pay according to its risks and not to its incomes). It would be preferable to consider each objective separately: on the one hand, social protection should be managed according to its own objectives; on the other hand, competitiveness should be improved either through R&D, innovation or, as a last resort, through lower wages (and dividends) paid by firms. There is no reason *a priori* why competitiveness gains should be obtained mainly *via* lower social spending.

The current Government is committed to cut public expenditure by 50 billion euros (i.e. by 4.5%). This implies substantial cuts in public services and social expenditure, which is harmful for social cohesion, is economically and socially undesirable in times of weak demand and mass unemployment.

So far, the social protection level has remained high in France. As a result, income inequalities and poverty rates are lower in France than in Anglo-Saxon and Mediterranean countries, and they are not rising contrary to Nordic countries and Germany (Table 3).

Table 3. Rates of poverty in Europe

	1997	2007	2013	Change 1997/2013
Germany	12	15.2	16.1	+4.1
Austria	13	12.0	14.4	+1.4
Belgium	14	15.2	15.1	+1.1
France	15	13.1	13.7	-1.3
Netherlands	10	10.2	10.4	+0.4
Spain	20	19.7	20.4	+0.4
Greece	21	20.3	23.1	+2.1
Italy	19	19.9	19.1	+0.1
Portugal	22	18.1	18.7	-3.3
Denmark	10	11.7	12.3	+2.3
Finland	8	13.0	11.7	+3.7
Sweden	8	10.5	14.8	+6.8
Ireland	19	17.2	16.1	-2.9
United Kingdom	18	18.6	15.9	-2.1

Source: Eurostat. Poverty rate at 60% of median income.

However, higher wages and incomes rose in France. The share of the 1% highest wages in the total gross payroll increased from 5.5% in 1996-1998 to 6.9% in 2008 and remained at 6.6% in 2010³. From 2004 to 2010, the number of households' paying the ISF (wealth tax) rose by 69%. In households' incomes, the share of the 0.1% richest rose from 1.72% to 2.03%; the share of the 1% richest rose from 6.48% to 7.07%⁴.

In 2013, the D10/D1 income ratio was 20.1 before redistribution and 5.9 after (Table 4). The French system is strongly redistributive, mainly because of social benefits. The redistributive role of taxation is less clear, particularly for higher incomes.

3. According to *Emploi et salaires*, INSEE Références, 2013.

4. According to *Les revenus et le patrimoine des ménages*, INSEE Références, 2013.

Table 4. Primary and disposable incomes in 2013

	Incomes before redistribution	Social benefit ratio	Tax ratio	Incomes after redistribution
D1	14.4	168.4	-4.3	41.6
Q1	26.6	61.1	-4.9	46.8
Q2	59.6	8.1	-6.9	66.1
Q3	82.8	3.4	-10.1	84.7
Q4	111.4	1.7	-12.7	108.7
Q5	219.6	0.6	-20.2	193.5
D10	289.8	0.5	-22.9	246.6
Total	100	5.7	-14.4	100

Source: INSEE, France, Portrait social, 2014.

3. A heavy and original taxation system

In 2013, France ranked second among OECD countries in terms of compulsory tax rates (table 5), at the same level as Northern European countries.

Table 5. Total tax revenues as a % of GDP

	1990	2007	2013 (p)
Denmark	45.8	47.7	48.6
France	41.0	42.4	45.0
Belgium	41.2	42.4	44.6
Finland	42.9	41.5	44.0
Sweden	49.5	44.9	42.8
Italy	36.4	41.7	42.6
Austria	39.4	40.5	42.5
Euro area	36.5	38.3	39.3
Netherlands	40.4	36.3	37.3
Germany	34.8	34.9	36.7
Greece	25.0	30.9	33.5
Portugal	26.5	31.3	33.4
United Kingdom	34.2	34.1	32.9
Spain	31.6	36.4	32.6
USA	25.6	26.9	30.1
Ireland	32.4	30.4	28.3
Japon	28.5	28.5	27.8

Source: OECD, Revenue Statistics, 2014.

The French tax system has four characteristics as compared with EU partners (Tables 6 to 8):

- There are two income taxes in France (a progressive tax (IR) and a flat tax (CSG)) having in total a relatively low weight. Conversely, the household's local tax is relatively heavy.
- Employers' social contributions are high; employees' contributions are relatively low.
- Local business taxes are relatively heavy.
- Capital taxation is relatively high, while consumption taxation is rather low.

Table 6. Structure of taxation, in % of GDP in 2007

	DE	AT	BE	ES	FI	FR	EL	IE	IT
Personal income	9.0	9.4	12.2	7.4	13.0	7.5	4.9	8.8	11.1
Corporate income	2.2	2.4	3.6	4.6	3.9	3.0	2.6	3.4	3.8
Employers' social contributions and wage tax	6.3	9.3	8.3	8.9	8.7	12.2	5.1	3.3	8.9
Employees (and other people) social contributions	6.9	7.6	5.3	3.2	3.2	5.1	6.6	1.6	4.1
Taxes on capital	0.9	0.6	2.3	3.0	1.1	3.5	1.4	2.5	2.1
Taxes on goods and services	10.6	11.7	11.0	9.5	12.9	10.7	11.4	11.1	11.0
Others	0.0	0.3	0.0	0.2	0.0	1.5*	0.0	0.0	2.6**
Total	36.0	41.8	43.6	37.2	43.0	43.7	31.8	31.0	43.4

	NL	PT	DK	SW	UK	EU15	JP	US
Personal income	7.7	5.5	25.3	14.6	10.8	9.7	5.5	10.6
Corporate income	3.2	3.7	3.6	3.8	3.4	3.2	4.8	3.1
Employers' social contributions and wage tax	4.5	4.8	0.2	12.3	3.7	7.3	4.7	3.3
Employees (and other people) social contributions	8.3	6.9	1.0	3.0	2.9	4.9	5.6	3.3
Taxes on capital	1.2	1.4	1.9	1.2	4.5	2.4	2.5	3.1
Taxes on goods and services	11.2	13.7	16.3	12.9	10.5	10.9	5.1	4.7
Others	0.2	0.1	0.2	0.2	0.1	0.6	0.0	0.0
Total	38.7	32.5	48.9	47.4	36.0	39.4	28.3	27.9

* Mainly business local taxes.

** Mainly IRAP.

Source: OECD, *Revenue Statistics*, 2014.

Indeed, there is no reason why French taxation should be brought in line with EU partners' taxation. Social contributions should be high in a country where social insurance benefits are

high. The high level of employers' contributions is partly offset by the level of net wages. However, these figures could suggest that France should reduce public spending, increase the weight of its income tax and of its VAT, cut employers' social contributions and capital taxation. But this would mean implementing a tax competition strategy, harmful at the EU level. France needs to make a social and political choice: remain original (which is dangerous for an open economy) or come in line with other countries.

Table 7. Structure of taxation in Germany and France, in 2012

In % of GDP

	Allemagne	France
Total	36.5	44.0
Personal income	9.3	8.0 (2.9+5.1)*
Corporate income	1.8	2.5
Employees' social contributions	6.2	4.0
Employers' social contributions	6.5	11.3
Others social contributions	1.2	1.3
Wage taxes	—	1.4
VAT and other indirect taxes	10.4	10.8
Local business tax	—	1.1
Taxes on capital, of which :	0.9	3.8
Households' local tax		1.1
Households' property tax	0.2	0.8
Company property tax	0.3	0.6
Wealth tax	—	0.2
Inheritance/donation	0.2	0.5
Transactions	0.3	0.6

*CSG-CRDS+IR

Source: OECD, *Revenue Statistics*, 2014.

Table 8. Implicit tax rates in 2012

	Labour	Consumption	Capital
<i>EA17</i>	38.5	19.3	30.7
Germany	37.8	19.8	22.2
Belgium	42.8	21.1	35.5
Spain	33.5	14.0	25.3
France	39.5	19.8	46.9
Ireland	28.7	21.9	13.0
Italy	42.8	17.7	37.0
NLD	38.5	24.5	13.7
Netherlands	38.6	26.5	30.6
UK	25.2	19.0	35.7

Source: Eurostat, *Taxation trends in the European Union*, 2014.

4. The recent reforms

The recent history of French taxation can be split into four episodes.

1) The tax-to-GDP ratio decreased by 1.6 percentage points from 1999 to 2002. This is the so-called '*jackpot*' effect of Lionel Jospin: strong GDP growth in 1997-2000 reduced the public deficit, prompting the government to cut taxes. The measures introduced by the Jospin Government amount to roughly 35 billion euros, i.e. 2.3% of GDP, split between households (12 billion), companies (12.5 billion) and indirect taxes (10.5 billion). Some of these measures (VAT and CIT rates cuts) were a return to normal after the 1995-1997 tax increases measures introduced to meet the Maastricht criteria. Other measures are part of an employment policy based on lowering employers' social contributions and removing the inactivity trap (introduction of the PPE, *prime pour l'emploi*, an employment premium, cut in residency tax). Some had purely electoral purposes and hardly any economic justification (income tax cuts, car tax (*vignette automobile*) abolition). From a macroeconomic viewpoint, this policy was strongly criticized by the European Commission, which considers it was responsible for the high level of French public deficits in 2003-2004. According to the Commission this is an illustration of a pro-cyclical policy.

2) Measures introduced in 2007 by Nicolas Sarkozy, at the beginning of his presidency, in particular the TEPA law (law for labour, employment and purchasing power) induced tax cuts of around 16 billion euros in full-year basis: tax-exemption of overtime pay, of mortgage interest payments, cuts in ISF (high wealth tax) and inheritance taxes, cuts in local business taxes, widening of the *Crédit Impôt Recherche* (tax credit for R&D expenses). In the following years, the government also cut the VAT rate on hotels and restaurants (2.4 billion euros) and reformed companies' local taxation (4.5 billion euros).

3) However, starting from 2011, France accepted the European constraint of reducing public deficits. From 2011 to 2013, tax increases reached 60 billion euros (3% of GDP). The Fillon government removed the tax exemption on mortgage interest payments, rose the '*forfait social*' and capital income taxation, introduced a contribution on high incomes, toughened CIT and income tax legislations, froze income tax brackets (formerly price-indexed); all

in all raising tax revenues by 30 billion. The five-year Sarkozy's Presidency shows that it is difficult to implement a liberal reform of French taxation. The announced objective of cutting massively the tax-to-GDP ratio (by 4 percentage points) was not met: the ratio rose from 42.1% in 2007 to 43.7% in 2012.

From 2012, François Hollande removed the tax-exemption on overtime pay, increased inheritance taxation and the ISF, increased capital income taxation, maintained the non-indexation of income tax brackets, lowered the ceiling of the family tax reduction (the *quotient familial*), rose the *forfait social*, the social contributions on pensions and self-employed contributions, toughened CIT legislation (25% of interest payments subject to CIT, increase in capital gains taxation). In addition, in 2014, households' taxation was increased by 12 billion euros (increase in VAT rates and in inheritance taxation, additional lowering of the ceiling of family tax reduction, taxation of complementary health employers' contributions, etc.).

The financial crisis cut French GDP by 8%; i.e. 4 percentage points in terms of tax revenues. The Fillon and Ayrault governments both agreed to comply with financial markets and EU Commission's diktats and to add an austerity tax shock to the financial crisis shock. The strong rise in taxation, without counterparts in terms of expenditure had a negative impact on output and fed a feeling of tax revolt (the so called '*ras-le-bol fiscal*'). Conversely it allowed abolishing several unjustifiable tax expenditures and to increase taxation on capital incomes and on the wealthiest.

4) Another episode started in 2014. Under strong lobbying from employers complaining about excessive taxation harmful to firms' competitiveness and investment, the government introduced the CICE (competitiveness and employment tax credit) and announced a responsibility Pact, CIT cuts, and the abolition of the C3S⁵, totalling 40 billion euros. In face of growing tax discontent, the government also announced households' tax cuts, such as cuts in employees' social contributions on low wages (which was later

5. *Contribution Sociale de Solidarité des Sociétés*, a tax on gross sales of larger firms to finance non-employees pensions.

rejected by the *Conseil Constitutionnel*) and income tax cuts for low and middle incomes (amounting to 5 billion euros).

Table 9. Tax-to-GDP ratios

In %

Tax-to-GDP ratios	
1999	43.6
2000	42.8
2001	42.5
2002	41.9
2003	41.8
2004	41.9
2005	42.5
2006	42.8
2007	42.1
2008	41.9
2009	41.0
2010	41.3
2011	42.6
2012	43.7
2013	44.7
2014	44.7
2015	44.6
2016	44.5
2017	44.4

Source: INSEE until 2013, and *Projet de loi de programmation des finances publiques 2014-2019*, from 2014.

The Government committed to cut the public deficit by 50 billion euros and company taxation by 40 billion between 2013 and 2017. This would be financed by public expenditure cuts amounting to 50 billion euros. 40 billion are thus lacking: the French government seems to have abandoned the objective of rapid public deficit reduction.

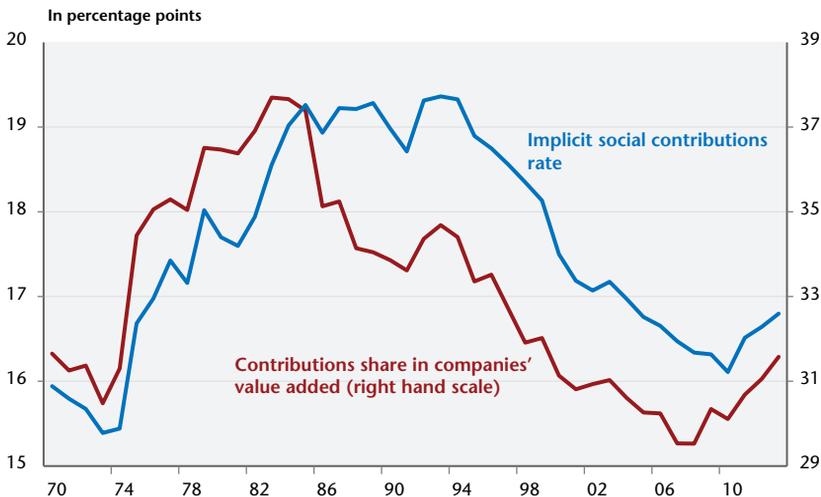
5. The reform of the Social Security financing

There are three arguments in favour of reforming social protection financing. The first argument is that financing should follow an economic and social rationale, according to which social insur-

ance benefits (unemployment, retirement) should be financed by contributions on wages while universal and assistance benefits (health, family and minimum income) should be funded by general taxation. The second argument is that universal benefits financing should not be harmful to employment; and should therefore weigh either at the level of companies on all production factors: labour, capital and energy, or at the level of households, on all their incomes. The third, and more circumstantial argument, is that French companies need a price-competitiveness shock and since currency devaluation is impossible, labour costs need to be cut via lower employers' contributions. But in counterpart other resources should be allocated to social protection.

France is the country with the highest social security contributions in the world. This is due to the size of the social protection system: the French worker does not have to pay a private insurance for his retirement and health. Family and unemployment benefits are relatively generous. Net wages may be lower (which offsets the additional wage costs induced by social security contributions). Since 1984, employers' social contributions have fallen quite substantially as a share of value added, from 19.8% in 1984 to 15.8% in 2007 (Figure 1), thanks to tax exemptions. Hence employers' social contributions can hardly be blamed for being responsible of the recent competitiveness losses of the French economy.

Figure 1. Employers' social contributions share in companies' value added



At the median wage level, social contributions rates stand at 44% for employers and 21.7% for employees (including the CSG). A French specificity is to collect social security contributions without ceiling and to cut payroll taxes on low wages (with social security entitlements being unaffected). Thus, wages at below 1.6 times the SMIC (the *minimum wage*) benefit from employers' contributions rebates, amounting to 28 percentage points at the SMIC level. Besides, low-wage earners are entitled to the RSA (*revenu de solidarité active*) or the PPE (*prime pour l'emploi*). This system is highly progressive and difficult to reform without reducing its redistributive characteristics.

The reform should clearly distinguish social insurance benefits (pensions, unemployment, and sickness replacement benefits), entitled on the basis of work-related contributions. These contributions should remain proportional to wages if benefits are to remain linked to wages. General taxation cannot entitle higher benefits to higher-wage earners. These real contributions amount to 38.5 percentage points. They should not be part of the compulsory tax rate. The latter should be lowered by 15.5 percentage points, from 44.5 to about 29 points. Any future increase in these benefits should be financed by higher employees' contributions so that the employees' social choice – contributions/pensions level/retirement age – is transparent and does not weigh on competitiveness. Currently, employees' social contributions finance only social insurance benefits. The plan of lowering employees' contributions on low wages (announced by Francois Hollande on 31 March 2014) had no economic rationale and would have complicated the wage bill further. Fortunately, the Constitutional Council rejected the plan, saying that these regimes should continue to be contributive: benefits entitlement relies on contributions paid.

On the contrary, universal (health, family) or solidarity benefits should be financed by taxation. Currently, they are financed by employers' social contributions (without ceiling), by the CSG and by social levies on households' capital incomes. In the past, it was considered that companies were benefiting from the existence of health and family (especially child-care expenditure) benefits, which were ensuring the availability of a healthy labour force, and hence it was not illegitimate that companies contribute to universal social protection financing. Firms' competitiveness and

wage costs issues lead to put this argument aside. Any future increases in terms of health expenditure should be financed by taxation on households' incomes, such as the CSG. Here also, this will have no impact on firms' competitiveness.

Therefore, the underlying problem is: what shall be done with current health and family employers' social contributions (i.e. 17.45 percentage points)? Five projects are on the table. The first two (CSVA or ecological taxation) would not improve firms' competitiveness, but could increase employment via substitution effects. The third (increase in the CSG offset by an increase in gross wages) would bring a social clarification, without economic impact. The last two (CSG rise not offset, VAT rise) imply lower households' incomes to increase French companies' competitiveness or profitability.

5.1. Employers' social contributions exemptions.

In the absence of a comprehensive reform, the solution adopted since 1993 has been to extend social security contributions' exemptions schemes. In 2014, there were 71 exemption schemes, amounting to 28 billion euros (table 10). It has become the major instrument of the French employment policy. These exemptions are based on the theory according to unemployment is high because of labour costs, especially at the minimum wage level. Conversely, these exemptions undermine the social protection financing, which sees its own resources declining; these exemptions tend to devalue the social role of work (see Friot, 1999).

Table 10. Exemptions from social security contributions in 2014

Billion euros		
	Offset	Non-Offset
Low wages	20,700	
Overtime	510	
Specific workers	1,140	1,740
Geographical areas	1,410	
Households' workers	180	1,770
Other sectors	630	150
Total	24,570	3,660

Source: PLFSS (2015).

Companies benefit from social security contributions cuts on low wages, amounting to 28 percentage points (over 44) for workers paid at the SMIC (minimum wage) level and decreasing linearly up to 1.6 times the SMIC. This lowers the minimum wage cost by 18.6%. In addition, minimum-wage earners are entitled to the PPE (7.7% of the net SMIC) in order to widen the gap between the minimum wage and the RSA (the minimum income). These social security contributions rebates had *ex ante* a cost of around 20.7 billion euros in 2013. Their impact is controversial (see Sterdyniak, 2007); according to the French ministry for Labour, the impact is 800,000 additional jobs (26 000 euros by job, which is high when the employers' total wage cost for a worker paid at the SMIC level is 24 540 euro without social contributions rebates. The *ex-post* cost would be significantly lower, 10 billion euro, since these jobs generate 12 billion euros in terms of social contributions and lower unemployment benefits. According to Heyer and Plane (2013), the impact would be 500 000 additional jobs (110 000 via capital-labour substitution, 230 000 via a basis effect, 80 000 by higher demand effect and 80 000 by a competitiveness effect). The effect comes down to 330 000 (250 000) if the measure is financed *ex post* by higher taxes (by lower public expenditure).

Three justifications may be given for targeting low-wages social contributions. The first one is that the minimum wage is too high in France and deemed responsible for unskilled workers' high unemployment while graduate workers are close to full employment. But one may argue that in a mass unemployment situation, companies have a choice and may prefer to hire over-skilled employees, themselves resigned to apply for a job below their skills. It is true that unemployment rates are higher and employment rates are lower for unskilled than for skilled people. But the gap between unemployment rates is not larger in France than elsewhere (Table 11), despite the SMIC, and the gap between employment rates did not shrink despite the policy of lowering social contributions at low-wage levels (Table 12). The second justification is a pure basis effect: it is less costly to cut labour costs for low than for higher wages. But social contributions cuts on low wages are an incentive to create poor quality jobs.

Table 11. Unemployment rates by level of education (2012)

	Primary	Tertiary	Gap
Spain	31.2	14.0	17.2
Germany	12.8	2.4	10.4
United States	14.3	4.6	9.7
Belgium	12.1	3.4	8.7
France	13.8	5.1	8.7
OECD	13.4	5.0	8.4
Sweden	12.3	4.0	8.3
Finland	11.6	3.9	7.7
United Kingdom	10.5	3.6	6.9
Italy	12.2	6.4	5.8
Austria	7.7	2.1	5.6
Denmark	9.6	4.7	4.9
Netherlands	6.6	3.0	3.6

Source: OECD (2014): *Employment Outlook*.

Table 12. Higher-graduates and non-graduates employment rates

	1994	2012	Change
Germany	34.4	30.4	-4.0
United States	34.0	27.2	-6.8
Belgium	34.0	37.0	+ 3.0
Austria	32.8	31.4	-1.4
Italy	32.7	27.8	-4.9
Netherlands	30.6	25.4	-5.2
United Kingdom	30.3	27.3	-3.0
France	29.4	28.9	-0.5
Spain	28.5	28.0	-0.5
Denmark	28.4	25.0	-3.4
Finland	28.3	29.2	+ 0.9
Sweden	20.5	24.7	+ 4.2

Source: OECD (2014): *Employment Outlook*.

The third justification is that labour demand elasticity to labour costs would be higher for low than for higher wages. Thus, Heyer and Plane (2013) assume that this elasticity ranges from 0.9 at the minimum wage level to 0.2 for higher wages. According to Brunel *et al.* (2013) this elasticity is 0.75 at the SMIC level and 0.25 above 1.6 SMIC. As long as the elasticity is lower than 1, this policy

appears more costly than public jobs creation (see, Sterdyniak, 2012b). But these estimates have no recent empirical basis on French data. Cahuc and Carcillo (2014) find an elasticity of 2 at the SMIC level, but they generalise a very specific episode, when during the 2008-09 crisis, a temporary social contribution cut allowed small firms to reduce the number of layoffs.

This strategy has three drawbacks: it benefits more to services than to industrial sectors (where there are fewer low wage jobs); it is an incentive for firms to create a specific category of jobs at the minimum wage level, without any career prospect, often through outsourcing; it supports low-wage companies at the expense of the companies making efforts to promote their employees.

A single worker paid at the SMIC costs 1 671 euros by month to his firm (for a 35 hour working week); he pays 540 euros in terms of contributions to unemployment and retirement schemes, representing deferred wages; he receives a net transfer of 140 euros (PPE + housing benefit - generalised social contribution (CSG) – income tax – health and family contributions); his disposable income is 1 271 euros. He does not support any tax burden and is entitled to health insurance for free. The standard of living of minimum wage-earners is totally disconnected from their labour costs.

But these exemptions weaken the social security financing. Employers' social contributions, and RSA generate low-paid jobs, for which wage increases are very costly for the employer and very limited for the employee. Hence, a 100 euros rise in the wage of a worker paid at the minimum wage, raises the employer's costs by 165 euros and raises employee's wage-earnings by 40 euros. Companies are encouraged to create specific unskilled jobs, without career prospects, trapped in a low-wage situation. Cutting contributions on low wages does not encourage skilled job creation, although there is a certain level of unemployment rate for skilled people too. One day, France will have to change its employment strategy. Conversely, the persistence of a large number of unskilled workers and the social denial to lower the standard of living of the working poor, do not really allow to dare to remove or to reduce these schemes.

Contributions cuts at the minimum wage level (28 percentage points) are currently larger than health and family employers'

contributions (17.45 percentage points), which makes it difficult and even prevents the implementation of a great reform. It would be difficult to reform employers' contributions without increasing unskilled jobs' relative labour costs.

5.2. The social contribution on value added

Employers' social contributions rebates could be offset by increasing companies' profits taxation. In so doing, one would abandon the objective of gaining competitiveness and target capital/labour substitution. Abolishing all employers' family and health contributions (17.45 percentage points or 98 billion euros, net of exemptions on low wages social contributions) would require the introduction of a Social Contribution on value added (SCVA⁶) of 8.3%: 32 billion euros would weigh on capital rather than on labour (Table 13).

Table 13. Changing the social contributions basis

In billion euros, figures for 2013

	Before reform	After reform
Gross wages	612	612
Employers' social contributions	196	100
SCVA on wages		64
Gross operating surplus	352	352
SCVA over gross operating surplus		32
Added value (factor prices)	1,160	1,160

Source: Authors' estimates.

Such a measure would not affect company profitability in the short term. Higher capital taxation would be offset by lower labour taxation; the overall firms' burden would be unaffected. In the medium term, companies would respond in using more labour (at unchanged real wages, but lower total cost) and less capital (the overall cost would be higher but the after-tax profit rate would be unchanged). *A priori*, prices would not rise.

6. Let us recall that it is a "real value added", without investment or capital depreciation deductibility.

But such a reform would have five consequences:

- The relative labour/capital cost would diminish, which would be an incentive for companies to use less machines and more labour.
- The labour cost would be reduced in absolute terms, which would support service industries.
- Households would be encouraged to buy products with a high labour content, which would see their relative price decrease at the expense of capital-intensive products.
- A transfer would be made from highly capital-intensive firms to labour intensive companies. Social protection financing would be shared more fairly between branches, while it currently weighs heavily on branches with high payroll to value added ratio.
- At the macroeconomic level, the increase in consumption (induced by job creation) would offset the decline in investment (induced by lower capital needs).

From a theoretical perspective, the debates in 1987-1988 as in 2006-2007 showed that this measure made sense only if one considers that France is durably in a Keynesian unemployment situation. In a model where the long-term unemployment rate is equal to an equilibrium rate, this measure cannot, by definition, create jobs and translates into less capital and less production.

Let us note σ the elasticity of substitution between capital and labour, w the real wage rate, π the rate of (after tax) profit, t the employers' contributions rate, θ the tax rate on gross operating surplus, n , employment, k the capital.

The production constraint is:

$$y = \alpha \cdot n + (1 - \alpha) \cdot k$$

The choice of production technique gives:

$$k = n + \sigma \cdot (w + t - \pi - \theta)$$

The product exhaustion constraint is:

$$y = \alpha \cdot (w + t + n) + (1 - \alpha) \cdot (\pi + \theta + k)$$

The social security resources stability constraint is:

$$0 = \alpha \cdot t + (1 - \alpha) \cdot \theta$$

Let us assume that employers' social contributions are cut; this being offset *via* higher profit taxation, the rate of profit, determined by the world capital market, remaining fixed.

In a classical situation, employment rises with real wages: $l : n = n_0 + l \cdot w$. But the measure does not increase real wages. Employment does not change. *Ex post*, capital decreases by $k = \alpha \cdot \sigma \cdot t / (1 - \alpha)$; output by $y = -\sigma \cdot t$.

In a Keynesian situation, the real wage is fixed, output is determined by demand, employment increases by $k = \alpha \cdot \sigma \cdot t / (1 - \alpha)$; capital decreases by $n = -\sigma \cdot t$. There is labour/capital substitution, with a fixed output.

The reform decreases the labour/capital relative cost by 11.2%. If the elasticity of substitution between capital and labour is unitary, then the reform should raise employment by 3.15% (600,000 jobs). Since the elasticity of substitution is slow, the production technique changing only once new capital is introduced, then the full effect would be obtained only after several years. The simulations run with OFCE's quarterly model of the French economy (see Timbeau *et al.*, 2007) led to less job creation (227,000 for 17.45 points), since the elasticity of substitution was assumed to be 0.45.

According to some economists (see Malinvaud, 1998, Groupe de travail, 2006), this transfer would undermine the capacity of firms to innovate and modernise. However, modernisation by substituting capital to labour is harmful in a mass unemployment situation. Firms can be innovative in hiring highly skilled workers rather than in using capital intensively.

The measure would be detrimental to firms making high profits and would encourage companies making low or no profits. This may be considered dangerous for economic activity. On the contrary, some companies may earn high profits because they benefit from rents; others may be in trouble because they are high many workers and face low-wage countries competition, in which case it would be justified to support them.

However a transition issue remains: the reform may be detrimental to existing firms and techniques, and encourage the emergence of new companies or techniques. This is less of a problem if the companies supported already exist and if the point is to keep them alive.

The measure would provide a competitiveness advantage for France in labour-intensive sectors and a disadvantage in capital

intensive sectors. The risk is that the first effect is small (due to differences in labour costs between France and emerging countries) and that the latter effect is large (due to competition with other European countries).

Studies implemented in 2006 (see Groupe de travail, 2006) showed that the employers' social contributions/CSVA transfer would be neutral for innovative companies (which benefit from the research tax credit). It would hurt the energy sector (+1.3% of the wage bill), financial activities (+0.9%), real estate activities (+0.5%) and agriculture and food industries (+0.2%). The winning sectors would be: services to firms (-0.3%), equipment goods (-0.25%), construction (-0.25%), automotive industry (-0.2%). Large companies would be losing; small companies would win. The winners would cover 69% of companies, 50% of value added, 54% of exports.

In 2006, an argument against this reform was that it would require the introduction of a new tax, with a new basis – the value added –, which would entail costs in terms of additional statements for companies and control from public administration (COE, CAS, 2006). But the introduction of the CVAE (*Contribution sur la valeur ajoutée des entreprises*) to replace partly the local business tax makes the proposal much more credible: requiring only to increase the CVAE from 1.5% to 9.8%, i.e. from 12 to 110 billion. The 2007 debate had rejected this measure as being too risky, judging also that slowing down capital/labour substitution was not going in the right direction.

5.3. Environmental taxation

The need to save energy and to reduce greenhouse gas emissions makes it necessary to introduce environmental taxes. In a mass unemployment situation, one may think that any rise in environmental taxation should be offset by lower employers' social contributions. On the whole, companies' tax burden would not rise and so *a priori* prices would be unchanged; firms' competitiveness would not be affected; but companies would be encouraged to use more labour and pollute less. This is the 'double dividend logic': environmental taxes would have the double advantage of giving incentives to reduce the use of polluting products and of allowing, thanks to collected revenues, to reduce labour costs. In 2013, envi-

ronmental taxation amounted only to 1.8% of GDP in France, as compared to 2.3% in the euro area (but 3.8% in Slovenia and 3.6% in the Netherlands), and 3.9% in Denmark.

Combining environmental taxation and employers' social contributions cuts may lead to less pollution and lower unemployment without any cost for public finances. This is all the more likely to happen in a country with under-employment. But environmental tax revenues will be all the more substantial that demand for taxed goods has low price-elasticity. There is a contradiction between the ecological objective (a high and targeted taxation may be so effective that it generates *ex-post* low revenues) and the revenue objective: tax revenues must be significant to allow substantial cuts in employers' social contributions. In terms of social security resources, the risk is to lose a relatively well-ensured basis against a basis intended to erode. This would be the case for example if employers' contributions were replaced by a deterrent tax on diesel.

Two strategies may be considered as concerns ecological taxation:

1. The rise of the eco-tax may be offset by a production (or consumption) subsidy for each type of product (the *bonus-malus* principle); green products are subsidized while polluting products are more heavily taxed. It can also be offset via subsidies to each producer (or consumer), according to their past consumption of polluting goods. Such a strategy has the advantage of not directly harming polluting sectors, but is difficult to implement: it requires a fine knowledge of the production processes. How to deal with new firms? How to embed ongoing technical progress? Taxation gives companies an incentive to change their production techniques, but it gives no incentive to households for not consuming goods resulting from a polluting production process. Households may choose greener cars (instead of stopping using cars).

2. Environmental taxation may be offset at the aggregate company level by social security contributions cuts. This hits directly polluting firms in raising their average production costs; companies' price increases lead households to consume less polluting products. This strategy can be implemented without any prior microeconomic analysis; it will support labour-intensive sectors, using little energy, but industrial sectors will be particularly hit.

A tax reform altering significantly the cost structure of firms implies costly restructuring: some activities are no more profitable and should therefore be stopped; some others become profitable, but require new investments. Whether it will generate substantial financial resources or not is uncertain.

In France, the failure of the climate-energy tax in 2009 may lead to be pessimistic: the acceptance of such a tax reform requires that part of its revenues are used to help poorer households, hit by higher fuel and heating prices, and to subsidize energy savings (collective transportation, construction sector). On the whole, prices are likely to rise and competitiveness to deteriorate. A price index excluding energy taxation should be introduced and households (at the exception of the poorest) should accept lower incomes to finance energy savings and support to the poorest.

In any case, such a reform should be coordinated at the European and even at the world level, to prevent polluting sectors from relocating production in poor or emerging countries, while other countries could decide not to introduce environmental tax measures in order to maintain their domestic industries. But poor and emerging countries will accept a worldwide agreement only if it is asymmetrical: part of the tax revenues raised in developed countries should be used to help poorer countries to make the necessary efforts (adopting less polluting production techniques). The eco-tax revenues cannot be used to cut employers' social contributions.

Some have proposed to offset the eco-tax by taxing products imported from countries not applying the eco-tax. For example, if European countries raise a 100 euro fee on European companies per emitted tonne of CO₂, they will apply the same tax on imported products, after deduction of already paid taxes. This would be justified before the WTO, on the ground of ecological need and on the principle of domestic and foreign producer similar treatment. However this project seems unrealistic: the amount of emitted CO₂ would be impossible to calculate, product-by-product. Moreover, the issue of competitiveness on external markets would remain (unless the eco-tax is repaid for exports). Last, can the WTO agree with such a project? Why not apply the same problematic to social contributions: protecting our social system in taxing products from countries with too low social protection?

The most promising strategy for our competitiveness would be to introduce an environmental tax, the revenues of which would be used to cut employers' social contributions and allowing us to tax imports from countries with no environmental taxation. There would thus be a triple dividend. But will the WTO agree?

Here again, the measure is effective only in a Keynesian unemployment situation. Let us consider the same model as above. σ is the elasticity of substitution between labour and energy, w is the real wage, π the price of energy, t : the employers' contributions rate; θ the tax rate on energy, n : employment, e energy consumption.

The production constraint is:

$$y = \alpha \cdot n + (1 - \alpha) \cdot e$$

The choice of the production technique gives:

$$e = n + \sigma \cdot (w + t - \pi - \theta)$$

The constraint of product exhaustion is:

$$y = \alpha \cdot (w + t + n) + (1 - \alpha) \cdot (\pi + \theta + e)$$

The stability of social security resources constraint is:

$$0 = \alpha \cdot t + (1 - \alpha) \cdot \theta$$

Let us assume employers' contributions cuts offset by higher energy taxation, the objective being to decrease energy consumption by η .

In a Keynesian situation, the real wage is fixed, demand determines output, and the energy tax must be $\theta = \eta/\alpha$, employment increases by $n = \alpha \cdot \eta/(1 - \alpha)$. There is effectively substitution between energy and labour, at constant output.

In a classical situation, employment is a rising function of the real wage: $n = n_0 + l \cdot w$. But the tax measure does not allow to increase real wages. Employment does not change. *Ex post*, production decreases by $y = -(1 - \alpha) \cdot \eta$ with $\theta = \eta/(\alpha\sigma)$. The ecological effect is obtained, but not the employment one.

5.4. Increasing the CSG

The more coherent reform would be to consider that family and health benefits only concern households and should be financed by them. This funding allows for transparent social choices: family benefits would appear as a transfer between households, health

expenditure as a households' choice not involving firms. The rise in the CSG would provide a well designed resource to Social security.

The traditional arguments would be left apart: firms need a healthy workforce (which justifies that companies contribute to health expenditure), renewing itself (which justifies that companies contribute to family expenses), and is available (which justifies that companies contribute to child care costs).

This reform could be implemented through four modalities:

- 1) With fixed gross wages, the reform would imply a huge transfer from households to companies. Companies would gain (households would lose) 17.45% of gross payroll, i.e. 5.5% of GDP (assuming that exemptions on low wages are abolished). This is the reform advocated by the Institut Montaigne (2012). This reform corresponds to the competitiveness shock.
- 2) Employees could benefit from a compensatory 17.45% increase in their gross wage. The CSG rate could increase from 8% to 22.3% on wages (+ 14.3 points): in this case, the reform would be entirely neutral.
- 3) Alternatively, after the wage increase, the CSG could be raised by 10.5 percentage points on all incomes. In purchasing power, employees would thus gain 4.8%; pensioners would lose 11.3% (their CSG rate would increase from 7.1% to 17.6%); rentiers (capital income earners) would lose 12.4% (their CSG – social security contributions on incomes would increase from 15.5% to 26%).
- 4) Offsetting measures could be introduced for pensioners or rentiers so that neutrality is reached.

In the second case, the measure would be neutral; it would be a simple accounting operation. There would be no competitiveness shock. Contrary to Piketty's argument⁷, it would have no impact on the cost of wage increases or of job creation. However, low-wage companies would lose: they would bear a 17.45% rise in the SMIC;

7. « La baisse de coût du travail pour un salaire brut donné, s'appliquera aux nouvelles embauches et aux augmentations de salaire, mais ne doit pas se faire sur le dos de ceux qui ont déjà un emploi », *Libération*, 24 septembre 2012.

they would pay at best no health and family benefits, while exemptions from contributions (28 percentage points today) are higher than health and family contributions (17.45%). Offsetting measures would be required for such companies.

In the third case, the measure would be neutral for firms; it would give purchasing power gains to employees at the expense of pensioners and capital income earners. This raises two issues: is it fair to deteriorate substantially the relative situation of pensioners (already projected to deteriorate under the impact of pension reforms)? As we will see later in the paper, capital income taxation is already as heavy as labour income taxation, and so the rise in the CSG would require compensatory measures (abolishing social security contributions on incomes or introducing a rebate to account for inflation or corporate taxation already paid). This could then lead to the fourth case: an entirely neutral measure.

5.5. Social VAT

Many industrial business leaders and parliamentarians have put forward social VAT. But contrary to what its proponents say, social VAT would not be a 'miracle' reform allowing for social protection to be financed by machines or by foreign producers. It could have a positive impact on jobs only if it led to lower employees and pensioners' purchasing power.

Let us consider first a closed economy. Would social VAT encourage firms to use more labour? Let us assume that several percentage points of employers' social contributions are replaced by VAT percentage points. At best, firms will translate fully contributions cuts in production prices and consumer prices will remain stable, despite higher VAT. However, VAT and employers' social contributions have *roughly* the same base (payroll), since the VAT does not weigh on investment and hence on capital (see Sterdyniak and Villa, 1984 and 1998). Therefore, VAT, like employers' social contributions, weighs only on labour. VAT has no impact on the relative capital/labour cost: labour costs are lowered but capital goods prices, which bear no VAT, are reduced similarly. The measure does not encourage firms to use more labour and less capital. It does not alter the relative situation of capital-intensive and labour-intensive industries: labour-intensive industries support both heavy social contributions and heavy VAT, as they benefit hardly from VAT

deductibility on investment. Capital-intensive companies bear little employers' social contributions (as they have few employees) and VAT (since they benefit from VAT refund on their investment). The cut in employers' contributions is offset by higher VAT not only at the aggregate but also at each sector levels. There is no sector effect to be expected. Relative prices of goods do not change and hence there is no reason why consumers would change the structure of their expenditure.

In order to see this more precisely, let us note p consumer prices, q production prices, w the wage, π the rate of profit, δ the depreciation rate of capital, t the employers' contributions rate and θ the VAT rate. Let us assume that the company produces 1 unit of goods using 1 unit of labour and k units of capital. Its production price is: $p = (1 + t)w + k(\pi + \delta)q$.

The consumer price is: $q = (1 + \theta)(1 + t)w + k(\pi + \delta)q$

A reform reducing the employers' social contributions rate and increasing the VAT rate leaving the $(1 + \theta)(1 + t)$ ratio unchanged has no effect on the capital/labour relative cost, or on the prices of the various sectors (characterized by different k). The social VAT can therefore not promote labour-intensive sectors or encourage companies to use more labour.

The equivalence between VAT and employers' social contributions is however true only at first order, for several reasons:

- VAT weighs only on companies' sales; social contributions on initial expenditure. The reform leads company taxation to be more in line with the business cycle. Profit volatility is reduced, which may have a positive impact on investment. But in this case, the best reform is not to increase VAT, but to tax the gross operating surplus (EBITDA), or even better profits (Table 14), although this would with increase tax revenues volatility. But if entrepreneurs like to take risks, they prefer taxation on production factors than on profits.
- Social contributions weigh on value added less profits; the VAT on value added less investment. The measure favours dynamic companies investing at the expense of companies paying dividends, which is positive for growth.
- The measure decreases the investment price relative to the consumption price. This decrease hits the owners of the

existing capital. The rate of profit does not diminish, new capital profitability is unaffected, but the purchasing power in consumer goods for dividends paid on the capital in place is reduced. The measure is thus a punctual tax on already installed capital.

Table 14. The choice of companies' taxation base

Basis	Economic effect	Volatility of the resource	Impact on firms
Payroll	Detrimental to employment		Increases the risk
AV	Detrimental to employment		
EBITDA	Detrimental to investment	High	Reduces the risk
Profit	Detrimental to investment	Very high	Reduces highly the risk

This “quasi-equivalence” also shows that it is arguable to consider that VAT is paid by the consumer while employers’ social contributions are paid by firms or by workers.

Let us consider now an open economy. Replacing employers’ social security contributions points by VAT points provides competitiveness gains: the price of imported goods increases due to the rise in VAT; the price of domestic products sold on the domestic market remains fixed in principle; the price of exports, exempt from VAT, decreases: it is a disguised devaluation. Like devaluation, the measure has an inflationary impact. Let us assume that VAT is increased by 5 percentage points while social contributions are cut by 6 percentage points. The day after the reform, import prices rise by around 5%; export prices should in theory fall by 5% (if companies translate entirely social contributions’ cuts in their selling prices). Consumer prices increase by 1.25%, with imports amounting to 25% of the domestic market. The domestic economy benefits from competitiveness gains of 5%, but thanks to a 1.25% loss of French residents’ purchasing power. Two strategies may then be considered:

- Let indexation mechanisms play, which involves a rise in the minimum wage, wages, and pensions. These increases will have an impact on prices, and then again on wages, until domestic prices have increased by 5%; the competitiveness gain will therefore be only temporary. The inflationary risk is all the more stronger that firms transmit slowly the fall in

labour costs while retailers immediately transmit the strong rise in VAT and that the sharp rise in inflation in the first year, may challenge the current weakness of wage increases⁸.

- Let prices increase and freeze wages and social benefits. Competitiveness gains may then be permanent. But it should be clearly announced that social VAT will lower workers' and pensioners' purchasing power, which cannot be said to be *social*. Social VAT is a way to implement internal devaluation.

The competitiveness of the French economy will be improved only insofar as higher prices for imported consumer goods have no impact on wages. Using social VAT thus implies that wage earners' and pensioners' purchasing power is reduced.

Social VAT is therefore not a miracle tool which would provide competitiveness gains without entailing losses in wage earners' and pensioners' purchasing power. Social VAT does not allow to shift the employers' social contributions burden from domestic employees to foreign producers. Each country has to finance its social protection. Social VAT is not more favourable to labour than to capital. For a given purchasing power, VAT and employers' social contributions have approximately the same macroeconomic impact. Social VAT has a few advantages: reducing company profit volatility, support to dynamic companies, and a once for all taxation on dividends and interest payments. However, social VAT cannot modify the social protection financing burden, which would continue to weigh on labour. Social VAT cannot boost employment without lowering purchasing power. As compared to the CSG, the VAT has a drawback (or advantage) or not saying explicitly which economic agent will pay for the reform: this will result from the indexation mechanisms

The only tax reform allowing to provide competitiveness gains without lowering workers' incomes would be the introduction of specific duty on imports, using its revenues to lower VAT (see Sterdyniak and Villa, 1998), but this is forbidden by the EU and WTO rules.

8. However, due to the existence of the euro, the rise in inflation in France would hardly be reflected in interest rates, which would have the advantage of easing the debt burden on borrowers.

6. A competitiveness shock?

Let us assume that an agreement is reached on the need to raise competitiveness: should employers' social contributions cuts be offset by higher VAT or CSG?

According to the Box, both measures are roughly similar. The main issue is to know whether companies will choose to keep their prices unchanged to restore their margins, which will induce in a large drop in French households' real incomes or will they cut their prices to increase their competitiveness. In the first case, the question is: will the rebound in investment offset the decrease in consumption? In the second case, the question is: will external trade gains offset the decrease in consumption? In the second case, the policy is uncooperative. Its impact is nil if it is implemented by all countries. Last, in both cases, the relative labour cost falls, which could have positive long-term effects.

The VAT rise leads to some increases in prices. In theory, social benefits and the minimum wage are price-indexed. They would therefore suffer no loss in purchasing power. But the social security deficit will increase and the situation of companies hiring low-wage workers will not be improved. Also, employees would request wage increases to offset the rise in prices. The indexation mechanisms would gradually reduce the initial gains in competitiveness or margins. The measure therefore requests social partners' agreement to freeze the minimum wage, social benefits and wages. On the contrary, the victims of the rise in CSG would not benefit from any indexation mechanism and would have to accept lower purchasing power. In addition, the CSG has the advantage of being a resource assigned to social security, more ensured *ex ante* than VAT percentage points.

Box. On the quivalence between VAT and CSG

Let us consider a country where GDP is 100, exports and imports 25. Wages (including social contributions) are 80; profits, 20. Company investment is 20, of which half is imported. Consumption is 80 (of which 15 is imported products). In the short term wages and pensions are fixed.

(1) Employers' contributions are cut by 5, CSG increased by 5. Firms maintain their prices and thus increase their profits. *Ex post*, there is no

competitiveness gain in the short term. Net wages amount to 75, i.e. a 6.25% loss in purchasing power. Profits amount to 25. The relative wage cost decreases by 6.25%. Under standard assumptions, propensity to consume wages is 0.8; to invest profits: 0.4; multiplier: 1; capital/labour elasticity of substitution: 0.3. GDP falls by 2% but employment is stable.

(2) Employers' contributions are cut by 5, VAT increased by 5. French companies keep their production prices unchanged. *Ex post*, there is no gain in competitiveness. Consumer prices rise by 6.25%. The purchasing power of wages falls from 80 to 75. The relative wage cost is reduced by 6.25% since investment prices are fixed. The macroeconomic impact is the same as in case (1).

(3) Employers' contributions are cut by 5, CSG increased by 5. Companies fully transmit lower costs in their prices. The producer prices drops by 5%; consumer prices fall by 4%. The purchasing power of wages drops by 1% only. Competitiveness gains are 5%. The relative wage cost decreases by 3.75%. Under standard assumptions of export-price elasticity at 1, import-price elasticity at 0.5, GDP increases by 1.25% and employment by 2.35%.

(4) Employers' contributions are cut by 5, VAT increased by 5. Companies fully transmit lower costs in their prices. Producer prices drop by 5%; consumer prices increase by 1%. The purchasing power of wages decreases by 1%. Competitiveness gains are 5%. The relative wage cost decreases by 3.75%. The macroeconomic impact is the same as in case (3).

6.1. Should a competitiveness shock be implemented?

The "competitiveness shock" philosophy is that households should accept a strong fall in their purchasing power to improve firms' profitability or competitiveness. French taxation would converge towards the standard European model. The reform raises six issues:

1. Should the Government say clearly to households that they need to accept their real incomes to fall?

2. What would be firms' commitments in terms of investment and jobs in France in exchange of a measure increasing massively their profits? How to avoid that companies increase dividends payments or investments abroad?

3. Should France take steps towards a German strategy: increasing firms' competitiveness at the expense of households' real incomes knowing that this strategy is disastrous at the euro area level? Of course, this kind of reform replaces the impossible

devaluation in the euro area. But it is detrimental to European partner countries (which would respond with the same kind of measures) and does not guarantee competitiveness gains vis-à-vis non euro area countries, which depend mainly on euro exchange rate developments. Successive internal devaluations cannot replace a reform of the euro area economic policy framework.

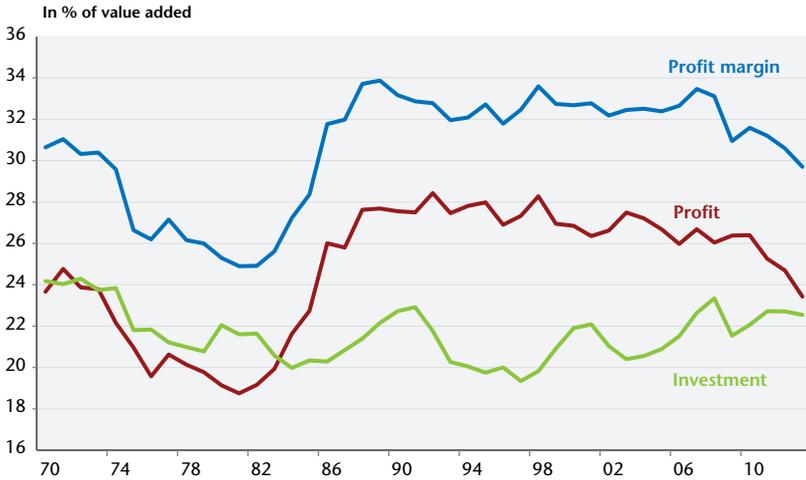
4. In Europe, France is in an intermediate situation between Northern countries which made strong competitiveness gains at the expense of their populations' purchasing power, and Southern countries, which experienced excessive wage increases. In 2000, the wage share in value added was 66.8% in Germany, 66.9% in France, 65.5% in the euro area. In 2007, it was down to 61.2% in Germany (-5.6 points), 62.8% in the euro area (-2.7 points), 65.7% in France (-1.2 points). Should European workers fight against each other by accepting a lower wage share in value added? On a 2000=100 basis, real wages had fallen to 97.9 in Germany in 2011, and risen to 111.2 in France (i.e. a 1% rise per year). Which country is wrong?

5. The share of profits in companies' value added was 29.6% in 1973. It fell down to 23.1% in 1982 before rising to 30.2% in 1987 (Figure 2). It stood at 30.8% in 2006, i.e. at a satisfactory level. Since 2007, it has been falling again due to the output fall and labour hoarding, which should be in principle a temporary phenomenon. The ratio did not fall because of higher taxation or excessive wage growth. The profit share in GDP can only recover under a "economic growth shock". Similarly, the share of profits (defined as cash flow + net dividends paid + net interest payments) in value added has returned to a satisfactory level. The problem in that investment spending was of the same size as profits in 1973, and is now 3-4 percentage points lower in terms of value added. Should the profit share be increased without any guarantee on investment?

6. Internal devaluation can be effective if the French economy suffers mainly from a lack of price competitiveness. But de-industrialization has probably other deeper roots. Firms prefer to operate and expand in emerging countries; scientific courses are not the first choice for students; young people do not wish to start industrial careers where pay is low and career prospects uncertain; France succeeds neither to protect its traditional industries, nor to develop in innovative sectors; the financial sector prefers speculation to

financing production and innovation, etc. This would not be solved by devaluation. France needs an industrial revival, which was already impulsed by competitiveness poles, the research tax credit, the Ministry of Industry, and which should be funded by the BPI (public investment bank), whose ability to act should be enlarged and field of competence specified.

Figure 2. Profit margin, rate of profit, and investment ratio of French companies



Source: INSEE.

Despite these doubts, in 2012 the Government decided that from 2014 French firms would be entitled to a CICE (*Credit d'Impôt pour la Compétitivité et l'Emploi*), a tax credit amounting to 6% of their gross wage bill, applying to wages below 2.5 times the minimum wage. This tax credit amounts to 20 billion euros and should be financed by additional public spending cuts (10 billion), higher VAT (6.5 billion) and higher environmental taxation (3.5 billion). In January 2014, the normal VAT rate increased from 19.6% to 20%; the intermediate rate from 7 to 10%. As, in the same time, firms benefited from the CICE, these increases had no impact on the inflation rate. Choosing a tax credit rather than social contribution cuts makes the measure complicated and less visible for firms.

In 2014, the government decided that a Responsibility Pact would increase employers' social contribution cuts by 10 billion

euros. Some economists argued that these cuts should be targeted on industrial sectors (or, at least, should apply to all workers) in order to improve industrial competitiveness, to support upgrading firms' strategy, to support innovative firms (who pay higher wages). But labour economists insisted on pursuing a low-wage targeting strategy. Finally, a complicated compromise was made: 5 billion euros to cut employers' family social contributions by 1.8 percentage points on wages until to 3.5 SMIC, 5 billion to reduce employers' social security contributions on low-wages. On the whole, the measures implemented would cut wage costs by 3.9%; around 22% of the measures would benefit the industry. France therefore starts to follow an internal devaluation strategy.

According to Ducoudré and Heyer (2014), these measures will have virtually no impact on GDP (the effect on domestic demand offsetting the competitiveness effect); employment would rise approximately 260 000 (i.e. the unemployment rate would fall by 0.8 percentage point) via a substitution effect. This leads however to a highly complex system, where social security contributions are progressive for wages between 1 and 1.6 times the SMIC, and flat from that level with a tax credit for wages below 2.5 times the SMIC and a rebate for wages below 3.5 times the SMIC. This reflects the influence of the idea according to which: "the high level of the minimum wage needs to be offset".

The CICE and the responsibility Pact are not part of a coherent reform of social protection financing, since the French government says it intends to finance employers' social contributions cuts by lower public and social expenditures.

7. Company taxation

The company tax burden cannot be easily measured, because it is uneasy to say which part of taxation bears respectively on companies, workers and consumers. In a company's location decision process, all taxes play a role, including management incomes taxation, and also public expenditure and social protection which the firm and employees benefit from. Should indirect taxation (such as excise duties for instance) be incorporated in company taxation? In principle, the answer is no, because these taxes are passed on to consumers, but possibly only partly. Should

employers' social contributions be included? In principle, no, because they weigh on wages in the long term, but the long term may be a very far horizon.

According to a rather arbitrary definition (CIT + taxes on production), the company taxation burden ranged in the EU in 2013 within 5 to 7 percent of GDP, being clearly higher in France (9.4%), and Sweden (11.3%), and clearly lower in the Netherlands (3.6%) and Germany (4.4%, see Table 15).

Table 15. Non-financial company taxation in 2013

In % of value added				
	Income taxes	Taxes on production	Total	Social contributions
Germany	3.8	0.6	4.4	10.2
Austria	3.6	4.0	7.6	9.5
Belgium	4.4	1.5	5.9	16.5
Denmark	4.0	1.9	5.8	3.1
Spain	3.2	1.4	5.6	11.5
Finland	4.4	0.2	4.6	11.0
France	3.8	5.6	9.4	16.3
Italie	4.8	3.5	8.3	15.4
Netherlands	2.6	1.0	3.6	12.4
UK	3.8	2.9	6.7	9.9
Sweden	4.0	7.3	11.3	13.9
United States	4.2	2.4	6.6	10.3

Source: OCDE (2015), National accounts.

Even if the corporate income tax represents a small share of tax revenues, companies are highly sensitive to it. Over the last twenty years, globalisation and the European Single Market have facilitated the possibility for firms to choose where to locate their financial or productive activities, which strengthened tax competition. Almost all EU countries drastically cut their CIT rate (Table 16). In 2012, the UK launched a new tax competition wave in cutting its CIT rate to 24%. However, the comparison is made difficult by the existence of a local business tax which may be based on benefits (Germany), on value added (Italy, France) and even more by substantial differences in the tax base assessment (in particular in depreciation rules). In France there is a normal rate of

33.3% (and a reduced rate of 15% for very small firms), on top of which large companies have to pay a social contribution (a 3.3% increase) and a temporary contribution (a 10.7% increase). Finally, dividends are subject to a 3% contribution. These high rates do not bring higher CIT revenues.

Table 16. Changes in nominal rates of CIT

	1990	2010	2013
Austria	30	25	25
Germany	40.5 DB / 54.5 NDP	30.2	30.2
Belgium	41	34*	34*
Denmark	40	25	25
Spain	35	30	30
Finland	44.5	26	24.5
France	42 DB / 37 NDP	34.4	33.3/34.4/38.0/40.2
Greece	46/ 40 industry	40	26
Ireland	43/ 10 industry	12.5	12.5
Italy	46.4	31.4	27.5
Portugal	40.2	35.2	31.5
Netherlands	35	26.5	25.0
United Kingdom	34	28	23
Sweden	53	26.3	22
Hungary	50	19.6	19
Poland		19	19
Czech Republic		19	19
Japan	50	39.54	37.0
United States	38.65	39.2	39.1

* With a system of notional interest. DB: dividends; NDP: undistributed profits.
Source: OECD, tax database.

The existing system is far from being satisfactory at the EU level. Countries have different rules for tax bases calculations. Transfers between headquarters and subsidiaries are managed by a patchwork of bilateral agreements. Large firms use tax optimisation, by choosing carefully the location of their headquarters, of their subsidiaries and of their financial operations. They use transfer prices, inter-enterprise credits and royalties to locate their profits in low CIT-rates countries. The need to avoid a costly tax competition, the single market, the rising number of companies operating in several EU-countries make it increasingly necessary to organise

CIT at the European level. But tax federalism comes into conflict with MS autonomy in terms of taxation. Hence, Ireland and CEECs refuse any rise in their tax rates.

Since 2000, the Commission has proposed to reform the multinational companies' corporate tax base. The Commission suggests that a multinational group may choose to be taxed on a comprehensive tax base set by a European rule. The profits of the group would be split among the different member states where the company operates, according to an allocation key (value-added, payroll, etc.). The share of profits made in each MS would be taxed at the domestic tax rate. This would allow to abolish profit shifting practices. However, it seems difficult to give companies a choice between two corporate taxation systems. One can hardly imagine how multinational companies' subsidiaries could fill in tax assessments only to the tax authorities of their parent company. How would the consistence of tax assessments in the host country be ensured? Finally, this system is hardly compatible with the strong disparity in national tax rates.

Hence we do not see how Europe can avoid a painful road towards a negotiated convergence on corporate taxation, which should be done through four steps:

- Strong homogenization of tax bases;
- Recognition of the source principle of taxation, hence agreement to combat unjustified profit shifting in low tax countries;
- Setting of a floor rate which would vary according to the MS development level, such as 20% for the new MS, to 30% for the older MS. The minimum rate would be gradually increased in line with economic convergence. MS who consider that they provide specific advantages to their companies would be entitled to set a higher tax rate, at their own risk;
- MS in transition should be allowed to subsidize their firms, on a payroll basis, which would prevent the risk of profit shifting in these countries. Subsidies to companies should also be more easily allowed to help the poorest regions, the sectors in difficulty, innovation and research, jobs for some categories of workers. Thus, countries could try to attract job-creating and innovating companies instead of companies looking for tax optimization.

Some difficult issues remain: how to account for local taxation? Who, between MS and the Commission, would decide upon temporary (for economic reasons) or structurally (to encourage R&D) tax relief measures?

EU countries should also combat tax and regulatory heavens. First, a comprehensive list of the latter should be done. Second, OECD countries should prohibit their banks, financial institutions and firms to locate any operation and to have any subsidiaries in these heavens. Tax agreements should be made to restrict them to countries having minimum tax rates on companies and on households.

In order to discourage dividend payments, France introduced in 2013 an additional taxation on distributed profits (at a 3% rate). This is in fact arguable, since paid dividends are taxed at the shareholders' level via social contributions and the income tax, while non distributed profits escape taxation, and will be taxed, at best, when they are sold, although they may actually escape (see below).

Interest payments are deductible from the CIT, which does not hit borrowed capital. This is consistent with the view according to which the CIT is a "tax on shareholders". This helps indebted companies to reduce their CIT payments. This encourages fictitious under-capitalisation and allows risky financial packages such as LBOs. In 2012, France decided to re-introduce 25% of net financial company payments in the CIT base, for firms where they are higher than 3 million euros. In 2013, the Government planned to introduce a new tax based on the EBITDA, with a view to raise it overtime, replacing a number of small taxes. This new tax had the advantage of bearing on interest payments and royalties transfers, therefore of combating tax optimisation. It also bears on capital depreciation, which can be seen as a drawback (by weighing on the industry and discouraging investment) or as an advantage (by discouraging capital/labour substitution). The Government abandoned this project in front of companies' opposition.

The French tax rate is high, even if it is partly offset by more favourable depreciation rules. VAT and social security contributions hit labour, EBITDA taxation hit capital; corporate taxation hits non-borrowed capital. In a mass unemployment situation, the objective should be to cut labour rather than capital taxation.

Hence, it is justified that France chose so far to focus on social contributions rather than on corporate income tax cuts.

From that perspective, the reform of local business taxation is debatable. The “*taxe professionnelle*” was initially based on the payroll, productive capital and land property. The “labour” base was abolished in 2003 and turned into a capital tax. The 2010 reform cut taxation by 5 billion, but this applied mainly to the ‘capital’ base, thereby promoting capital/labour substitution and capital-intensive firms. Conversely, the reform has the advantage of encouraging industry. A contribution based on companies’ value added (CVAE) was introduced, and will possibly be increased in the future to replace employers’ social contributions, which will allow weighing less on capital and more on labour.

In early 2014, the French government organised the “*Assises de la fiscalité des entreprises*”. Firms requested a massive CIT rate cut (targeting a rate of 25%). They requested the abolition of the C3S (a tax weighing on companies’ turnover and financing non-employees pensions), of all taxes based on the payroll (transportation tax, wage tax, apprenticeship tax, housing tax) and of many small taxes (financing public operators, professional organisations or organisations with ecological or behavioural objectives). But it is fair that firms contribute to their employees’ transportation costs; the payroll tax replaces VAT for the sectors which are not subject to it; behavioural taxation is often justified. After the *Assises*, the Government announced the progressive abolition of the C3S (from 2015 to 2017), which will cost 5.8 billion, the abolition of the CIT surcharge in 2016 (a 2.3 billion cost) and the objective of cutting the CIT rate from 33.3% to 28% in 2020. On the whole, this will cut company taxation by 10 billion before 2017.

In the recent past, the French strategy was to maintain a high CIT rate but to maintain also, and even extend, tax expenditure measures to encourage companies to invest and to create jobs in France. Thus, France had introduced a generous Research Tax Credit, followed by the Tax Credit for competitiveness and employment. France had chosen tax incentives, rather than neutral taxation. The strategy which seems to prevail now is to cut the CIT nominal rate so as to take an active role in European tax competition.

8. Households' taxation

Broadly speaking, households' direct taxation amounted to 14.85% of GDP in 2012. This includes the CSG-CRDS (5.1% of GDP), non-contributory employers' social contributions (4.4%), the income tax (2.9%), the residency tax (0.8%), property taxes (0.75%), taxes on inheritance and donation (0.45%), the wealth tax (ISF, 0.25%), the tax on transactions (0.2%).

The income tax and the wealth tax (ISF) are the only progressive taxes, the only taxes accounting for households' total incomes and characteristics. In France, their weight is low: by nature, they should be strongly progressive. The French specificity is the coexistence of an income tax, very targeted but with a small weight, of a proportional CSG (*Contribution sociale généralisée*), and employers' social contributions without any ceiling and progressive (because of low-wage exemptions). In addition, the poorer families are entitled to the PPE (*Prime pour l'emploi*), the RSA (*Revenu de Solidarité Active*) and housing benefits. On the whole, the French system is highly redistributive (Table 4 and Table 17), which makes it difficult to improve, but this redistributiveness is obtained in a complicated way.

Table 17. Taxation and redistribution, family two children, in 2013

In euros per month			
	SMIC	4 SMIC	10 SMIC
Total employer labour cost	1 685	8 227	20 595
Contributive employers contributions (3)	330	1 318	3 318
<i>Employers contributions health-family (2)</i>	297	1 189	2 975
<i>Low-wage contribution exemption (5)</i>	372		
Gross wages (1)	1 430	5720	14 302
Contributive employees contributions (4)	197	789	1836
CSG (6)	112	450	1 124
<i>RSA/housing benefit/family benefit (7)</i>	371/280/129/60	129	129
<i>Income tax (8)</i>	0	235	1 846
Disposable income	1961	4375	9625
Saving rate	0%	10%	20%
<i>Added value tax (9)</i>	327	656	1 284
Tax-benefits * (10)	-476	2401	7100
Net tax rates ** (11)	-41,1%	39,2%	46,0%

* (10) =(2)+(6)+(8)+(9)-(5)-(7)

** (11)=(10)/((1)+(2)-(4)-(5))

Source: Author's calculations.

8.1. Tax treatment of families

The French taxation and benefit system is family-based. The French Society recognizes the right of individuals to be married (or to sign a PACS, a solidarity civil pact), to found a family and pool resources. The living standard of a family is assessed by dividing its overall resources by a number of tax shares (the family quotient approximates the number of consumption units, as estimated by OECD or INSEE). The family quotient system ensures family horizontal equity: two families of different composition, but with the same living standard are subject to the same tax rate. Similarly, the RSA provides approximately the same living standard to the poorest families, regardless of their composition.

Thus, the French taxation system includes a conjugal quotient (QC), as a compulsory element of the family quotient (QF). Some (such as Landais *et al.*, 2011) blame the QC for treating women wages as an extra income. But this cannot be related to legislation, especially as the couples of the same sex, who are PACSed, are also entitled to the QC. Landais *et al.* (2011) claim that the QC subsidise couples of unequal incomes, but the QC like the QF consider that family members pool their resources. In our view, this approach is closer to reality, than the approach according to which each parent would keep their own wages for themselves, letting children live only on social benefits, the only case who could justify income tax individualization. Our approach on family solidarity is also normative: parents should ensure their children have the same standard of living than themselves; this is the basis of child maintenance (after a divorce). A single earner with 5,000 euros per month does not have the same living standard as a married person with the same earnings, three young children, and a spouse who does not work: there is no reason why taxation should be the same in the two cases.

Questioning the family quotient would violate the principle according to which: “each citizen contributes to public expenditure according to his contributory capacities”, unless it was enacted that married persons do not pool their resources and that parents have no duty to care for their children. Children would be expected to live on family benefits: this would require a substantial increase in family benefits, reaching 580 euros per child (and at least 350 euros) at 35% of the median income (at the poverty threshold) (Sterdyniak, 2011).

The QC does not prevent France to have a high female participation rate (Table 18). The marginal tax rate of women could be cut only through increasing single-earner families' taxation, but the latter are generally poorest. Denying the working spouse the right to account a share for its inactive spouse in its taxed income, required that the inactive spouse is entitled to the RSA, regardless of their spouse's income. But in this case the marginal tax rate of an inactive spouse, who takes a job, would be 38% (the withdrawal rate of the RSA), the same level than the current maximum income tax rates, 36.9% ($90\% * 41\%$) or 40.5 ($90 * 45\%$). If joint taxation of spouses increases the marginal tax rate of married women who earn less than their husband, the QF has an opposite effect. An individualized tax system, not accounting for children and with a tax credit for inactive spouses, will not necessarily lead *ex post* to lower marginal tax rates (for the opposite view, see OECD, 2013). An individualized tax system will be necessarily less satisfactory from a redistributive perspective than a family-based system as families with children, single-earner families, families with unequal spouses earnings, would be over-taxed.

Table 18. Participation, 25-55 year-olds, in 2008

In %

	Men	Women	Gap	Gap, in full-time equivalent	Fertility rate
Finlande	91.2	85.9	5.3	8.1	1.75
Sweden	93.1	87.5	5.6	10.4	1.75
Denmark	93.4	86.3	7.1	11.4	1.75
France	94.5	83.2	11.3	18.2	2.0
Austria	93.0	81.7	11.3	20.9	1.4
United States	90.5	75.8	14.7	19.7	2.1
Germany	92.9	80.5	12.4	21.1	1.4
United Kingdom	91.7	78.3	13.4	23.5	1.65
Belgium	92.2	78.7	13.5	24.0	1.65
Spain	92.6	74.7	27.9	24.0	1.3
Ireland	91.6	71.9	19.7	28.8	1.85
Netherlands	93.8	81.6	12.2	29.0	1.65
Italy	91.0	65.2	25.8	32.9	1.3
Japon	96.3	70.4	24.9	32.9	1.2

Source: OECD, *Labour Force Statistics* (2010).

The QF ensured a satisfactory tax treatment to families with children. A ceiling of 2400 euros for the first two children was amounting approximately to the exemption at 35% of the median income $((580-30) * 12 * 41) = 2700$ euro) and was therefore not too high. The Ayrault government decreased the ceiling down to 1500 euros, without any specific justification. But the additional half-share starting from the third child is a tax expenditure, a support to large families which could be questioned (see below).

Refusing the QF principle would not allow social policy to assess the living standard of families for the RSA, for housing allowances, and other means-tested benefits. According to Landais *et al.* (2011), individualisation corresponds historically the Republican ideal according to which there is no intrusion of the political sphere in the individual sphere.⁹ But this view forgets about the point that getting married (or PACSed) is an individual right, guaranteed by the *Declaration des droits de l'homme*. This view brings us back to the early 20th century, with the right parties fighting against progressive taxation, judged to be an awful intrusion in individual private lives. This does not explain how solidarity benefits can be calculated without political intrusion in the individual sphere.

8.2. The concept of income

Two taxpayers earning the same incomes should pay the same tax. Some economists claim that labour income, costly in time and effort should be less taxed (but should pensioners and the unemployed be then over-taxed?). Others claims that capital incomes should be less taxed, since they come from income savings already taxed (or from capital already subject to inheritance taxation), but the point is to tax the new incomes of the current period. So we advocate a basic principle: everyone should contribute to public expenditure according to their contributory capacities, i.e. according to their total incomes. We will compare capital and labour incomes taxation using an economic definition of incomes and taxes (excluding contributive social contributions). We will compare here only the maximum tax rates, those applying on highest incomes.

9. « L'individualisation correspond historiquement à l'idéal républicain de non-intrusion du politique dans la sphère individuelle ».

Let us first consider wage earnings taxation. With regard to highest wages, the nominal tax rate is now 41% above 71,000 euros per tax share, 45% beyond 150,000 euros, and temporarily 48% above 250,000 euros, 49% above 1 million. However, the CSG-CRDS and the non-contributive social contributions must be added to calculate an economic tax rate. On the other hand, contributive social contributions are deferred wages and should not be included in the tax rate. Thus, the marginal tax rate of 45% corresponds to an economic rate of 61.4%. These rates are high in comparison with neighbour countries, some of which have a higher maximum income tax rate but have a ceiling on social security contributions (Table 19). Only Belgium and Sweden have a higher maximum tax rate than France. At the SMIC level, using the same conventions, and accounting for employers' social security contributions exemptions, the *Prime pour l'emploi* and housing benefits, the tax rate of a single person is negative by 6.8%.

Table 19. Maximum labour income tax rates in 2013

	Income tax	Social contributions (health-family)		Total
		Employers	Employees	
Germany	47.5	0	0	47.5
Austria	50	0	0	50
Belgium	50 + 3.7	18.4	3.55	63
Spain	30.5 + 21.5	0	0	52
France	45 + 8	22.8	0	61.4
Italy	43 + 2.6	0	0	45.6
Netherlands	52	0	0	52
United Kingdom	45	0	0	45
Sweden	25 + 31.7	16.8	0	62.9
United States	35 + 6.85	0	0	41.85
Japon	40 + 10	0.15	0	50.15

Source: Author's calculations based on OECD: *Taxing wages* (2014).

In 2014, the French government had also introduced a tax rate of 50%, on the share of wages exceeding 1 million euro (i.e. an economic tax rate of 72.5%). This was justified by the need to combat the rise in wage inequalities in companies, to fight against exorbitant wages for some managers, sportsmen/women and financial traders. However, this tax rate was set only for two years.

Old-age pensions may seem to be the less taxed category of incomes (Table 20), since they are not subject to employers' family and health contributions, and no social levies. In the past, pensioners paid no social contributions. It was considered useless to raise contributions on benefits. It was simpler to set directly pensions benefits at a satisfactory level. The introduction of the CSG and its subsequent increases, allowed to shift part of the contributions paid by the economically active to pensions and wealth incomes. The process was entirely done for supplementary pensions, but not entirely for the pensions general system (there remains a gap of 0.9%). This gap will probably be filled one day to finance old-age care expenditure. Conversely, pensioners have to pay a supplementary health insurance of around 1200 euros per year (i.e. 6% of the pensioners average income), while the cost is around 480 euros for an employee (2.4% of the average income), often covered to a large extent by the employer. The risk is for retirees that the shift continues from family/health contributions and CSG, as the MEDEF wishes, with some employees' trade unions apparently willing to accept. But pensioners will not benefit from purchasing power gains in retirement, and undergoing reforms already tend to lower the relative level of pensions. Should this be pursued?

Table 20. Economic tax rates for a 45% nominal tax rate

Economic tax rates, 2014	
Wages	61.4
Pensions	51.1
Interest received	116.4
Property tax revenues	62.4
Implicit rent	10.0
Real estate gains	5/40.3
Dividends	62.0
Capital gains taxed	66.8/60.6
Capital gains untaxed	34.43

Source: Author's calculations.

In 2013, the left-wing government introduced a major reform: taxing capital income gains at the income tax schedule, there was already a specific levy deducted at source on some of these gains. The purpose may be to show that all incomes are taxed similarly,

but this leads to high tax rates on capital incomes, at least when the latter are taxed.

Interest incomes gains are taxed at 24% up to 2 000 euros; at the income tax schedule from that level. But an interest rate of 4%, with a 2% inflation imply a real income of 2%. The 24% levy corresponds to an economic rate of 79%; the income tax taxation at 45% leads to an economic taxation of 116.4%. This rate is high, but depends on the rate of inflation.

Dividends are part of companies' profits, which have already been taxed at the CIT, at the rate of 34.43% (and currently also at a 3% tax rate). This is why dividends benefit from a 40% rebate in the income tax. Taking into account the CSG, Social security contributions and CIT, the economic rate is 62%, for an income tax rate of 45%.

Taxed capital gains are theoretically the counterpart of non-distributed profits having been taxed at the CIT. They are now subject to the income tax with an allowance depending on the detention length: 50% after 2 years, 65% after 8 years. Let us assume that capital gains are 10% of the capital (8% representing actual profitability and 2% inflation), then the economic tax rate is 66.8% after 5 years and 60.6% after 8 years.

Non-taxed capital gains escape taxation at the households' level. But in theory they have been taxed at the CIT; their economic tax rate is 34.43%.

Our calculations may be questioned: the CIT effective rate would not be 34.3%, accounting for companies' tax avoidance possibilities. In fact, in 2006, the year before the crisis, CIT on non-financial corporations collected 42 billion euros, for 68 billion of net dividend payments, 139 billion of non-distributed profits and 132 billion of fixed capital consumption, i.e. an effective tax rate of 35.9% (the rate is increased due to companies making losses).

Rental property incomes are subject to a property tax (amounting on average to 10% of the rent), the CSG-CRDS, social contributions and the income tax. The income tax rate of 45% therefore translates into an economic rate of 62.4%.

Real estate gains are now subject to a taxation at the income tax of 19%, after an allowance (6% per year from 5 to 21 years; 4% in

year 22, so that taxation is zero at the end of 22 years) and a 15.5% taxation to the CSG/CRDS/Social contributions after a rebate (1.65% per year from 5 to 21 years; 1.6% the year 22, 9% per year after so that taxation is zero at the end of 30 years). Here also, the reasons for such a complicated system cannot be easily explained. Let us consider a person who buys a house at 100, and sells it 10 years later; let us assume that meanwhile housing prices rose by 8% per annum and annual inflation by 2%. The economic gain is 79. The taxable gain is 81 for the income tax and 106 for the CSG; the paid tax is 31.9, i.e. an economic tax rate of 40.3%.

Implicit rents (the rents the owner would earn from renting his home) are not subject to income tax or social contributions. Because of the property tax, the economic tax rate is 10%.

Capital gains on the main residence are not taxable. In fact, households often sell their main residence to buy a new one, and so it is difficult to tax the capital gains needed for the new acquisition. Households pay transfer taxes at a 5% rate on the amount of their acquisition.

All in all, the economic rates are considerably higher than nominal rates (table 20). Interest payments, property rent incomes, dividends and capital gains are taxed at high rates.

It is difficult to consider reforms which would increase further capital incomes tax rates. As concerns interest incomes, one could decide to tax only real interest incomes, by allowing to deduct capital depreciation induced by inflation; in this case, social security contributions should be maintained at 15.5% (as a counterpart of health and family social contributions on labour income). The economic taxation rate, corresponding to the nominal 45% rate, would thus be 58.2%.

Capital gains are not necessarily equal to non-distributed profits. It is difficult to tax unrealised gains, which may vanish in the event of a stock market crash. The best system would be for companies to distribute a "*avoir fiscal*" (tax credit) to their shareholders, amounting to the actually paid CIT. Shareholders would then be imposed at the income tax and social contributions, on the basis of: "dividends + accrued capital gains adjusted for inflation", possibly with measures being introduced to ensure that all capital gains are taxed (see below). The economic taxation rate would also be 58.2%.

The main difficulty comes from in the tax avoidance schemes. A principle should be stated: financial institutions should be responsible of convince savers about the advantages of the products they sell; but the State should not give tax incentives to any financial product. So PEA (equity assets contracts) and life insurance contracts should be subject to ordinary taxation. Today, a wealthy shareholder can place his assets in an *ad hoc* company which receives its dividends, uses companies' equity assets as a guarantee to obtain loans from his bank, which provides the money he needs to live. Thus the wealthy shareholder does not declare incomes and when may bequeath the shares of this company to his children, who will pay no taxes on capital gains. So it would it be fair to tax unrealized capital gains for transfers by donation or inheritance.

Implicit rents, and non-taxation of capital gains on the main residence, are the other black hole of taxation. It is not really fair that two families earning the same incomes pay the same tax, although one inherited an apartment and the other one must pay a rent: their contributory capacities are very different. It would be desirable to introduce gradually a taxation of implicit rents¹⁰. In counterpart, mortgage interest payments could become deductible from the taxable income, which would support young people who are building patrimonial assets at the expense of people already having patrimonial assets. As concerns housing gains; inflation should not be deductible except on the main residence and gains on the main residence should be subject to taxation (at the exception of gains reinvested in buying the main residence).

8.3. Abolishing all tax expenditures?

The French system includes many tax expenditures schemes, amounting to 34 billion euros as concerns income taxation, i.e. near 60% of income taxation revenues. They are detrimental to tax progressivity; many have no economic and social justification; some have been introduced to satisfy pressure groups (such as tax cuts on journalists' incomes, tax exemptions in PEA). Abolishing these schemes seems to be an obvious reform to be done.

10. Implicit rents amount to ca. 150 billion euro in 2010. A 15.5% tax rate would raise 15 billion euros (accounting for some unavoidable undervaluation).

However, some of these schemes allow to account for households' contributory capacity. This is the case for the *quotient familial*, which only account for the households' size to assess their living standard. Similarly, it is legitimate to allow the deduction of alimony, donations to charity organisations, child-care expenditure, care expenditure dependent persons specific charges.

Some other tax expenditures are justified for social reasons. They could not be removed without introducing replacement schemes: this is the case for additional tax shares for large families or for invalids. It would not be justifiable to tax family benefits which are already far from ensuring parity of livings standards between families and individuals without children (see Sterdyniak, 2011).

Others follow a taxation rationale. This is the case for the 40% rebate on dividends, for the 10% rebate on wage earnings for employees' professional expenses (which is excessive but avoids to have to tackle numerous requests for taxation to real costs, which offsets the possibilities of self-employed to shift part of their personal expenses in professional expenses), et consequently of the capped rebate for pensioners' incomes.

Some tax expenditures should be replaced by subsidies: tax rebates for historical monuments maintenance, for energy savings works, aid to overseas territories. Some refundable tax credits (like the *Prime pour l'emploi*) are in fact already subsidies.

The current government has already abolished the tax exemption for overtime work. The total amount of tax reductions a household may benefit from tax exemptions schemes is capped to 10 000 euros. It is however less effective to cap tax reductions than to look at each tax expenditure and decide whether they should be maintained or removed.

At most, abolishing unjustified tax expenditures would raise around 8 billion euros: 2.5 billion on pensioners, 1 billion on individual employers, 3 billion on financial savings (PEA, life insurance, employee participation in company profits), 1 billion on rental or productive investment. But the beneficiaries of its measures will oppose such moves.

In its electoral programme, somewhat inspired by Landais, Piketty and Saez (2011), François Hollande mentioned the introduction a more simple income taxation, unifying the CSG

and the income tax. But the characteristics of this new income taxation remain to be defined (see Allègre, Cornilleau and Sterdyniak, 2007, and Sterdyniak, 2012). Such a reform would oblige to rethink the French system and open the field of all possibilities in the democratic debate. Should the family characteristic of French taxation be removed or extended? Should redistributiveness be reduced or increased?

The search for '*simplification*' may be worrying: can a progressive taxation system account for households' composition? In France, the tax system exempts the poorest and already taxes the richest much more heavily than in other developed countries. It is an illusion to believe that the reform could make it even more progressive.

According to its proponents, a simple and unified system would lead all French citizens to feel *imposed*, but does this mean that poorest households (the unemployed, pensioners, wage-earners below the SMIC) who currently do not pay income tax would suffer from the reform?

This reform would allow removing all tax expenditures at once, but difficulties would quickly appear: many tax expenditures would have to be maintained or replaced by grants.

One of the objectives of the reform is to tax capital incomes like labour incomes. But this is not so easy, once it is acknowledged that several elements need to be taken into account: non-contributory social contributions paid by employers, social security levies paid on capital incomes, CIT already paid, distinction between real and nominal interest rates. It would very rapidly appear that capital incomes are often already more heavily taxed than labour incomes.

In our view, it would be safer to improve gradually the existing tax system by abolishing unfair tax expenditures than to pursue the myth of implementing a great reform. Besides, we do not find it necessary to shift towards a withholding tax paid directly by companies: taxation may keep a "citizen" characteristic, be paid by taxpayers, who see the effective tax burden.

Local taxation is high in France. Local taxes are archaic and less progressive than national taxes. They are also more unequal because the rich pay little in rich municipalities and the poor pay a lot in poor municipalities. Both in terms of economic efficiency and social fairness, France should reverse recent developments

which lead to reduce the income tax burden and increase local taxes. Decentralization tends to increase local spending, which could widen local disparities. It would be desirable to reduce the residential tax, create a supplement to the income tax, the revenues of which would be redistributed to local communities according to their needs (population, numbers of children, number of people in difficulty).

8.4. Is there a need for an ISF?

The ISF (*'Impôt de solidarité sur la fortune'*, wealth tax) is justified for five reasons. First, the wealthiest benefit particularly from the social organization; it is only fair that they contribute more than others to its costs. Wealth distribution is more unequal than income distribution: between the 1st and the 9th deciles, the ratio is 4.2 for income, 205 for wealth.¹¹ Thus, wealth taxation is more redistributive than income taxation. The French ISF does not tax professional property; therefore, it encourages entrepreneurs and their families to invest in their company and to remain committed to it. The ISF may oblige some owners of non – or under-occupied real estates, to sell or rent them. Finally, the ISF may oblige some financial portfolios holders to sell securities, hence to realize capital gains.

Since the 2012 reform, the ISF rates range from 0.5% to 1.5%. The ISF remains heavy for interest, dividends, property income, and taxed capital gains earners, but not for the owners of their residence, or for the beneficiaries of non-taxed capital gains (Table 21).

The 2012 reform introduced a cap for all taxes paid by an ISF taxpayer at 75% of its income. But the tax assessment remains questionable (neither CIT nor health and family social contributions are taken into account) as well as the assessment of incomes (interests are not adjusted for inflation, implicit rents and unrealised capital gains are not taken into account). However, firms' owners can no longer deduct their professional debt from their professional wealth. The incomes taken into account should have included capitalized interests and a share of unrealised capital gains, but the Constitutional Council denied this inclusion. Tax evasion remains possible for the richest.

11. 2010 figures, according to *INSEE Première*, n° 1380, novembre 2011.

Table 21. Marginal tax rates in 2013

In %	Sans ISF	ISF à 0.50%	ISF à 1%	ISF à 1.5%
Interests	116.4	141.4	166.4	191.4
Rents *	62.4	70.7	79.1	87.5
Imputed rents *	10.0	18.4	26.6	34.8
Dividends **	62.0	68.2	74.4	80.6
Capital gains taxed **	60.4	66.6	72.8	79.0
Capital gains not taxed **	34.4	40.7	46.9	53.1

* 6% profitability.

** 8% profitability.

Source: Author's calculation.

As concerns the richer, tax competition bears also on wealth and inheritance taxation. In Europe, only Luxembourg, Switzerland, France and Greece have kept a wealth tax. The weight of inheritance taxation is very low except in Belgium and in France. Should France come in line with other countries? No, but the risk of tax evasion makes it more difficult to tax the richest. Two cases should however be distinguished: as concerns financial wealth, tax evasion reduced tax revenues in France but has minor economic consequences; as concerns professional property, this may imply a firm's closing down and the loss of productive capital. So professional property is exempted in France from the ISF and from a part of inheritance rights when heirs continue to manage the firm. These schemes may be considered to be contrary to equity, but this is better than nothing and this is not bad to encourage sometimes productive capital.

France should take retaliatory measures against its citizens leaving abroad for tax reasons. In 2011, the Government had reintroduced an *exit tax*, a tax on unrealised capital gains for people leaving France. However, France could be censured by the EU Court of Justice, in the name of the freedom of establishment principle. A measure could be to tax all French citizens at the world level, following the US model. To retain their right to vote, French citizens living abroad should make a tax statement in France and pay a tax equal to the difference between taxes due to be paid in France and those paid abroad. It would be manageable to do so, if it would apply only from a certain level of income/wealth and in countries with low taxation rates on income or wealth.

8.5. As concerns the poor...

France helps poorest households via a complicated system involving the RSA (*Revenu de solidarité active*, a family-based minimum income), the PPE (*la Prime pour l'emploi*, an individualized benefit to encourage people to work), housing allowances (family-based) and means-tested family benefits (school allowance, family complement for large poor families). Since 2000, governments, encouraged by many economists (see for instance Laroque and Salanié, 2000), are convinced that the gap is too small between unskilled workers' wages and assistance incomes, which would explain the high unemployment rate level of unskilled workers. They try to increase this gap by subsidising low-wage work (the PPE, the RSA-Activity, as an incentive to create jobs).

Despite Martin Hirsch's efforts, the RSA does not include the PPE and housing allowances. The RSA has a basic element: the RSA-basis (*RSA socle*). This basic element depends on the family composition and is reduced by 38 (resp. 100) euros for 100 euros of labour (resp. other) incomes. Thus a family with a low-wage worker is entitled to the RSA-Activity. The RSA allowance is paid monthly on the basis of a quarterly income statement; the RSA-basis depends in principle on the efforts made to find a job. The PPE is paid automatically on the basis of the income tax assessment, with a one-year delay. The RSA is deductible from the PPE, so that a household not claiming for the RSA receives automatically the PPE.

The system aims to ensure a minimum income to the poorest while preserving their work incentive. So the RSA-basis (499 euros per month for a single person) is significantly below the pensioners' minimum income (792 euros). As can be seen from Tables 22 and 23, the RSA provides an income of about 40% of the median income (i.e. below the poverty threshold at 60% of the median income). A single person will be lifted out of poverty for wage earnings at 0.5 SMIC; a couple with two children needs to earn 1.5 minimum wage. In total, the marginal gain rate is in the order of 50% for a single person (Table 24). The rate is very low for a couple, between 1 and 1.5 SMIC, which may be a disincentive for the spouse of a minimum-wage earner to take a job (Table 25). Before the RSA-activity was introduced, the first job was discouraged.

Table 22. The case of a single

In euros par month (2013)

	RSA	0.5 SMIC	SMIC	1.5 SMIC
Wages	0	548	1,097	1,646
RSA	415	207	–	–
PPE	–	–	80	–
Housing benefit *	301	246	49	0
Income tax				-102
Total	716	1,001	1,226	1,544
% median income	42.5	59.4	72.7	91.6

*The rent is estimated at 400 euros.

Source: Authors' calculations.

Table 23. The case of a family with 2 children

In euros par month (2013)

	RSA	Single wage-earner			Two wage-earners	
		0.5 SMIC	SMIC	1.5 SMIC	1.5*SMIC	2*SMIC
Wages	0	548	1,097	1,646	1,646	2,194
RSA	856	522	312	103	–	–
PPE	–	–	–	–	126	166
Family benefits	48	127 + 48	127 + 48	127 + 48	127 + 48	127 + 48
Housing benefits *	473	473	369	209	211	54
Total	1,377	1,718	1,953	2,133	2,158	2,589
% median income	38.9	48.5	55.2	60.3	61.0	73.2
PPE **			93	13		
Total			1,734	2,043		

*The rent is estimated at 500 euros. Children are 7 and 10 year-old. ** If they do not claim for RSA.

Source: Author's calculations.

Table 24. The gain from employment. Single

	In euros (% of net wages)
RSA to 0.5 SMIC	285 (52%)
0.5 SMIC to SMIC	225 (41%)
RSA to SMIC	510 (46.5%)
SMIC to 1.5 SMIC	318 (58%)

Source: Author's calculations.

Table 25. The gain from employment. Couple two children

En euros

	Avec recours au RSA	Sans recours au RSA
First active		
RSA to 0.5 SMIC	341 (62%)	
0.5 SMIC to SMIC	235 (43%)	16 (2%)
RSA to SMIC	576 (52.5%)	357 (32.5%)
SMIC to 1.5 SMIC	180 (33%)	309 (56%)
Second active. First active at the SMIC		
Inactif to 0.5 SMIC	205 (37%)	424 (77%)
Inactif to 1 SMIC	636 (62%)	855 (78%)

Source: Author's calculations.

The current system has six drawbacks:

- The non-take-up rate of the RSA-activity remains high (68%). Low-wage workers refuse to be subject to a social monitoring in order to get a relatively small benefit. Due to the stigmatisation effect, RSA recipients do not wish to be confused with RSA-base recipients. The PPE is paid automatically, without monitoring, but with a delay of one year.
- The RSA provides an allowance of around 110 euros per child for families with 1 or 2 children at the SMIC level. This allowance fills a hole in the French system. However, unemployed workers' families are not entitled to it. 110 euros should be paid in the form of a family complement to all poor families with 1 or 2 children (those with 3 children and more benefiting already from a family supplement and from more generous family benefits).
- The RSA, like all family benefits is indexed on prices only. RSA recipients may see their relative situation deteriorate over time.
- A scheme similar to disability allowances in Scandinavian countries, allocated on medical, economic and social criteria ensuring people who have no chance to get a job (temporarily or permanently) a more satisfactory income, similar to the retirees minimum income, is missing in France.
- Young (below 25) people are not entitled to the RSA, although many of them have difficulties of getting into the labour market.

- The system is not more generous for families with children on the RSA, while we may wish a more generous benefit for these families, for three reasons: RSA recipients with children fulfil a social role, as parents, which the RSA recipients without children do not fulfil. RSA-recipients' children are not responsible for the lack of resources of their parents and have the right to a higher living standard than the one ensured by the Society to RSA recipients without children, who are partly responsible for their situation. The allowance should allow parents to raise their children in satisfactory conditions.

In 2013, a parliamentary report (Sirugue, 2013) had proposed the introduction of an Activity Premium (*Prime d'Activité*, PA) which would replace the RSA-activity and the PPE. But as the RSA-base would remain, very low-wage families would have to claim for two allowances: the RSA-base and the PA. The system would have been complicated for them. The Sirugue report proposes to extend the right to the PA to below 25 young people, which is justified, but propose a reform at constant costs, without even proposing to recover the savings currently made by the current non-take up of the RSA. So, extending entitlement to below 25-year olds would be paid by existing RSA and PPE recipients. The PA's scale was arbitrary, with a slope and a peak at 0.7 SMIC, which have no justification. The marginal tax rates remain low in some places; high in others. There are no strong improvements over the existing system. Overall, the families' situation was not improved. The risk was that the PA suffers the same rate of non-take up as the RSA and that many families lose the PPE without wanting to ask for the PA.

In 2014, the government announced the PPE and the RSA will be merged, without specifying how the new scheme would be designed. In our view, the system should be simplified by replacing the PPE by an increase in the SMIC, if needed offset by a job subsidies; a family supplement of around 100 euros per child in poor families, employed or unemployed, with 1 or 2 children; the RSA should be maintained, but its role would be reduced and the non-take up would have less consequences for families with children. Finally, an insertion allowance should be introduced, of the amount of the RSA, for young people looking for a job, which should allow them to begin to accumulate retirement rights.

9. After the crisis

The crisis led to a sharp deterioration of public finances in almost all EU MS. In 2013, the public deficit reached 2.9% of GDP in the euro area, while public debt had risen from 66.5% of GDP in 2007 to 93% in 2013. However, the deficit in euro MS was smaller than in the United States (9.3% of GDP), the United Kingdom (6.3% of GDP) or Japan (8.3% of GDP). There is a structural primary surplus of 1.5 percent of GDP in the euro area (even using the Commission's estimates).

European countries face a double dilemma. First, they need to choose a macroeconomic strategy. From a Keynesian perspective, large public deficits should be maintained as long as the unemployment rate does not fall significantly. The euro area lost 8.5 percent of GDP due to the financial crisis; recovering this GDP loss would be enough to bring public deficits to a sustainable level. The objective should not be a balanced budget, but the real “public finances golden rule”, i.e. a balanced budget net of investment expenditure, which allows in France a structural deficit of 2.4% of GDP.

Instead, the strategy advocated by the IMF, the OECD and the European Commission is to reduce public deficits very rapidly. The risk is for the euro area economy to remain in stagnation for a long period of time; fiscal austerity weighs on demand; tax revenues decrease; public deficits and debt ratios hardly improve. In view of the threat of financial markets and ratings agencies, European countries have chosen the second strategy and this has kept Europe in depression.

The second point is to choose between spending cuts and tax increases. International institutions warn against tax increases (especially direct taxes) which would be detrimental to firms' competitiveness and would be a disincentive for households to work, save, and invest. International institutions advocate drastic cuts in public and social expenditure, denying any economic and social usefulness in these expenditures. Only VAT, which weighs on consumption, could be increased. Countries should continue to cut company taxation, so as to promote employment. Thus, this strategy implies the continuation of tax competition. The risk is that it has a strong depressive impact, since it cuts spending which have a strong impact on demand and that it undermines the *European social model*.

The alternative strategy would aim to preserve the *European social model*, therefore a high level of public and social expenditure, relying on its comparative advantages (free and high quality education and health for all, public infrastructure, social benefits) to keep the European economies competitive. In this context, MS should tax financial transactions, should increase taxation of financial incomes, capital gains, high incomes and wealth (the rise of which is one of the causes of the crisis), and should introduce a confiscatory tax rate on exorbitant incomes. Taxation should encourage firms and banks to have a behaviour favourable to production. It should support investment rather than financial activities and dividends distribution. It should encourage energy savings rather than job destruction. At the EU level, this strategy requires tax harmonisation, letting each country the possibility to tax domestic firms and residents, banning unfair competition, setting minimum tax rates for firms, high incomes and wealth, prohibiting banks and firms to have subsidiaries in tax havens, organizing the rise in ecological taxation. Production and consumption modes will need to be deeply modified in the coming years under the ecological constraints. The consumption model where new needs are constantly generated by large companies' strategies will have to be changed. Ecological constraints should not translate into higher prices without any counterpart, so that the efforts do not weigh on the poorest; Europe should move to a sober and less unequal society. This strategy should be implemented at the EU level, but who may promote this strategy in Europe?

10. What strategy for a tax reform in France?

In 2015, four strategies can be considered

A strategy focusing on increasing taxation for the richest and multinational firms. This was the French strategy from mid-2012 to mid-2014. This strategy required strong measures against tax evasion, since France was already one of the countries with the highest taxation on the richest. This strategy would have also required to combat all schemes allowing tax evasion (which is difficult to do for an isolated country).

A strategy focusing on company tax cuts in order to improve the competitiveness and attractiveness of the French economy.

Less heavily taxed companies would invest more in France and create jobs, which would offset the initial fall in tax revenues. Initially, taxes paid by employees and households would need to be increased; French households would have to accept a certain fall in their living standards in order to let French Firms become more competitive. This strategy raises two issues: the negative impact on demand it would have in the short-term and its social acceptance. Moreover, this is a non-cooperative strategy at the European level. This is the strategy chosen by the Valls Government.

A rationalization strategy, targeting the abolition of tax and social expenditures, which would require to abandon tax interventionism, and is satisfactory in some cases (savings taxation), less in some others. The gains of such a strategy are probably overestimated.

An ecological strategy raising over time environmental taxation. But its impact on firms' competitiveness is likely to be heavy if this strategy is not part of a European strategy.

Hence, the economic and social gains which may be expected from a tax reform should not be overestimated. In our view, five axes should however be considered in priority:

- to reaffirm the principle according to which all households' incomes must be subject to income taxation; taxation should to strictly enforce the principle according to which: "everyone should contribute to public expenditure according to their contributory capacities". These capacities should be assessed on a family basis.
- to reaffirm the principle according to which all labour incomes must pay social security contributions, all capital incomes should pay social security levies;
- to split tax expenditures into three categories: those determining the contributory capacity of households (which should be maintained and no longer be considered as tax expenditures); economic or social subsidies (which should be transformed into explicit subsidies); the other expenditures should be removed.
- to increase progressively environmental taxation and taxation on financial activities, to maintain capital taxation, to reduce labour taxation.

- to combat tax optimization and tax tourism implemented by companies and the wealthiest. This requires tax harmonisation at the world or EU levels, but in this area, France should take the lead and make proposals, and if necessary, make decisions alone.

Implementing a tax reform is far from being easy.

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THE INTERACTION BETWEEN THE LABOUR TAX WEDGE AND STRUCTURAL REFORMS IN ITALY

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We present a quantitative analysis of Italian fiscal and structural reforms using the Prometeia Dynamic Stochastic General Equilibrium (DSGE) model to identify the optimal reform mix to boost growth and employment. We find that structural reforms *via* a reduction in price and wage markups and a labour tax wedge cut can provide a strong stimulus to the economy by increasing GDP and employment levels. The balanced budget constraint shows that to offset the decreased revenue due to the labour wedge cut, a reduction in public lump-sum transfers or a tax shift from labour to consumption or property is preferred over a cut in public spending on goods and services. Conversely, under simultaneous fiscal and structural reforms, the best payoff would be obtained from an expansion to public spending. Finally, we find that public investment works to magnify this effect in the long run.

Keywords: balanced budget, macroeconomic policy, public investment, taxes.

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1. Introduction

Italy has recently started to speed up the process of fiscal and structural reforms in response to European Commission requirements and internal policy willingness to achieve better macroeconomic performance. The importance of structural reforms is well known and, in the last few years, has been a constant in the economic policy recommendations of international economic institutions, particularly in European countries (OECD, 2013). The onset of the recent Great Recession has focused policy and economic debates on a faster and deeper adoption of structural and fiscal reforms to achieve higher sustainable growth, higher levels of employment and a consolidated fiscal situation with a balanced public budget and a lower level of public debt. In this context, the aim of the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG) – also known as the fiscal compact – is to increase the resilience of the European Monetary Union in the face of a crisis, through the application of stringent general criteria for budget deficits, structural deficits and the debt-to-GDP ratio. This requires European countries with low potential growth and high public debt to introduce definitive reforms to their economic systems in order to improve economic performance and meet the TSCG criteria.

The *golden rule* of the fiscal compact is ensuring budgetary discipline among European Union (EU) governments. The goal is for each country belonging to the fiscal compact to reduce the debt-to-GDP ratio to 60 per cent in the long run. This fiscal moderation has been accompanied by widespread implementation of structural reforms in the EU periphery. Nahtigal and Bugarcic (2012), De Grauwe (2011) and Whelan (2012) discuss the danger of recessionary and deflationary effects. The main sources of doubt are related to: a) the long run expansionary effects of an *austerity* paradigm; b) evidence of the relationship between debt-levels and a growth regime; c) under-estimation of the deflationary and recessionary effects of a wide-ranging one-size-fits-all application of the fiscal compact on fragile countries in Europe.

Roubini and Mihm (2010) and Krugman (2012) argue that EU policy switched too rapidly to austerity after the onset of the crisis,

and this contributed to a worsening of the economic situation in 2012. In this context, Creel *et al.* (2012) and Creel *et al.* (2013) propose a counter-factual exercise using a VAR and DSGE methodology to rank several automatic fiscal rules and find the TSCG golden rule to be the worst performing instrument in relation to output gap and inflation rate. On the other hand, international institutions have contributed to the debate on quantitative assessment of fiscal and structural reforms providing a quite uniform consensus on their effects. In the case of Italy the OECD recommendations for structural reform (OECD, 2014) include a set of labour market, education system and tax structure improvements.¹ In general, given the fiscal consolidation requirements, one can rank these structural reforms based on the criteria of their performance and harmfulness. Cournède *et al.* (2013a) and Cournède *et al.* (2013b) suggest that reforms should start with the implementation of changes to subsidies, pensions, property taxes and personal income taxes, and that reforms to education, childcare, family expenditure, social security contributions, public investment and consumption taxes should be implemented only if absolutely necessary. In other words, the OECD countries should use the least harmful instruments to achieve their short-, medium- and long-run consolidation goals while Japan and the US are forced to impose more harmful reforms given their starting macroeconomic imbalances and long-run equity and growth needs. Italy is positioned in the best group for short-term equity and growth. The OECD study identifies various levers that Italy can use to achieve short- and medium-run goals: subsidies, pensions, other property taxes, unemployment benefits, personal income, corporate income taxes, environmental taxes, recurrent taxes, taxes on immovable property, and other government in kind consumption. The question of how heterogeneous growth patterns

1. They include: 1) the rebalancing of protection, from jobs to workers' income, through a decrease in workers' job protection under certain types of contracts, and improvements to the social safety net; 2) increased equity and efficiency in education in order to get better value for money from the education system and improve the chances of the low-skilled; 3) increasing the efficiency of the tax structure by simplifying the tax code, fighting tax evasion and, when the fiscal situation permits, reducing the tax wedge on low-wage labour; 4) reducing the barriers to competition through stronger law enforcement at all levels of government, reduced public ownership and shorter waiting times in civil courts; 5) reducing the risk of persistent unemployment and accelerating return to work through enhanced active labour market policies.

in the euro area are shaped by fiscal policy measures compared to structural reforms is crucial and requires quantitative assessment of the interaction between these two policy instruments. Bouthevillain and Dufrénot (2013) argue that best practice is not a one-size-fits-all approach to growth-friendly fiscal consolidation.²

In general, the main structural changes advocated in the literature are labour and product market reforms, and their outcomes can depend on the time span and institutional framework. These reforms usually are modelled such that they imply an increase in the economic efficiency or a reduction in the bargaining power of economic agents and, therefore, affect real wages and relative prices in the economy. Barnes *et al.* (2011) evaluate the impact of policy reforms in terms of GDP per capita, in a review of a range of empirical studies conducted mostly by the OECD. They find that the largest long run per capita GDP gains seem to come from reforms to education, strengthening of competition in product markets, reductions in the level and duration of unemployment benefits, tax wedge cuts and less strict employment protection legislation. Overall, one-fifth of this long-run impact comes from product market deregulation, and one-fifth from reforms to the average tax wedge. Other significant gains come from increased human capital and lower unemployment benefits. Their review suggests that countries can be grouped according to their policy priorities. For example, in Italy the labour tax wedge could be reduced to the average OECD level to achieve an impact on GDP per capita equal to 8.4 per cent. Hobza and Mourre (2010) provide some stylised and illustrative results for the broad benefits of some types of policy measures envisaged by the European Commission's so-called Europe 2020 programme for EU countries, using the macroeconomic model QUEST III, DG ECFIN. They demonstrate the long-run effects of fiscal consolidation – on its own and in combination with structural reforms – and propose various scenarios. The structural reform scenarios suggest that progress in implementing structural reforms under the main

2. Emerging European countries are more sensitive than the most advanced countries to direct taxation measures and indirect taxation could have more harmful effects on growth rates in these countries. Increased human capital expenditure stimulates growth in low-growth countries, while welfare and sovereign spending are efficient for economies that are growing rapidly.

priority areas of Europe 2020 could generate significant gains in terms of increasing output and employment.³ While the long-run consequences of structural reforms have been investigated extensively, the results of short-run analyses could be misleading. Cacciatore *et al.* (2012) explore the short-term effects of labour and product market reforms by applying a dynamic general equilibrium model with endogenous producer entry and labour market search, and matching frictions. They find that it takes time – typically two years – for reforms to pay off. This is partly because their benefits materialise gradually through the processes of firm entry and increased hiring whereas reform-driven layoffs are immediate. Also, although all reforms stimulate GDP in the short run, some, such as job protection reforms and product market reforms, result in temporary increases in unemployment.⁴

Implementing labour and product market reforms simultaneously helps to minimise such transition costs. Gomes *et al.* (2011) find that the effects of individual reforms are more or less additive by using EAGLE, a multi-country dynamic general equilibrium model. Bouis and Duval (2011) examine the impact on potential GDP over a 5 to 10-year horizon of structural reforms in product and labour markets, relying on the existing OECD empirical studies.⁵ Both types of reforms raise productivity growth, although the effects are estimated to be smaller for labour market than product market reforms. In particular, for Italy, the estimated multifactor productivity gains from product market reform are found to be around 3 per cent and 7 per cent over a 5-year and

3. In particular, GDP could increase from around 1.3 per cent up to 6.8 per cent depending on the boldness of the reform plan. The contribution to GDP of product market reforms would increase from 0.9 per cent to 3.3 per cent, while the contribution of labour market reforms would increase from 0.4 per cent to 2.9 per cent. Product market reforms could have a negative impact on the labour market of between -0.1 per cent and 0.1 per cent, while labour market reforms could have a positive impact of 0.6 per cent up to 4.3 per cent. The extent of economic benefits is conditional on the extent of the policy efforts (which needs to be very high for the most ambitious scenarios).

4. Cacciatore *et al.* (2012) argue that structural reforms can affect payoffs depending on whether the country is a member of a monetary union or not. Within a monetary union expectations about lower prices could increase real interest rates and decrease consumption and output in the short-run.

5. The authors state that the analysis implicitly assumes homogeneous marginal effects of reforms on GDP across different countries, time periods and magnitudes of reforms and, in some cases, assumes economy-wide impacts of reforms based on sector-level estimates. They assume also that the underlying OECD studies do a better job at estimating the long-run as opposed to the short-run effects of reforms.

10-year horizon respectively, and the gains from employment protection legislation are around 0.5 per cent over a 10-year horizon. The estimated long run increase in employment rates from labour tax wedge cuts is close to 2 percentage points for Italy.⁶ Using the European Commission's QUEST III model for R&D, adapted to Italy, Annicchiarico *et al.* (2012) find that structural reforms are likely to result in sizeable output, consumption, employment and net foreign assets gains. However, these increases may be affected by fiscal consolidation intensity. The analysis covers a product and a labour market reform that includes lower price and wage markups and a shift from labour to consumption taxation. The authors find that under a fiscal consolidation package equivalent to 6 per cent of GDP, the effects of structural changes may be mitigated. However, the positive effects of structural reforms support fiscal consolidation *via* a decreased public debt-to-GDP ratio in the *ex ante* budget-neutral scenarios. The average annual output growth rate gain over a 10-year time horizon is found to be equal to 0.6 per cent under the assumption that Italy manages to halve the gap with the EU best performers in several intervention areas, in five years. Reducing the gap by one-third would imply an average annual gain of 0.4 per cent, while fully closing the gap would require increased average growth of up to 1 per cent. This result is very close to our scenario where product market reform under unbalanced budget gives an output increase of 1.25 percentage points while, when supported by public consumption, it could give more than 2 percent (see section 4 and appendix A). In a closely related paper, Lusinyan and Muir (2013) use the International Monetary Fund's Global Integrated Monetary and Fiscal model (GIMF) to analyse the role of structural and fiscal reforms in Italy aimed at strengthening competition in the product market and making the labour market more efficient supported by growth-friendly fiscal reforms. They find positive effects on GDP in the long run from both product and labour market reforms, and payoffs from their simultaneous implementation. In considering fiscal reforms, they take account, in a deficit-neutral way, of a

6. In general, the potential overall increase in GDP for the average OECD country gained by undertaking the full range of reforms to the labour and product markets, could be close to 10 per cent over a 10-year horizon, indicating the ample room for structural reforms to offset permanent GDP losses resulting from the recent crisis.

reduction in the labour tax wedge and an increase in infrastructure spending. In particular, they allow for a shift from direct to indirect taxes (lowering both labour and corporate taxes, offset by broadening the VAT base) and a shift from lump-sum transfers to productive, well-targeted infrastructure investment. Increasing competition in the tradable and non-tradable sectors could increase output by 4.0 per cent in 5 years and 7.7 per cent in the long run. The reduction in labour taxes initially raises GDP relative to the baseline by 0.5 per cent, and by up to 2 per cent in the long run. By combining fiscal reforms with product and labour market reforms, real GDP in Italy could increase by about 8.5 per cent after 5 years and almost 22 per cent in the long run.⁷ Lusinyan and Muir (2013) find also that these effects would be stronger if the remaining euro area economies were to carry out contemporaneous similar reforms. Forni *et al.* (2010b) assess the effects of increasing competition in the service sector in Italy which, based on cross-country comparisons, is the OECD country with the highest markups in the non-manufacturing industries. They propose a two-region (Italy and the rest of the euro area) dynamic general equilibrium model allowing for monopolistic competition in the labour, manufacturing and service markets. They simulate the macroeconomic and spillover effects of increasing the level of competition in the Italian services sector, and find that decreasing service sector markups to the levels of the rest of the euro area increases Italian GDP by 11 per cent in the long run. Moreover they find, as in our paper, that labour market reform is less growth friendly than product market as it impacts only on some sectors of the economy. Forni *et al.* (2010a) evaluate fiscal policy consolidation *via* different fiscal coverage adjustments. First, given a certain level of Italian public debt, they find that a labor, capital and consumption tax cut gives positive and higher results than a reduction in public consumption and employment that has instead negative impacts on the economy. Then, in order to achieve a consolidation of 10 percent of debt-to-GDP ratio in five years, they state that the best fiscal mix is given by a decrease in public consumption, employment and in particular in public transfers, together with a generalized tax cut, because this would maximise the reduction of distortion and increase GDP

7. The effect of product market reform is amplified by the productivity-enhancing effects of higher government spending on infrastructure.

levels. This result is qualitatively very close to our findings which show that transfers are the most growth friendly instrument to be used to cut the labour tax wedge. Our paper is close to the above-mentioned literature and focuses on the specific Italian fiscal dilemma related to the best growth friendly policy and the interaction effect between labor tax wedge and structural reform. The Italian specificities and structural and keynesian macroeconomic policies are taken into account to provide a systematic analysis of the fiscal policy outcomes.

As argued in Malinvaud (2000), the economic policy debate has a theoretical counterpart which consists of two strands: macroeconomic policy and structural reform. Macroeconomic policy is related to the demand side of the economy, while structural reform refers to institutional changes. In some sense, they affect the supply-side of the economy since permanent institutional changes would affect the behaviour of the economy over the business cycle, or the *structural long-run equilibrium levels*. Thus, DSGE models are a good compromise to investigate macroeconomic and structural policies since they can represent institutional (market) frictions affecting the business cycle, demand shock transmission and long-run structural equilibrium levels simultaneously. Our paper contributes to this strand of the literature; we perform an analysis of mixed structural and macroeconomic policies within a balanced budget framework. For example, we allow for fiscal reforms to cut the labour tax wedge (that is both structural and macroeconomic), together with a simultaneous reduction in union monopolistic power via a decrease in real wages (structural) and also an expansion in public goods expenditure and public investment plans (macroeconomic). In particular, we are interested in comparing the fiscal balancing of a labour tax wedge cut, realised through a cut in public spending and transfers or a shift to indirect or property taxes. We examine a series of taxation mixes combined with structural reforms to the labour and product markets. We analyse the extra payoffs that may accrue from simultaneous structural and fiscal reforms. Unlike other studies on Italy, both fiscal and structural reforms are here implemented in a budget-neutral scenario. Fiscal reforms include cuts to taxes affecting labour costs, that is, firms' social security contributions (SSC), the regional tax on productive activities (IRAP), and personal income tax (IRPEF).

We find a dynamic trade-off for the tax rates analysed: a reduction in IRAP rate produces the highest payoff in terms of real GDP in the long run, while a cut in SSC results in the highest output in the short run. Similarly to Coenen *et al.* (2007), who focus on a reduction of public transfers to households to offset the tax revenue reduction from a labour tax wedge cut, we find that reducing firms' labour costs (IRAP plus SSC) has more notable effects on output in the long run than reducing the wedge component entering the households' decision problem, i.e. labour income tax (IRPEF).⁸ However, unlike Coenen *et al.* (2007), we focus only on labour income tax for households, excluding households' SSC; on the other hand, we consider also the cost of IRAP together with the firms' SSCs.

In relation to structural changes, product market reforms outperform labour market reforms, in both the short and the long run. However, only labour market reforms lead to a permanent reduction in the unemployment rate. Moreover, the contemporaneous combination of cuts to the IRPEF, SSC and IRAP and structural reforms shows that, in accordance with a balanced budget, it would be preferable to increase public spending.

There are several points to bear in mind to interpret our results. First, the level or growth of GDP (alone) is not a satisfactory metric to evaluate economic policy. A welfare analysis is needed to achieve a more comprehensive understanding of the impact of policies on the several agent/sectors of the economy. Also, the analysis presented here is an aggregate analysis. Despite their complexity, by construction, DSGE models comprise a collection of heterogeneous representative agents, which means we have a multitude of agents represented by a single actor. This implies that we ignore progressive taxation and the distribution of wealth and income and concentrate on an average representation of the economic system. Second, our quantitative assessment exploits a stylised representation of the fiscal side of the economy: for

8. Coenen *et al.* (2007) consider four alternative scenarios for the euro area: a reduction in the consumption tax, a reduction in the sum of the tax on labour income and households' social security contributions, a reduction in the firms' social security contributions, the reduction of the overall tax wedge, i.e. a combination of the three single scenarios. The experiments are designed to lower the euro area tax wedge to levels prevailing in the United States. In all cases the reductions in tax revenue are offset by a reduction in public transfers to households.

example, transfers do not distinguish between pensions and social allowances which underestimates life cycle effects. Third, our results refer to a small open economy context, meaning that we ignore adjustments in the rest of the EU. Taking account of these points might change our results by weakening the fiscal and structural policy effects due to international spillover. However, the focus of this paper is to provide a quantitative assessment based on analysing the interactions among labour tax wedge reduction, structural reform and macroeconomic demand policy, to show that in a such complex environment a macroeconomic demand policy plays a prominent role.

The paper is organised as follows: in section 2 we briefly describe the model and the areas of policy intervention; section 3 discusses the calibration and experimental setup; section 4 and section 5 present the simulation results and sensitivity analysis; section 6 summarises the results of the public investment growth scenario; and section 7 concludes.

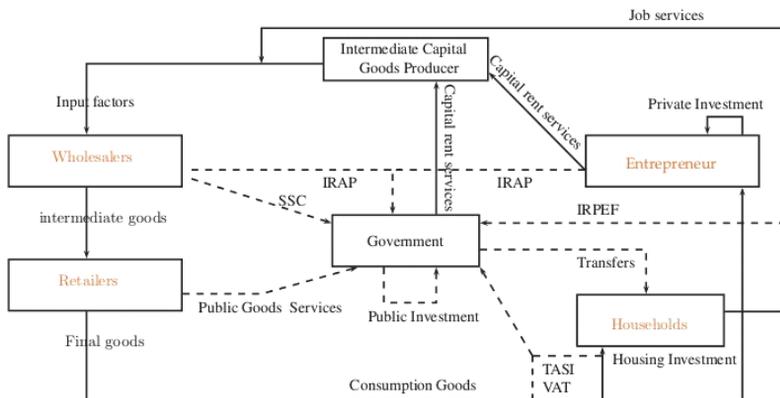
2. The model

In this section we briefly describe the model focusing on the policy areas of intervention. The reference framework is a new-Keynesian medium-scale DSGE model. We apply the Prometeia DSGE model for the Italian economy (Catalano, 2014 and Catalano and Pezzolla, 2014), and incorporate various tax rates including the household labour income, indirect, and labour wedge taxation (Figure). Structural reforms are modelled such that they imply a reduction in price and wage markups. Fiscal reforms include cuts to taxes affecting labour costs, that is, social contributions (SSC), the regional tax on productive activities (IRAP), and personal income tax (IRPEF). All reforms are implemented in a budget neutral scenario: in order to keep the public deficit constant in the face of the reduced revenues resulting from labour tax wedge cuts, we consider alternative scenarios allowing for a reduction in government spending, a cut in general transfers,⁹ and a tax shift from labour to consumption (through an increase in the

9. The lump-sum nature of the transfers implies that households cannot change or alter them by changing their behaviour. They represent unconditional cash transfers meaning that they are general transfers delivered to households, with no limitations or exceptions.

VAT rate) or to real estate investment (through an increase in the TASI i.e. house services tax rate).¹⁰

Figure. Structure of the model



2.1. Households and firms

Households are divided into two groups: workers and entrepreneurs. The former rents job services and the latter rents capital goods to an intermediate firm sector. Both groups save and consume. Working households are further subdivided into impatient and patient or, respectively, negative and positive financial net savers.¹¹ Both consume non-durable and durable goods, invest in housing services, offer labour services to an intermediate sector and earn profits from the firm sectors. Patient households save and invest in housing and financial deposit services provided by the banking sector. Impatient households borrow from banks against their housing stock. Constrained households cannot finance their desired level of consumption and are more dependent on current

10. Catalano and Pezzolla (2014) and Table A10 provide the results of alternative experiments without a balanced budget constraint.

11. The distinction between patient (unconstrained) and impatient (constrained) households allows us to account for the importance of financial factors in macroeconomic fluctuations. The presence of credit constrained agents and the “financial accelerator” may enhance the amplitude of business cycles depending on the source of the shocks. As Iacoviello (2005) states, the reasons for this choice are practical and substantial: “practical because, empirically, a large proportion of borrowing is secured by real estate; substantial because, although housing markets seem to play a role in business fluctuations, the channels by which they affect the economy are far from being understood”.

income for consumption and, therefore, are more sensitive to a shock that affects their disposable income, even if the shock has no cyclical effect on their borrowing capacity. Similarly, entrepreneur households decide upon their capital investment goods and borrow from the banking sector.

An intermediate sector sells output to the monopolistic competitive retailer sector, which differentiates this output into multiple goods and sells them on final markets. The public sector levies taxes, buys public goods and provides unemployment and transfer payments to working households. Since working households and retailers are monopolistic competitive sectors, they set wages and prices respectively following a markup rule that creates a (double) wedge between final real wages and the marginal rate of substitution.¹² This allows us to explore labour and product market structural reforms through the reduction in wage and price markups.

2.2. Government

Government consumes an amount of domestic goods G_t at price P_t^{ch} and purchases capital investment goods ik_t^g at prices qk_t^g . Public capital evolves according to the following equation

$$K_t^g = ik_t^g + (1 - \delta^g)K_{t-1}^g, \quad (1)$$

where δ^g is a constant depreciation rate and ik_t^g is assumed to follow an exogenous process $ik_t^g = (1 - \rho_g)ik_{ss}^g + \rho_g ik_{t-1}^g + \varepsilon_t^k$, with ρ_g denoting the persistence parameter and ik_{ss}^g the steady-state value of public capital investment. Then, government rents capital services k_t^g to the intermediate capital goods firms at price Pk_t^g , gaining the following profits

$$\pi_t^g = Pk_t^g K_{t-1}^g - qk_t^g ik_t^g \quad (2)$$

which can be used to reduce government debt. Other government revenues are given by the exogenous tax rates imposed on labour, consumption, return on capital for entrepreneur households, SSC

12. The working household sector has monopolistic power which allows it to earn a surplus share. However, this creates a friction, which allows us to account for a positive level of unemployment and an unemployment related Phillips-curve as in Galí (2011). This means that wage inflation is inversely affected by the unemployment gap, i.e. a positive deviation from its natural level. Therefore, wage stickiness (Calvo pricing) could affect the allocation of labour, increasing unemployment also in the short-run.

affecting wholesaler employer and real estate value and profits, i.e. τ_{irpef} , τ_{vat} , $\tau_{capital}$, τ_{ssc} , τ_{tasi} and τ_{irap} , respectively. Government borrows B_t from financial intermediaries at a rate R_t to finance its expenditure on G_t , which is adjusted in order to set the public deficit-to-GDP ratio to its long-run (target) level.¹³ Public debt stock evolves according to the following equation:

$$\begin{aligned}
 B_t = & 1 + R_{t-1}B_{t-1} + P_t^{ch}G_t + Pk_t^s K_{t-1}^s - qk_t^s ik_t^s - \tau_{capital,t}Pk_t K_{t-1} + \\
 & -\tau_{tasi,t}Pdv_{t,t}H_{t-1} - \tau_{irap,t}(Pw_t Y_t - Pk_t K_{t-1}) - \tau_{ssc,t}L_t W_t + \\
 & -\tau_{irpef,t}L_t W_t - \tau_{vat,t}(P_t C_t + Pch_t Cn_t + Pcd_t I_t^d) + \\
 & +T_t + U_t b,
 \end{aligned} \tag{3}$$

where T_t denotes total transfers to unconstrained and constrained households.

Finally, the public expenditure reaction function is given by:

$$\begin{aligned}
 G_t := & 1 + R_{t-1}B_{t-1} + P_t^{ch}G_t + Pk_t^s K_{t-1}^s - qk_t^s ik_t^s - \tau_{capital,t}Pk_t K_{t-1} + \\
 & -\tau_{tasi,t}Pdv_{t,t}H_{t-1} - \tau_{irap,t}(Pw_t Y_t - Pk_t K_{t-1}) - \tau_{ssc,t}L_d W_t + \\
 & -\tau_{irpef,t}W_t L_t - \tau_{vat,t}(P_t C_t + Pch_t Cn_t + Pcd_t I_t^d) \\
 & +T_t + U_t b = 0.
 \end{aligned} \tag{4}$$

where $pk_t^s k_{t-1}^s$ are rent revenues on public capital stock, $qk_t^s ik_t^s$, investment costs, $\tau_{irap,t}Pk_t k_{t-1}$, taxation on capital, $\tau_{tasi,t}Pdv_{t,t}H_{t-1}$, taxation on housing, $\tau_{irap,t}(Pw_t Y_t - Pk_t K_{t-1})$, IRAP taxation on wholesaler profits, $\tau_{ssc,t}L_d W_t$, employee social contribution revenue, $\tau_{irpef,t}W_t L_t$, $\tau_{vat,t}(P_t C_t + Pch_t Cn_t + Pcd_t I_t^d)$, labour income and consumption taxation, T_t and $U_t b$ total transfers and unemployment benefits.

2.3. Taxes and tax payers

Taxes have different degrees of distortion that imply diverse efficiency gains from tax reforms, which need to be clarified. Distortionary taxes imply large effects on GDP in response to economic shocks, and the higher the distortion, the larger the effect.¹⁴

13. In the scenario described in the following sections we interchange public spending with indirect taxations (VAT and TASI) or transfers.

14. Given that optimal taxation means distributing distortions over time in order to maximize welfare (Lucas and Stokey, 1983), a future research objective is a comprehensive analysis that explores the redistributive consequences of the revenue-neutral tax reforms we analyse in this paper.

2.4. Labour wedge components

IRPEF is the Italian individual income tax that is paid on several kinds of income earned both in Italy and abroad. In the model, we focus only on IRPEF levied on labour income that is paid by working households and affects their labour/leisure choice. This kind of taxation creates a wedge between the marginal rate of substitution and the real wage; thus, households require a higher wage to provide the same supply of labour that would be induced in the absence of this taxation. Therefore, a reduction in the IRPEF tax rate is expected to cause an increase in disposable income that will lead to higher consumption and saving, thereby stimulating the incentive to invest and to increase labour supply.

SSC are taxes paid by both workers and employers which are levied on the income received by the worker from the employer as a result of their employment relationship. In the model, SSC are defined as taxation on employed labour income levied only on the intermediate goods producers (employer). The higher the SSC rate, the higher the cost of labour for the employer. Therefore, a reduction in SSC is expected to induce an increase in demand for labour with positive effects on aggregate demand. It should be noted that this could trigger an adverse reallocation of capital investment as relative prices will change accordingly.

IRAP is the regional business tax levied on the value of production generated by business activities developed in Italian regions. In our model, it is paid by entrepreneur households that accumulate and rent physical capital, and by wholesalers that produce intermediate goods and services. IRAP can be considered a business tax on value added, which does not allow for deduction of labour costs. The IRAP tax base is computed by subtracting the cost of capital from the revenue from sales. Therefore, an IRAP tax rate increase would be particularly harmful to businesses making a loss rather than a profit (Manzo and Monteduro, 2011). Also, it affects demand for input factors: a reduction in the IRAP rate will induce a bias towards capital, while an increase in this rate will stimulate demand for labour.

2.5. Offsetting policies

To balance the budget and cover the revenue losses stemming from a cut in the labour tax wedge, we allow for different fiscal coverage: an increase in VAT rate; an increase in TASI; a reduction in government consumption; a decrease in public transfers. However, raising distorting taxation or reducing government consumption or transfers can offset some of the growth effects induced by a decrease in the labour tax wedge.¹⁵ The channels through which this effect occurs may be different depending on the labour tax wedge component (IRPEF, SSC, IRAP) that is being reduced, and the fiscal coverage chosen to balance the budget.

VAT is a value added tax which, in Italy, is paid only by the final consumer; companies can generally deduct VAT paid in the intermediate production stages. VAT is levied on sales of goods and/or services within the Italian territory. In our model, VAT affects households' purchasing power relative to consumption of durable and non-durable goods, thereby conditioning households' consumption-leisure choices.

TASI is a tax on house services paid on real estate in Italy. In our model, TASI only affects owners, i.e. (patient and impatient) households, and their consumption-investment decisions. This effect is particularly noticeable for constrained households that have a high marginal propensity to consume. This implies a different consumption behaviour for impatient and patient households following fiscal shocks, especially when there is a tax shift from labour to property that discourages housing investment.¹⁶

A decrease in (unproductive) government consumption reduces the amount of resource government absorb from the economy and, given the large spending multiplier, almost completely offsets the positive effects of the labour tax wedge cut on GDP.

15. It is worth noting that although a shift in tax from labour to consumption is often advocated to provide a work incentive and to increase supply and demand for labour, it also implies important distributive consequences that need to be taken into account. For instance, Pestel and Sommer (2013) find that people on low-incomes, and pensioners (who have a smaller income tax and social security contributions burden) are typically damaged by such a tax shift, with employees and unemployed workers being the main beneficiaries.

16. Following Carroll *et al.* (2014), in a future analysis, we could introduce different degrees of impatience across households with heterogeneous time preference rates, to account for inequality in the distribution of wealth.

Since we consider lump sum transfers, relative prices are not affected. Therefore, reducing transfers to households will affect aggregate demand, but to a lesser extent than government consumption, given that the fiscal burden implied by their reduction will be damaging to only a part of the economy, namely (patient and impatient) households. Transfers could be considered aggregated pensions and social income provided directly from the public sector to sustain aggregate demand. In particular, a reduction in transfers will mainly influence the decisions of constrained (impatient) households without free access to the credit market to finance their housing investment, whereas the consumption smoothing behaviour of unconstrained households will continue to sustain aggregate demand.

3. Calibration and experimental design

In this section we describe the calibration of the parameters of interest and the design of the experiment. All policy changes are assumed to be permanent. Also, we assume all measures are fully credible from the start, meaning that the announced reform path is believed to be immediately and fully anticipated.¹⁷ The general calibration follows Catalano (2014) and Catalano and Pezzolla (2014). As we show below, we build several reform scenarios concerning both fiscal and structural policy areas. The public sector is calibrated to be at 40 per cent of GDP,¹⁸ public expenditure on goods and services is set at 21 percent and public debt is 132 per cent in terms of the GDP ratio. We set marginal and mean tax rates for VAT, IRPEF, TASI and SSC at 14.5 per cent, 21 per cent, 0.8 per cent and 36 per cent respectively. Markup on the product market is set at 20 per cent, close to the values in Forni *et al.* (2010b).¹⁹ Labour markup is equal to 20 per cent, setting the elasticity of substitution accordingly. We calibrate the price and wage

17. For all shocks, the speed of reforms is set such that the time of convergence to the final value is 2 years. Thus, we assume a realistic process of institutional adaptation to fiscal and structural reforms.

18. The percentage includes transfers to households, unemployment benefits and expenditure of goods and services.

19. Based on the estimates in Christopoulou and Vermeulen (2012) for sectoral markups, we set the Italian price markup according to the aggregate value for Manufacturing and Construction, which is higher than the 18 per cent value estimated for the euro area.

markup reduction by 2 percentage points. This is consistent with the minimum size experiment performed in Forni *et al.* (2010b) on price markup.

3.1. Fiscal reform scenarios

To take account of the effects of a labour tax wedge cut we allow for a decrease in IRPEF, SSC and IRAP. For each fiscal instrument, we consider a tax cut such that the decrease in the relative fiscal revenue is equal to 1 per cent of nominal GDP. The simulation exercises are modelled such that the public budget is balanced and kept constant; therefore, in each experiment we allow for alternative fiscal adjustments/coverage: a reduction in public spending, a cut in public transfers, an increase in the VAT or TASI rate, against each labour tax wedge component simulated.²⁰ Also, in order to detect the likely payoffs stemming from a fiscal reform package, we analyse the effects of simultaneous cuts to IRPEF, IRAP and SSC.²¹ Table 1 shows the percentage changes in tax rates.

3.2. Structural reform scenarios

Structural reforms aim at enhancing competition through short- and long-run increases in output, employment and investment. Rigidities in the product and labour markets imply that both prices and wages are higher than they would be in more competitive markets. This means that prices and wages may include a markup over marginal costs and over the marginal rate of substitution between consumption and leisure, respectively. Therefore, the simulation experiments take into account a 2 percentage point reduction in markups. Lower price markups would lead to an increase in competition and to a sizeable positive effect on GDP, and a lower wage markup would reduce union bargaining power and, hence, real wages, increasing flexibility in the labour market and generating a smaller, but not irrelevant increase in output. Similar to our treatment of fiscal reforms, we analyse the interactions between labour and product market reforms, combining them in a scenario with simultaneous markup changes.

20. See section 2.5.

21. The size of the shock to each single tax rate is such that each instrument is simultaneously responsible for one-third of the total percentage change in GDP (1 percentage point).

Table 1. Fiscal reform scenarios

Fiscal reforms	Experiments		
	Tax rate	Single tax change	Simultaneous tax change
Labour tax wedge cut	IRPEF	-2.7 pp	-0.9 pp
	SSC	-2.7 pp	-0.9 pp
	IRAP	-1.8 pp	-0.6 pp

3.3. Reform package scenario: combining fiscal and structural reforms

We consider a scenario that involves a broad simulation exercise that includes simultaneous tax wedge cuts and structural reforms. The purpose is to evaluate the interactions among policy measures and their likely dynamic tradeoffs.

4. Results

In this section we present the results of our scenarios for fiscal reforms aimed at reducing labour costs, and structural reforms to both labour and product markets in a budget-neutral scenario. These reforms may contribute to reducing the competitiveness gap with the best EU performers, and restoring the sustainability of public finances. We enrich the analysis by taking account also of the likely payoffs stemming from a combination of structural reforms to the labour and product markets, and evaluation of the macroeconomic implications of tax relief on labour associated with structural reforms. We collect all GDP multipliers in Table A1; in Tables A2 and A3 we show the response of the variables of interest to labour tax wedge and structural reforms respectively, for the given set of fiscal coverages.²²

Fiscal reforms. In this section we describe the impact of a labour tax wedge cut via a decrease in IRPEF, SSC and IRAP tax rates. Regardless of the type of fiscal coverage,²³ we find a degree of dynamic tradeoff between the tax rates affecting labour costs: a reduction in social contributions produces the highest payoff in terms of real GDP in the short run, while a cut in IRAP produces

22. In tables A2 and A3 the rows show the variables and the columns show the fiscal coverages that are transposed, as opposed to table A1.

23. See section 2.5.

the highest output in the long run. In this case, intermediate-goods producers and entrepreneur households have incentives to foster labour demand and employment but also investment in capital goods, whose effect *via* the capital accumulation process takes time. Given initial adverse effects on capital investment, a cut in IRAP seems to provide an initial cost in terms of GDP compared to the other tax wedge components (Table A1). A permanent decrease in the IRPEF tax rate causes an increase in disposable income that leads to a rise in consumption, investment and hence real GDP (Table A2). A cut in the SSC, which produces the highest short-run increase in output, like IRPEF, positively affects labour demand and disposable income, but also improves competitiveness and exports because the reduced labour costs allow a reduction in prices.

The best long-term performance is associated with a reduction in public transfers in order to offset the decrease in fiscal revenues from a reduction in each labour tax wedge component (Table A1, columns c1, c5, c9). This effect is due to the consumption smoothing behaviour of unconstrained households (and the relative low percentage of constrained households in the economy), which allows for a smaller reduction in aggregate demand given a contemporaneous increase in labour demand by firms. Thus, a public transfer performs better than other coverage in the long run, but VAT coverage represents the best compromise between the short- and long-run scenarios (Table A1, columns c3, c7, c11). Indeed, a tax shift from labour to consumption, results in an increase in disposable income, consumption – and the relative tax base – thus, offsetting the negative impact stemming from an increase in the VAT rate. The performance of the TASI is similarly to the VAT in the long run, but with some relevant costs in the short run in terms of real estate investment.²⁴ Increasing taxation will affect expected housing values, leading to a sharp decrease on impact in demand for housing investment.

In order to appreciate the impact of the fiscal reform package, we can consider a permanent reduction in the overall labour tax

24. The huge impact of a TASI tax increase on GDP is due to the lack of adjustment cost that in the current version of the paper is not included into the model. If it was included the same impact would have been spread over several time periods.

wedge with simultaneous cuts in IRPEF, SSC and IRAP tax rates.²⁵ As expected, we observe a positive impact on labour demand and employment. In general, we find positive effects on GDP in the long-run, but public expenditure adjustment constrains the labour tax wedge cut effects (0.2 against 0.5 for TASI and VAT, and 0.9 for public transfer adjustment) via long run crowding-out of investment and consumption (see Table A1 columns c13-c16.).

Structural reforms. The purpose of product market reforms is to increase competition and stimulate growth, employment and productivity; labour market reforms aim mainly at increasing labour market flexibility and stimulating labour demand. We find that output increases especially under product market reforms, which perform better than labour market reforms in both the short and the long run (Table A1 c21-c24 vs c17-c20), irrespective of the type of fiscal coverage. However, only labour market reforms lead to a permanent contraction in the unemployment rate.²⁶ Our results show that a permanent reduction in price markups leads to an increase in exports and hence in domestic production and employment (Table A3). Labour market reforms imply a permanent reduction in the wage markup, which would lead to a fall in real wages and increased demand for labour. The reduction in prices resulting from labour market reforms, brought about by a decrease in marginal costs, is less intense compared to product market reforms, therefore, the positive effects on exports and consumption are more muted although not negligible, under labour market reforms.²⁷

Thanks to structural reform payoffs, fiscal coverage adjustment to balance the budget works in the opposite direction to the labour tax wedge cut scenario: depending on the type of fiscal adjustment chosen the benefits stemming from structural reforms allow for either a reduction in the VAT and TASI rate (rather than an increase in the fiscal burden) or an increase in government

25. See section 3.1 for details on the design of the experiment.

26. Our model incorporates the labor market as in Galí (2011). This explains unemployment in the long run as a frictional outcome due mainly to monopolistic labour union power. Therefore a reduction in labour wage mark-up allows to reduce supply and increase labour demand. When other shocks hit the economy the unemployment remains constant in the long run.

27. The small impact of labour market reforms is confirmed in the empirical literature (e.g., Barnes *et al.*, 2011; Bouis and Duval, 2011).

spending or transfers (rather than a reduction). This allows exploitation of the expansive side of public expenditure/transfers or of a cut in VAT or TASI. For both product and labour market reforms it is public spending that boosts the economy in the long run. In the short-run, the largest gains in terms of GDP come from product market reforms under a TASI fiscal coverage (Table A1, column c24). This effect depends on the price reduction, which, on the one side, reduces real estate values, but on the other side boosts the economy via a larger cut to housing taxation which enhances housing investment accumulation.

With respect to the public debt-to-GDP ratio, product market reforms perform better since they reduce the public debt-to-GDP ratio by about four times compared with labour market reforms (2.4 vs 0.7 percentage points in Table A3). Indeed, the reduction in prices would reduce the cost of final goods to consumers and yield higher real wages, which would cause a rise in disposable income in the long run. This would strengthen consumption and investment, which would increase more by around 2 percentage points (Table A3) under public spending and transfer coverage, and by around 6 percentage points under TASI coverage. Increased demand for goods would stimulate production and induce firms to employ more labour and capital. In the short run, labour demand increases more than labour supply (which grows because the income effect is dominated by the substitution effect stemming from the increased opportunity cost of leisure), thus, reducing the unemployment rate. Capital becomes relatively cheaper and firms increase capital investment. In the long run, output improves by around 2 percentage points with public spending coverage (Table A1 c22). Demand for capital also increases; thus, investments are permanently higher (by 1.5 per cent with TASI coverage, Table A3). Overall, real GDP improves in the short run and stabilises at the 0.5-0.6 per cent higher level in the long run.

Implementing simultaneous product and labour market reforms could imply some extra payoffs in both the short and long runs. The combination of structural reforms would prevent real wages from declining permanently, as they would do under labour market reforms only. If we combine labour and product market reforms, we can see that the effects of reforms are roughly additive (Table A1, c25-c28).

Combining structural and fiscal reforms. If we combine structural reforms with fiscal policies, product market reforms always perform better than labour market reforms (which constrains the expansion of aggregate demand via decreasing real wages). The labour tax wedge package, which includes simultaneous IRPEF, SSC and IRAP cuts (without structural reforms) points to transfer reduction as the best scenario in terms of GDP growth from the first quarter onwards (Table A1, column c13). The combination of contemporaneous IRPEF, SSC and IRAP cuts with structural reforms (Table A1, column c34) shows that, except for the first two quarters after the shock, it is always preferable to adjust public spending because its increase (due to the structural reform gains) provides benefits from higher multipliers than those from a reduction in taxation, while transfers interact poorly with structural reforms and, although positive, provide the worst coverage. As in the structural reform case, the interaction between structural and fiscal reforms are additive as shown in the results.²⁸

5. Sensitivity analysis

Table A10 presents the results of fiscal and structural reforms in the case of an unbalanced budget which implies an endogenous adjustment to public debt. Note that, in this scenario, a labour tax wedge cut – IRPEF, SSC, IRAP – implies higher medium-run costs in terms of GDP, but higher gains in the long run compared to the balanced case. Conversely, structural reforms – LM and PM – in the presence of an unbalanced budget lead to higher short- and medium-run benefits, but lower gains in the long run. The same holds for an increase in government (productive) investment.²⁹ Unbalanced fiscal shocks partially affect the fiscal consolidation,

28. In the model (see Catalano and Pezzolla, 2014) we have the unit labour cost ($clup$, VAT gross) defined as

$$clup = (1 + \tau_{vat}) \frac{mrs}{mpl} = \frac{1}{markup_w markup_p} \frac{(1 - \tau_{irap})(1 - \tau_{irpef})}{1 + \tau_{ssc}}, \quad (5)$$

where mrs is the marginal rate of substitution, mpl is the marginal labour productivity and $markup_w$, $markup_p$ are respectively wage and price mark-ups. The right hand side of the equation is the labor tax wedge. It is straightforward that first order effects of simultaneous structural and fiscal reforms are additive.

29. For further details on the effects of a government investment increase see section 6.

while in the balanced case, where the initial deficit is kept constant, consequent fiscal room is used to increase public goods demand.

In the remaining part of this section we assess the sensitivity of the baseline results to the following specifications (robustness checks): *a*) different degree of nominal price and wage rigidity;³⁰ *b*) higher percentage of liquidity-constrained households;³¹ *c*) tightening of credit conditions.³² We distinguish the most significant effects through calibration frameworks, comparing them with baseline.

With respect to specification *a*), we analyse the effect of the shocks in the presence of lower price rigidity compared to the baseline. Price rigidity implies that prices do not adjust either continuously or fully to changes in demand or costs. This means that the probability of prices changing is not constant, and not all firms can adjust to the optimal price immediately. The proportion of prices not resetting is a measure of nominal rigidity. Because firms set prices as a markup over a weighted average of expected future marginal costs, the announcement of a labour tax wedge cut in the presence of lower price rigidity would imply a higher output response in the short run, given the increased proportion of reoptimising firms. The more sensitive variables to lower price rigidity are labour demand, capital investment and production. The effects on short-run GDP are larger for SSC and IRAP cuts under TASI fiscal coverage (Table A4, c8 and c12 Year 1). Therefore, a reduction in the unit cost of labour (*via* a reduction in SSC or IRAP) leads to a higher response of output as the price adjustment spreads over the final markets and allows for higher aggregate demand in the short run. Surprisingly, a lower nominal price rigidity decreases the output response to a price markup shock since a reduction in wholesaler profits induced by a faster real cost increase leads to lower demand in the labour and capital markets. When rigidity enters the wage determination mechanism (Table A5), imperfect adjustments to employment and the real wage can affect the short-

30. We change the values of parameters ζ_p and χ_w in the model to 0.7 from 0.8 and 0.5 respectively, see Catalano (2014).

31. We change the value of parameter μ_a from 20 to 40 per cent, see Catalano and Pezzolla (2014).

32. We change the values of parameters μ_μ and μ_2 from 0.3 and 0.1 to 0.1 and 0.033; see Catalano (2014) and Catalano and Pezzolla (2014).

run response of the economy to a macroeconomic shock: if labour costs decrease due to a smaller labour wedge, the boost in labour demand will lead to a lower wage in the short run. Due to higher nominal rigidity, unions decrease wages slowly, maintaining higher available income. Regarding structural reforms, the increase in real wages due to a faster price markup reduction allows for higher demand and boosts growth. In the face of a positive shock induced by structural reforms to the labour markets, if wage rigidity is higher than the baseline, the employment adjustment will be slower.

Specification b) allows for a higher number of impatient households in the economy. The higher the percentage of constrained households, the more sensitive the economy to income shocks. If there is a positive shock increasing house prices (e.g., generated by a shock to the marginal rate of substitution between housing and consumption for all households), debtor borrowing capacity increases, allowing households to spend more and invest more. Therefore, the net effect on demand is positive, and acts as a powerful amplification mechanism. However, a higher proportion of impatient households does not seem to affect the labour wedge cost. Structural reforms interact with a higher financial constraint on the household sector, in particular in the case of product market reform (Table A6). In the short run, transfers and public spending seem to respond quickly due to lower availability of income and consequently lower aggregate demand. A reduction in prices leads to devaluation of housing stock and, therefore, also borrowing capacity. In the case of transfers and public spending (Table A6, c21 c22), the negative effects are larger because of lower available income for constrained households, which causes a decrease in aggregate demand and output.

Specification c) is obtained via lower loan-to-value (LTV) ratios for both households and entrepreneurs. Their demand for loans is more sensitive to income and net worth shocks in countries with higher LTV ratios, given the collateral-based financial accelerator mechanism.³³ A positive shock boosting household demand for housing, or firm demand for capital investment, would lead to an increase in households' borrowing capacity. Clearly, the higher the

33. See Catalano (2014) and Catalano and Pezzolla (2014).

LTV ratio the higher the increase in their borrowing capacity. On the other hand, lower LTV ratios render the collateral constraint more binding and reduce the impact of (positive or negative) shocks to household income. Tables A7 and A8 show that lower LTV ratios induce a slight reduction in the short-run output response to fiscal and structural changes. In particular, a higher financial constraint on working households seems to affect structural reforms covered by public transfers since lower available income reduces aggregate demand, thus, decreasing the impact of structural reforms on the labour market (Table A7 c17). Finally, structural reforms on the labour market implemented during a financial recession particularly affecting the entrepreneur sector, could slightly decrease the positive effects on GDP with respect to the baseline case (Table A8 c17-c28) except for the case of product market reforms that have a positive impact.

6. Government investment

All the experiments described in the previous sections are based on an economy with constant public capital stock, while the private sector accumulates capital given economic market incentives. In this section we investigate what would happen if the policymaker expands the productive capacity of the economy in the long run, by increasing public investment. We assess the interactions between the increase in public investment and the above-mentioned fiscal and structural reforms. We expect a greater benefit to the economy in the long run, at the cost of lower growth in the short term. In fact, the simulations indicate that the positive effect of a wedge cut is enhanced in the presence of a permanent increase in public investment equal to 1 per cent of GDP: this alone has an effect similar to the effect of structural reform to the product market (Table A9). The full package of reforms in the presence of increased public investment shows a strong interaction with adjustment to public spending to balance the budget: the cumulative effect on GDP increases by more than 2 percentage points compared to the full package of reforms in the baseline case (Table A9 c2, c6- . . . -c30, c34). Although at the expense of a slight initial cost due to a tightening of budget coverage, an increase in public investment would ensure higher long-run growth and lead

to an increased chance of spending or increased chance of a reduction in the tax burden on indirect taxes.

7. Conclusions

Reduction in the labour tax wedge and implementation of structural reforms are two crucial instruments for boosting growth and achieving long-run fiscal consolidation goals. In this paper we analyse the effects of both structural reforms, *via* a reduction in prices and wage markups, and a labour tax wedge cut *via* a reduction to the IRPEF and IRAP and SSC tax rates. Our findings indicate that a cut in IRAP is the best tax wedge component to stimulate long-run GDP growth. In all the experiments we propose, the decrease in fiscal revenues coming from the tax wedge cut was offset by the use of different fiscal instruments, namely, a public spending cut, a reduction in public transfers and a shift from a labour to a consumption or property tax rate. We found that in the absence of structural reforms, the reduction in public transfers to households to cover a labour wedge cut is the best instrument to ensure higher GDP growth under the balanced budget constraint. Conversely, in the presence of both a labour tax wedge cut and structural reforms in the product market, the best instrument is public spending, which allows exploitation of the positive effects of simultaneous fiscal and structural reforms. We provide some additional robustness checks regarding the degree of nominal rigidity in the economy and the availability of credit to economic agents with the aim of showing how fiscal policy might be affected by contemporaneous financial distress. There is evidence of a negative impact from the interaction of fiscal reform to the labour wedge with transfers, and aggregate demand. We also consider the role of increasing public investment in order to measure the interaction mechanism between fiscal policy instruments and growing capital stock due to an expansionary public policy. Except for an initial cost in terms of growth, public investment causes widespread improvements to GDP growth, enhancing the positive effects from increased public expenditure on goods and services. The picture that emerges from these various model specifications indicates that the baseline results are fairly robust to changes in the parameters considered and the economic conditions. The simulation exercises show that structural reforms could provide large

payoffs in terms of growth and employment. In particular public spending is shown to be a useful instrument if used in combination with product market reforms. Among the other options, we recommend stimulating public investment, because this could magnify the effects of structural reforms in Italy. Finally, in order to alleviate the short-run costs of a public investment increase, it could be useful to simultaneously reduce the labour tax wedge components.

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APPENDIX

Table A1. Fiscal and structural reforms
(GDP percentage deviation from steady state, Baseline)

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	0.24	0.37	0.43	0.48	0.72	0.83	0.91	0.97	c1
	Pub. Spend.	-	0.34	-0.09	-0.18	-0.17	-0.03	0.10	0.12	0.15	c2
	VAT	+	0.64	0.33	0.27	0.26	0.32	0.40	0.44	0.47	c3
	TASI	+	-1.74	-0.83	-0.48	-0.29	0.24	0.32	0.41	0.46	c4
SSC	Pub. Transf.	-	0.32	0.50	0.56	0.58	0.58	0.54	0.60	0.63	c5
	Pub. Spend.	-	0.25	0.17	0.20	0.22	0.17	0.07	0.08	0.09	c6
	VAT	+	0.45	0.39	0.40	0.41	0.32	0.23	0.26	0.27	c7
	TASI	+	-0.51	-0.05	0.11	0.17	0.25	0.18	0.24	0.27	c8
IRAP	Pub. Transf.	-	0.08	0.34	0.42	0.47	0.64	0.75	0.96	1.11	c9
	Pub. Spend.	-	-0.12	-0.14	-0.09	-0.04	0.08	0.15	0.36	0.53	c10
	VAT	+	0.30	0.20	0.22	0.26	0.33	0.40	0.59	0.74	c11
	TASI	+	-1.42	-0.53	-0.21	-0.09	0.26	0.34	0.57	0.73	c12
IRPEF+SSC + IRAP	Pub. Transf.	-	0.21	0.41	0.46	0.51	0.64	0.70	0.81	0.89	c13
	Pub. Spend.	-	0.16	-0.01	-0.02	0.00	0.07	0.11	0.18	0.24	c14
	VAT	+	0.46	0.31	0.30	0.31	0.32	0.34	0.42	0.48	c15
	TASI	+	-1.20	-0.46	-0.19	-0.08	0.25	0.28	0.40	0.48	c16
LM	Pub. Transf.	+	0.14	0.26	0.28	0.31	0.43	0.49	0.53	0.57	c17
	Pub. Spend.	+	0.12	0.13	0.17	0.22	0.40	0.49	0.56	0.61	c18
	VAT	-	0.06	0.08	0.12	0.17	0.34	0.42	0.47	0.50	c19
	TASI	-	0.31	0.26	0.26	0.29	0.40	0.44	0.47	0.51	c20
PM	Pub. Transf.	+	0.77	1.49	1.61	1.54	1.19	1.03	1.24	1.37	c21
	Pub. Spend.	+	0.91	2.53	2.74	2.58	1.86	1.57	1.88	2.12	c22
	VAT	-	0.08	1.36	1.64	1.66	1.41	1.19	1.47	1.67	c23
	TASI	-	4.56	3.25	2.65	2.29	1.33	1.33	1.54	1.69	c24
LM+PM	Pub. Transf.	+	0.88	1.62	1.76	1.73	1.49	1.37	1.61	1.77	c25
	Pub. Spend.	+	1.03	2.67	2.93	2.82	2.29	2.07	2.45	2.74	c26
	VAT	-	0.14	1.45	1.77	1.84	1.77	1.62	1.95	2.18	c27
	TASI	-	4.90	3.53	2.95	2.61	1.75	1.78	2.03	2.21	c28
IRPEF+SSC + IRAP+LM	Pub. Transf.	+	0.32	0.52	0.60	0.68	0.93	1.04	1.18	1.29	c29
	Pub. Spend.	+	0.27	0.12	0.15	0.22	0.48	0.59	0.74	0.85	c30
	VAT	-	0.52	0.39	0.42	0.47	0.66	0.76	0.89	0.99	c31
	TASI	-	-0.88	-0.20	0.08	0.22	0.65	0.72	0.88	0.98	c32
IRPEF+SSC +IRAP+LM +PM	Pub. Transf.	+	1.07	1.89	2.10	2.11	2.01	1.93	2.27	2.50	c33
	Pub. Spend.	+	1.19	2.66	2.90	2.82	2.35	2.16	2.62	2.97	c34
	VAT	-	0.61	1.77	2.08	2.16	2.09	1.96	2.37	2.66	c35
	TASI	-	3.70	3.07	2.76	2.53	1.99	2.05	2.43	2.68	c36

Note: The values indicate GDP percentage changes after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

**Table A2. Impact of a labour tax wedge cut
(deviation from steady state)**

Variable	Year (IQ)	Public Spending			VAT			TASI			Public Transfers		
		IRPEF	SSC	IRAP	IRPEF	SSC	IRAP	IRPEF	SSC	IRAP	IRPEF	SSC	IRAP
Output	1	0.34	0.25	-0.12	0.64	0.45	0.30	-1.74	-0.51	-1.42	0.24	0.32	0.08
	3	-0.03	0.17	0.08	0.32	0.32	0.33	0.24	0.25	0.26	0.72	0.58	0.64
	5	0.10	0.07	0.15	0.40	0.23	0.40	0.32	0.18	0.34	0.83	0.54	0.75
	10	0.12	0.08	0.36	0.44	0.26	0.59	0.41	0.24	0.57	0.91	0.60	0.96
	20	0.15	0.09	0.53	0.47	0.27	0.74	0.46	0.27	0.73	0.97	0.63	1.11
Consumption	1	0.27	0.19	0.10	0.31	0.15	-0.04	0.22	0.17	0.06	0.01	0.02	-0.11
	3	1.20	0.77	0.61	0.04	0.27	-0.18	1.16	0.78	0.58	0.49	0.36	0.06
	5	1.26	0.75	0.76	0.24	0.18	0.01	1.21	0.75	0.71	0.65	0.36	0.28
	10	1.30	0.76	1.03	0.35	0.20	0.40	1.32	0.77	1.04	0.84	0.45	0.70
	20	1.34	0.77	1.26	0.41	0.24	0.72	1.42	0.82	1.32	0.97	0.53	1.03
Investment	1	2.26	1.57	1.09	2.85	1.90	1.79	-10.97	-3.81	-8.72	0.26	0.33	-0.43
	3	1.05	0.79	2.10	1.46	0.94	2.38	-1.92	-0.91	-0.01	1.15	0.88	2.17
	5	1.09	0.58	1.89	1.38	0.74	2.12	-1.84	-1.16	-0.21	1.22	0.66	1.99
	10	1.05	0.60	1.72	1.30	0.74	1.90	-1.79	-1.03	-0.11	1.09	0.63	1.76
	20	1.03	0.59	1.57	1.25	0.72	1.70	-1.80	-1.03	-0.14	1.01	0.58	1.56
Employment	1	0.55	0.42	-0.17	0.99	0.72	0.48	-2.69	-0.76	-2.18	0.38	0.51	0.15
	3	0.17	0.39	0.14	0.52	0.55	0.38	0.64	0.54	0.47	1.15	0.93	0.88
	5	0.36	0.20	0.05	0.62	0.35	0.26	0.73	0.39	0.35	1.25	0.78	0.77
	10	0.35	0.21	0.05	0.60	0.35	0.22	0.73	0.42	0.32	1.20	0.76	0.68
	20	0.35	0.21	0.04	0.59	0.34	0.18	0.71	0.41	0.26	1.16	0.74	0.60
Unemployment	1	-0.28	-0.65	-0.10	-0.54	-0.84	-0.56	2.51	0.38	1.67	0.33	-0.42	0.03
	3	0.13	-0.34	-0.23	0.12	-0.33	-0.22	0.01	-0.37	-0.29	0.14	-0.31	-0.19
	5	-0.02	-0.01	-0.02	-0.01	0.00	-0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01
	10	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Debt/GDP	1	-0.39	-0.28	0.17	-0.76	-0.52	-0.34	2.11	0.64	1.74	-0.29	-0.36	-0.09
	3	0.21	-0.10	0.05	-0.30	-0.33	-0.31	-0.12	-0.18	-0.18	-0.76	-0.62	-0.68
	5	0.07	0.02	-0.04	-0.40	-0.23	-0.40	-0.20	-0.12	-0.26	-0.87	-0.59	-0.79
	10	0.04	0.01	-0.27	-0.44	-0.26	-0.61	-0.30	-0.18	-0.53	-0.96	-0.65	-1.03
	20	0.01	0.00	-0.47	-0.48	-0.28	-0.78	-0.36	-0.21	-0.71	-1.03	-0.69	-1.20

Note: The values indicate percentage changes after fiscal reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LFP: long-run fiscal coverage change.

Table A3. Impact of structural reforms
(deviation from steady state)

Variable	Year (IQ)	Public Spending			VAT			TASI			Public Transfers		
		LM	PM	LM+PM	LM	PM	LM+PM	LM	PM	LM+PM	LM	PM	LM+PM
Output	1	0.12	0.91	1.03	0.06	0.08	0.14	0.31	4.56	4.90	0.14	0.77	0.88
	3	0.40	1.86	2.29	0.34	1.41	1.77	0.40	1.33	1.75	0.43	1.19	1.49
	5	0.49	1.57	2.07	0.42	1.19	1.62	0.44	1.33	1.78	0.49	1.03	1.37
	10	0.56	1.88	2.45	0.47	1.47	1.95	0.47	1.54	2.03	0.53	1.24	1.61
	20	0.61	2.12	2.74	0.50	1.67	2.18	0.51	1.69	2.21	0.57	1.37	1.77
Consumption	1	0.03	-0.11	-0.09	0.06	-0.05	0.00	0.01	0.00	0.03	-0.04	0.05	0.11
	3	0.18	-0.02	0.17	0.41	1.55	1.99	0.16	0.15	0.32	0.17	0.58	0.91
	5	0.25	0.29	0.54	0.55	1.34	1.90	0.24	0.35	0.60	0.26	0.71	1.10
	10	0.34	0.71	1.05	0.66	1.93	2.60	0.33	0.67	1.01	0.37	1.08	1.54
	20	0.42	1.03	1.45	0.74	2.35	3.11	0.39	0.93	1.33	0.44	1.37	1.89
Investment	1	0.28	1.66	1.96	0.20	-0.10	0.11	1.85	26.31	28.23	-0.22	2.31	2.84
	3	0.60	3.62	4.27	0.54	3.08	3.65	1.57	6.11	7.76	0.58	3.68	4.27
	5	0.62	2.46	3.09	0.54	2.19	2.74	1.55	5.91	7.50	0.61	2.28	2.87
	10	0.55	2.15	2.72	0.47	1.86	2.35	1.48	6.04	7.57	0.55	2.10	2.64
	20	0.50	1.93	2.44	0.42	1.60	2.03	1.48	6.01	7.54	0.50	1.92	2.43
Employment	1	0.18	1.53	1.72	0.10	0.27	0.37	0.49	7.21	7.73	0.22	1.32	1.51
	3	0.64	2.28	2.96	0.56	1.92	2.51	0.61	1.43	2.07	0.66	1.46	1.96
	5	0.72	1.45	2.18	0.65	1.18	1.84	0.64	1.05	1.70	0.71	0.81	1.34
	10	0.71	1.46	2.18	0.63	1.16	1.80	0.60	1.02	1.64	0.68	0.78	1.29
	20	0.71	1.45	2.16	0.63	1.11	1.74	0.59	0.96	1.57	0.66	0.71	1.20
Unemployment	1	-0.27	-0.89	-1.16	-0.21	-0.01	-0.23	-0.51	-5.88	-6.45	-0.17	-1.01	-1.34
	3	-0.97	-0.37	-1.37	-0.96	-0.38	-1.38	-0.96	-0.15	-1.14	-0.96	-0.41	-1.43
	5	-1.05	0.04	-1.01	-1.05	0.05	-0.99	-1.05	0.03	-1.01	-1.05	0.06	-0.99
	10	-1.05	-0.01	-1.06	-1.04	0.00	-1.05	-1.04	0.00	-1.05	-1.04	0.00	-1.05
	20	-1.05	-0.01	-1.05	-1.04	0.00	-1.04	-1.04	0.00	-1.04	-1.04	0.00	-1.04
Debt/GDP	1	-0.13	-0.97	-1.11	-0.07	0.04	-0.03	-0.38	-5.33	-5.71	-0.17	-0.79	-0.92
	3	-0.44	-2.06	-2.52	-0.34	-1.43	-1.78	-0.43	-1.42	-1.86	-0.47	-1.24	-1.53
	5	-0.53	-1.76	-2.29	-0.42	-1.21	-1.63	-0.48	-1.50	-1.97	-0.53	-1.10	-1.43
	10	-0.61	-2.12	-2.72	-0.48	-1.52	-1.99	-0.52	-1.74	-2.26	-0.58	-1.32	-1.69
	20	-0.68	-2.39	-3.05	-0.52	-1.73	-2.24	-0.56	-1.90	-2.46	-0.62	-1.47	-1.87

Note: The values indicate percentage changes after structural reforms. LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ L: long-run fiscal coverage change.

**Table A4. Fiscal and structural reforms with a lower price rigidity
(GDP percentage deviation from baseline)**

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	-0.01	-0.01	0.01	0.02	0.03	0.01	0.00	0.00	c1
	Pub. Spend.	-	-0.13	0.08	0.14	0.15	0.08	0.01	0.01	0.00	c2
	VAT	+	-0.15	-0.05	-0.01	0.01	0.03	0.00	0.00	0.00	c3
	TASI	+	0.53	0.29	0.19	0.14	0.02	0.02	0.01	0.00	c4
SSC	Pub. Transf.	-	0.09	0.13	0.13	0.11	0.03	0.01	0.01	0.00	c5
	Pub. Spend.	-	0.15	0.30	0.28	0.22	0.05	0.02	0.01	0.00	c6
	VAT	+	0.03	0.15	0.16	0.13	0.03	0.00	0.00	0.00	c7
	TASI	+	0.53	0.33	0.23	0.17	0.01	0.02	0.01	0.00	c8
IRAP	Pub. Transf.	-	0.09	0.11	0.10	0.09	0.03	0.01	0.01	0.00	c9
	Pub. Spend.	-	0.19	0.30	0.28	0.23	0.07	0.03	0.01	0.00	c10
	VAT	+	0.01	0.13	0.13	0.11	0.03	0.01	0.00	0.00	c11
	TASI	+	0.63	0.36	0.24	0.17	0.01	0.02	0.01	0.00	c12
IRPEF+SSC + IRAP	Pub. Transf.	-	0.05	0.07	0.08	0.07	0.03	0.01	0.00	0.00	c13
	Pub. Spend.	-	0.06	0.22	0.23	0.20	0.07	0.02	0.01	0.00	c14
	VAT	+	-0.03	0.07	0.09	0.08	0.03	0.00	0.00	0.00	c15
	TASI	+	0.55	0.32	0.21	0.16	0.01	0.02	0.01	0.00	c16
LM	Pub. Transf.	+	-0.13	-0.42	-0.52	-0.50	-0.27	-0.06	-0.04	-0.01	c17
	Pub. Spend.	+	-0.02	0.01	0.02	0.03	0.02	0.00	0.00	0.00	c18
	VAT	-	-0.01	0.01	0.03	0.03	0.02	0.00	0.00	0.00	c19
	TASI	-	-0.04	-0.01	0.00	0.01	0.01	0.00	0.00	0.00	c20
PM	Pub. Transf.	+	0.07	0.04	0.04	0.05	0.04	0.01	0.01	0.00	c21
	Pub. Spend.	+	-0.12	-1.07	-1.21	-1.10	-0.46	-0.12	-0.07	-0.02	c22
	VAT	-	0.22	-0.42	-0.58	-0.60	-0.34	-0.06	-0.03	-0.01	c23
	TASI	-	-2.06	-1.33	-1.00	-0.79	-0.18	-0.09	-0.06	-0.02	c24
LM+PM	Pub. Transf.	+	-0.14	-0.43	-0.51	-0.49	-0.26	-0.06	-0.04	-0.01	c25
	Pub. Spend.	+	-0.14	-1.06	-1.20	-1.08	-0.45	-0.12	-0.07	-0.02	c26
	VAT	-	0.20	-0.40	-0.56	-0.58	-0.32	-0.05	-0.03	-0.01	c27
	TASI	-	-2.11	-1.35	-1.00	-0.79	-0.17	-0.09	-0.06	-0.01	c28
IRPEF+SSC + IRAP+LM	Pub. Transf.	+	0.05	0.07	0.09	0.09	0.04	0.01	0.01	0.00	c29
	Pub. Spend.	+	0.04	0.23	0.25	0.23	0.09	0.02	0.01	0.00	c30
	VAT	-	-0.05	0.09	0.12	0.11	0.05	0.01	0.01	0.00	c31
	TASI	-	0.51	0.31	0.22	0.17	0.03	0.02	0.01	0.00	c32
IRPEF+SSC +IRAP+LM +PM	Pub. Transf.	+	-0.09	-0.34	-0.42	-0.41	-0.23	-0.05	-0.03	-0.01	c33
	Pub. Spend.	+	-0.08	-0.84	-0.96	-0.87	-0.38	-0.09	-0.06	-0.02	c34
	VAT	-	0.17	-0.33	-0.47	-0.49	-0.29	-0.05	-0.03	-0.01	c35
	TASI	-	-1.55	-1.02	-0.78	-0.62	-0.16	-0.07	-0.05	-0.01	c36

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

**Table A5. Fiscal and structural reforms with a higher wage rigidity
(GDP percentage deviation from baseline)**

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	-0.04	-0.05	-0.07	-0.08	-0.09	-0.02	0.00	0.00	c1
	Pub. Spend.	-	-0.02	-0.05	-0.08	-0.10	-0.11	-0.02	0.00	0.00	c2
	VAT	+	0.00	-0.02	-0.03	-0.05	-0.06	-0.01	0.00	0.00	c3
	TASI	+	-0.20	-0.17	-0.17	-0.16	-0.09	-0.02	0.00	0.00	c4
SSC	Pub. Transf.	-	0.07	0.10	0.13	0.16	0.19	0.06	0.01	0.00	c5
	Pub. Spend.	-	0.06	0.11	0.17	0.21	0.29	0.11	0.02	0.01	c6
	VAT	+	0.04	0.09	0.14	0.18	0.25	0.09	0.01	0.00	c7
	TASI	+	0.29	0.24	0.25	0.27	0.24	0.07	0.01	0.00	c8
IRAP	Pub. Transf.	-	0.04	0.05	0.07	0.09	0.11	0.04	0.01	0.00	c9
	Pub. Spend.	-	0.04	0.06	0.09	0.11	0.18	0.08	0.02	0.01	c10
	VAT	+	0.02	0.06	0.09	0.11	0.16	0.06	0.01	0.00	c11
	TASI	+	0.13	0.11	0.12	0.14	0.14	0.05	0.01	0.00	c12
IRPEF+SSC +IRAP	Pub. Transf.	-	0.02	0.03	0.04	0.05	0.07	0.03	0.01	0.00	c13
	Pub. Spend.	-	0.03	0.04	0.06	0.07	0.12	0.06	0.01	0.00	c14
	VAT	+	0.02	0.04	0.06	0.08	0.11	0.04	0.01	0.00	c15
	TASI	+	0.07	0.06	0.07	0.08	0.09	0.03	0.01	0.00	c16
LM	Pub. Transf.	+	0.12	0.20	0.26	0.31	0.29	0.04	0.01	0.00	c17
	Pub. Spend.	+	-0.01	-0.03	-0.05	-0.06	-0.07	-0.02	0.00	0.00	c18
	VAT	-	-0.01	-0.03	-0.04	-0.05	-0.06	-0.01	0.00	0.00	c19
	TASI	-	-0.07	-0.06	-0.06	-0.07	-0.05	-0.01	0.00	0.00	c20
PM	Pub. Transf.	+	-0.01	0.00	0.01	0.01	0.03	0.03	0.02	0.00	c21
	Pub. Spend.	+	0.08	0.24	0.37	0.46	0.42	0.06	0.03	0.01	c22
	VAT	-	0.04	0.14	0.22	0.28	0.29	0.03	0.01	0.00	c23
	TASI	-	0.64	0.57	0.56	0.55	0.32	0.04	0.02	0.01	c24
LM+PM	Pub. Transf.	+	0.10	0.17	0.23	0.27	0.25	0.04	0.01	0.00	c25
	Pub. Spend.	+	0.07	0.21	0.32	0.40	0.36	0.05	0.03	0.01	c26
	VAT	-	0.03	0.11	0.18	0.23	0.24	0.03	0.01	0.00	c27
	TASI	-	0.57	0.52	0.51	0.49	0.28	0.04	0.02	0.01	c28
IRPEF+SSC + IRAP+LM	Pub. Transf.	+	0.01	0.01	0.01	0.01	0.03	0.02	0.01	0.00	c29
	Pub. Spend.	+	0.01	0.01	0.01	0.01	0.05	0.04	0.01	0.00	c30
	VAT	-	0.01	0.02	0.02	0.03	0.06	0.03	0.01	0.00	c31
	TASI	-	0.00	0.00	0.01	0.02	0.04	0.03	0.01	0.00	c32
IRPEF+SSC +IRAP+LM +PM	Pub. Transf.	+	0.13	0.21	0.28	0.33	0.33	0.07	0.02	0.01	c33
	Pub. Spend.	+	0.10	0.25	0.38	0.47	0.49	0.11	0.04	0.01	c34
	VAT	-	0.05	0.16	0.25	0.32	0.36	0.08	0.02	0.01	c35
	TASI	-	0.65	0.58	0.58	0.57	0.38	0.07	0.03	0.01	c36

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

Table A6. Fiscal and structural reforms with a higher percentage of constrained households (marginal GDP percentage deviation from baseline)

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	-0.02	-0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01	c1
	Pub. Spend.	-	-0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	c2
	VAT	+	-0.02	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	c3
	TASI	+	-0.05	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	c4
SSC	Pub. Transf.	-	0.02	0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01	c5
	Pub. Spend.	-	0.04	0.06	0.03	0.02	-0.01	0.00	0.00	0.00	c6
	VAT	+	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	c7
	TASI	+	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	c8
IRAP	Pub. Transf.	-	0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	c9
	Pub. Spend.	-	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.00	c10
	VAT	+	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	c11
	TASI	+	-0.06	-0.03	-0.01	-0.01	0.00	0.00	0.00	0.00	c12
IRPEF+SSC+IRAP	Pub. Transf.	-	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	c13
	Pub. Spend.	-	0.01	0.03	0.02	0.01	0.00	0.00	0.00	0.00	c14
	VAT	+	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c15
	TASI	+	-0.03	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c16
LM	Pub. Transf.	+	-0.01	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	c17
	Pub. Spend.	+	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c18
	VAT	-	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c19
	TASI	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c20
PM	Pub. Transf.	+	-0.05	-0.13	-0.09	-0.07	-0.01	-0.01	-0.01	-0.01	c21
	Pub. Spend.	+	-0.08	-0.09	0.00	0.02	0.00	0.00	0.00	0.00	c22
	VAT	-	-0.03	-0.02	0.01	0.01	0.00	0.00	0.00	0.00	c23
	TASI	-	0.05	0.02	0.01	0.01	0.00	0.00	0.00	0.00	c24
LM+PM	Pub. Transf.	+	-0.06	-0.13	-0.09	-0.06	-0.01	-0.01	-0.01	-0.01	c25
	Pub. Spend.	+	-0.10	-0.10	-0.01	0.01	0.00	0.00	0.00	0.00	c26
	VAT	-	-0.04	-0.03	0.00	0.01	0.00	0.00	0.00	0.00	c27
	TASI	-	0.05	0.02	0.01	0.01	0.00	0.00	0.01	0.01	c28
IRPEF+SSC+IRAP+LM	Pub. Transf.	+	-0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	c29
	Pub. Spend.	+	-0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	c30
	VAT	-	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c31
	TASI	-	-0.03	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c32
IRPEF+SSC+IRAP+LM+PM	Pub. Transf.	+	-0.06	-0.12	-0.08	-0.06	-0.01	-0.01	-0.01	-0.01	c33
	Pub. Spend.	+	-0.09	-0.06	0.02	0.02	0.00	0.00	0.00	0.00	c34
	VAT	-	-0.04	-0.03	0.00	0.01	0.00	0.00	0.00	0.00	c35
	TASI	-	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	c36

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

Table A7. Fiscal and structural reforms with a lower LTV ratio (households)
(marginal GDP percentage deviation from baseline)

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	c1
	Pub. Spend.	-	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c2
	VAT	+	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	c3
	TASI	+	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	c4
SSC	Pub. Transf.	-	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	c5
	Pub. Spend.	-	-0.03	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	c6
	VAT	+	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c7
	TASI	+	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c8
IRAP	Pub. Transf.	-	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	c9
	Pub. Spend.	-	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c10
	VAT	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c11
	TASI	+	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	c12
IRPEF+SSC+IRAP	Pub. Transf.	-	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	c13
	Pub. Spend.	-	-0.02	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	c14
	VAT	+	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	c15
	TASI	+	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	c16
LM	Pub. Transf.	+	-0.62	-1.22	-1.32	-1.22	-0.76	-0.53	-0.70	-0.80	c17
	Pub. Spend.	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c18
	VAT	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c19
	TASI	-	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c20
PM	Pub. Transf.	+	0.90	1.17	1.11	0.95	0.23	-0.13	-0.06	0.21	c21
	Pub. Spend.	+	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	c22
	VAT	-	0.03	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	c23
	TASI	-	-0.08	-0.03	-0.01	0.00	0.01	0.00	0.00	0.00	c24
LM+PM	Pub. Transf.	+	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	c25
	Pub. Spend.	+	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	c26
	VAT	-	0.02	-0.04	-0.05	-0.05	-0.04	-0.02	-0.01	0.01	c27
	TASI	-	-0.08	-0.03	-0.01	0.00	0.01	0.00	0.00	0.00	c28
IRPEF+SSC+IRAP+LM	Pub. Transf.	+	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	c29
	Pub. Spend.	+	-0.02	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	c30
	VAT	-	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	c31
	TASI	-	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	c32
IRPEF+SSC+IRAP+LM+PM	Pub. Transf.	+	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	c33
	Pub. Spend.	+	0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	c34
	VAT	-	0.02	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	c35
	TASI	-	-0.06	-0.02	-0.01	0.00	0.01	0.00	0.00	0.00	c36

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

Table A8. Fiscal and structural reforms with a lower LTV ratio (entrepreneur)
(marginal GDP percentage deviation from baseline)

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	-0.02	-0.08	-0.08	-0.07	-0.07	-0.08	-0.09	-0.09	c1
	Pub. Spend.	-	-0.01	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	c2
	VAT	+	-0.01	-0.01	0.00	0.00	0.00	0.00	-0.01	-0.01	c3
	TASI	+	-0.01	-0.01	0.00	0.00	0.00	-0.01	-0.01	-0.01	c4
SSC	Pub. Transf.	-	-0.02	-0.07	-0.08	-0.08	-0.08	-0.09	-0.09	-0.09	c5
	Pub. Spend.	-	0.01	0.01	0.00	0.00	-0.01	0.00	0.00	0.00	c6
	VAT	+	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	c7
	TASI	+	-0.01	-0.01	0.00	0.00	-0.01	-0.01	-0.01	0.00	c8
IRAP	Pub. Transf.	-	-0.02	-0.08	-0.08	-0.08	-0.08	-0.09	-0.09	-0.09	c9
	Pub. Spend.	-	0.00	0.00	-0.01	-0.01	-0.02	-0.01	-0.01	0.00	c10
	VAT	+	0.00	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	c11
	TASI	+	-0.06	-0.03	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	c12
IRPEF+SSC + IRAP	Pub. Transf.	-	-0.02	-0.08	-0.08	-0.08	-0.08	-0.08	-0.09	-0.09	c13
	Pub. Spend.	-	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	c14
	VAT	+	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	c15
	TASI	+	-0.03	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	c16
LM	Pub. Transf.	+	-0.64	-1.30	-1.40	-1.30	-0.84	-0.62	-0.79	-0.90	c17
	Pub. Spend.	+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c18
	VAT	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c19
	TASI	-	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	c20
PM	Pub. Transf.	+	0.86	1.05	0.98	0.82	0.09	-0.25	-0.17	0.12	c21
	Pub. Spend.	+	-0.02	-0.09	-0.09	-0.07	-0.03	-0.02	-0.01	0.01	c22
	VAT	-	0.02	-0.03	-0.05	-0.04	-0.03	-0.02	-0.01	0.01	c23
	TASI	-	-0.10	-0.03	-0.04	-0.04	-0.03	-0.03	-0.01	0.01	c24
LM+PM	Pub. Transf.	+	-0.02	-0.10	-0.11	-0.12	-0.13	-0.12	-0.10	-0.09	c25
	Pub. Spend.	+	-0.03	-0.09	-0.09	-0.07	-0.04	-0.03	-0.01	0.01	c26
	VAT	-	0.02	-0.04	-0.05	-0.05	-0.04	-0.02	-0.01	0.01	c27
	TASI	-	-0.12	-0.03	-0.04	-0.04	-0.03	-0.03	-0.01	0.00	c28
IRPEF+SSC + IRAP+LM	Pub. Transf.	+	-0.02	-0.08	-0.08	-0.08	-0.08	-0.09	-0.09	-0.09	c29
	Pub. Spend.	+	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	c30
	VAT	-	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	c31
	TASI	-	-0.04	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	c32
IRPEF+SSC + IRAP+LM +PM	Pub. Transf.	+	-0.02	-0.10	-0.12	-0.12	-0.13	-0.12	-0.10	-0.09	c33
	Pub. Spend.	+	-0.02	-0.08	-0.09	-0.08	-0.04	-0.03	-0.01	0.00	c34
	VAT	-	0.02	-0.04	-0.06	-0.05	-0.05	-0.03	-0.01	0.00	c35
	TASI	-	-0.15	-0.05	-0.05	-0.05	-0.04	-0.04	-0.02	0.00	c36

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

Table A9. Fiscal and structural reforms with an increase in public investment
(marginal GDP percentage deviation from baseline)

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
IRPEF	Pub. Transf.	-	-0.15	0.29	0.42	0.53	0.94	1.13	1.28	1.14	c1
	Pub. Spend.	-	-0.27	-0.86	-0.22	0.17	0.74	0.98	1.58	2.11	c2
	VAT	+	1.64	-0.12	0.25	0.47	0.86	1.08	1.46	1.62	c3
	TASI	+	-7.21	1.65	1.49	1.22	0.88	1.15	1.48	1.62	c4
SSC	Pub. Transf.	-	-0.15	0.20	0.37	0.46	0.83	1.01	1.14	0.99	c5
	Pub. Spend.	-	-0.46	-0.30	0.10	0.30	0.58	0.97	1.58	2.11	c6
	VAT	+	1.34	0.24	0.44	0.54	0.75	1.07	1.46	1.62	c7
	TASI	+	-5.06	1.36	1.17	0.92	0.78	1.14	1.48	1.63	c8
IRAP	Pub. Transf.	-	-0.15	0.19	0.36	0.45	0.81	0.98	1.10	0.96	c9
	Pub. Spend.	-	-1.15	-0.32	0.12	0.35	0.64	0.98	1.57	2.09	c10
	VAT	+	1.06	0.06	0.41	0.57	0.79	1.07	1.43	1.58	c11
	TASI	+	-6.50	1.79	1.45	1.11	0.79	1.13	1.45	1.59	c12
IRPEF+SSC+IRAP	Pub. Transf.	-	-0.15	0.19	0.36	0.46	0.82	1.00	1.13	0.98	c13
	Pub. Spend.	-	-0.61	-0.50	0.00	0.27	0.65	0.97	1.58	2.10	c14
	VAT	+	1.34	0.06	0.36	0.52	0.80	1.07	1.45	1.60	c15
	TASI	+	-6.20	1.57	1.36	1.08	0.81	1.13	1.47	1.61	c16
LM	Pub. Transf.	+	-0.15	0.19	0.36	0.46	0.83	1.01	1.14	0.99	c17
	Pub. Spend.	+	-0.45	-0.34	-0.19	-0.05	0.54	0.97	1.64	2.24	c18
	VAT	-	0.13	0.13	0.21	0.33	0.76	1.09	1.53	1.72	c19
	TASI	-	-2.02	-0.61	-0.09	0.13	0.86	1.15	1.56	1.75	c20
PM	Pub. Transf.	+	-0.13	0.22	0.38	0.46	0.78	0.96	1.10	0.95	c21
	Pub. Spend.	+	-0.40	-0.18	-0.03	0.09	0.55	0.94	1.61	2.21	c22
	VAT	-	0.13	0.15	0.23	0.34	0.73	1.05	1.48	1.69	c23
	TASI	-	-1.88	-0.48	0.01	0.19	0.80	1.10	1.53	1.73	c24
LM+PM	Pub. Transf.	+	-0.13	0.22	0.38	0.46	0.78	0.95	1.09	0.95	c25
	Pub. Spend.	+	-0.40	-0.18	-0.03	0.09	0.55	0.94	1.61	2.21	c26
	VAT	-	0.13	0.14	0.23	0.34	0.73	1.05	1.48	1.68	c27
	TASI	-	-1.89	-0.48	0.00	0.19	0.80	1.10	1.53	1.74	c28
IRPEF+SSC+IRAP+LM	Pub. Transf.	+	-0.15	0.19	0.36	0.45	0.82	0.99	1.13	0.98	c29
	Pub. Spend.	+	-0.46	-0.35	-0.20	-0.05	0.54	0.96	1.63	2.23	c30
	VAT	-	0.13	0.12	0.21	0.32	0.75	1.08	1.52	1.71	c31
	TASI	-	-2.01	-0.59	-0.07	0.14	0.86	1.13	1.54	1.73	c32
IRPEF+SSC+IRAP+LM+PM	Pub. Transf.	+	-0.13	0.22	0.38	0.46	0.77	0.94	1.08	0.94	c33
	Pub. Spend.	+	-0.40	-0.19	-0.04	0.08	0.55	0.93	1.60	2.20	c34
	VAT	-	0.13	0.14	0.23	0.33	0.72	1.04	1.47	1.68	c35
	TASI	-	-1.89	-0.47	0.02	0.20	0.79	1.09	1.51	1.71	c36

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after fiscal and/or structural reforms. Labour tax wedge includes IRPEF (labour income tax), SSC (social security contributions paid only by employers), and IRAP (regional tax on productive activities). LM: labour market reform (reduction in wage markup); PM: product market reform (reduction in price markup); LM+PM simultaneous labour and product market reform. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after any shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. ΔLP: long-run fiscal coverage change.

Table A9bis. Fiscal and structural reforms with an increase in public investment (marginal GDP percentage deviation from baseline)

Reform	Coverage	Δ LP	1st year				3rd year	5th year	10th year	20th year	Column
			IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ	
Increase in government investment (1 pp of Gdp)											
PUBLIC INVESTMENT	Pub.Transf.	+	-0.12	0.34	0.51	0.60	0.98	1.16	1.31	1.17	c37
	Pub.Spend	+	-0.45	-0.33	-0.19	-0.05	0.53	0.96	1.64	2.24	c38
	VAT	-	0.13	0.13	0.22	0.33	0.76	1.09	1.53	1.72	c39
	TASI	-	-2.01	-0.60	-0.08	0.13	0.86	1.15	1.56	1.74	c40

Note: The values indicate GDP percentage deviations from the baseline in Table A1 after an increase in public investment. All experiments assume a balanced budget scenario. Fiscal coverages to balance the budget, after the shock, include: public spending or transfer adjustment; VAT or TASI (house services tax) adjustment. Δ LP: long-run fiscal coverage change.

Table A10. Fiscal and structural reforms: balanced vs unbalanced budget (marginal GDP percentage deviation from baseline)

Reform	Budget	1st year				3rd year	5th year	10th year	20th year
		IQ	IIQ	IIIQ	IVQ	IQ	IQ	IQ	IQ
IRPEF	Balanced	0.34	-0.09	-0.18	-0.17	-0.03	0.10	0.12	0.15
	Unbalanced	1.25	0.06	-0.67	-1.17	-1.90	-0.65	0.37	0.72
SSC	Balanced	0.25	0.17	0.20	0.22	0.17	0.07	0.08	0.09
	Unbalanced	0.94	0.31	-0.12	-0.43	-0.94	-0.29	0.23	0.42
IRAP	Balanced	-0.12	-0.14	-0.09	-0.04	0.08	0.15	0.36	0.53
	Unbalanced	0.70	0.12	-0.30	-0.60	-1.06	-0.23	0.52	0.86
LM	Balanced	0.12	0.13	0.17	0.22	0.40	0.49	0.56	0.61
	Unbalanced	-0.12	0.32	0.61	0.82	1.06	0.64	0.45	0.41
PM	Balanced	0.91	2.53	2.74	2.58	1.86	1.57	1.88	2.12
	Unbalanced	-0.47	2.76	4.35	5.17	4.70	1.91	1.38	1.25
PUBLIC INVESTMENT	Balanced	-0.45	-0.33	-0.19	-0.05	0.53	0.96	1.64	2.24
	Unbalanced	-2.50	5.02	9.82	11.80	4.00	1.46	0.41	0.31

Note: Balanced budget implies public spending adjustment as fiscal coverage in both the short and the long run (for further details, see Table A1); unbalanced budget implies a public debt adjustment in both the short and the long run, and only a transitory government spending adjustment.

TAX POLICY, INVESTMENT DECISIONS AND ECONOMIC GROWTH¹

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This paper evaluates the impact of the taxation system on production factor costs, investment and economic activity. This is performed on the basis of detailed analysis of the Italian tax system and the production of own estimates of the user cost of capital to labour, which capture the contribution of tax rates, tax incentives and other underlying factors. The study identifies the link between user cost and investment in the context of a full econometric model of investment demand determinants that includes aggregate demand, expectations and uncertainty. Finally, the study evaluates the past contribution of taxation to investment and economic activity, and assesses the impact of future tax reform proposals.

Keywords: corporate taxation, user cost of capital, labour cost, investment, policy evaluation and modelling, expectations, uncertainty.

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1. Introduction

Since ancient times the primary objective of taxation has been to collect revenue in order to finance state provision of essential public services. At the same time, enlightened by advances in public sector economics, current taxation policies are designed to strike the difficult balance between achieving minimal disincentives to undertake productive activities and maximum social fairness.

In this context, corporate taxation is a key part of the taxation system that directly affects current and future business decisions of the private sector. Corporate taxes impact capital and labour costs and, hence, not just current production and hiring decisions, but also the net present value of future production, which motivates corporate investment. Corporate taxation policy has been used as an instrument to both fine-tune investment and output fluctuations over the business cycle, and spur long-term economic growth and national welfare. In the last few decades, the importance of optimally designed, growth-friendly taxation policies has been further emphasised by the enhanced international mobility of capital in search of a lower tax burden and modest production costs to ensure competitiveness. Policy options, which reignite the engine of economic growth in Europe, generating welfare and internal demand, offer the only viable exit from the financial and debt crisis, as suggested by Onofri and Tsenova (2014).

This paper evaluates the empirical significance of corporate taxation policies on the macroeconomic dynamics of Italy and, on that basis, assesses the likely transmission and economic impact of future policy changes in that area. We study closely the case of Italy since it is the third largest euro area economy and because its relatively high public debt, subdued economic growth and stringent governance rules set out in the Fiscal Compact, impose critical trade-offs on fiscal policy-making aimed at escaping from the global economic crisis. Also, since Italy's corporate tax system has frequently changed over the past twenty years, this country would seem to have been actively using corporate taxation reforms to steer its economy. This provides valuable historical evidence on the efficiency of corporate taxation as a policy instrument. We also aim

at shedding more light on the possible impact of policy proposals to further reduce or abolish some corporate taxes.

To this end, we consider in great detail both the structure of the corporate taxation system in Italy and its numerous reforms, and scrupulously measure their impact on the user cost of capital to labour in the period 1996Q1-2012Q4. We construct our own measure of user cost and its components in order to distinguish the impact of the taxation system, inclusive of tax rates and temporary incentives, from other underlying factors such as monetary policy and relative price movements. We estimate the investment channel in the transmission of taxation policies to examine the link between the user cost of capital to labour within the context of a theoretically motivated Vector Error Correction Model (VECM) that contains a full set of other factors such as demand realisations, expectations and uncertainty. We use the model to conduct counterfactual historical analysis. Finally, we apply Prometeia's quarterly macro-economic model for the Italian economy, estimated on detailed sectorally disaggregated data and incorporating the investment channel, to evaluate the transmission and overall impact on economic activity of recent policy proposals to reduce corporate taxes in Italy. We compare and contrast those policies with a corresponding increase in public spending which provides a perspective on the advantages and limits of using the corporate tax system as tool to fine-tune the business cycle and stimulate long-term economic growth.

The paper builds on the micro-founded theoretical literature (e.g. Jorgenson, 1996, Devereux and Griffith, 1998, Jorgenson and Yun, 2012), which regards the user cost of capital to labour as being at the core of taxation and monetary policy transmission over the business cycle and over the longer-term. It also widens the scope and policy relevant discourse compared to other valuable efforts to analyse the direct consequences of tax reforms in Italy such as Bontempi *et al.* (1995), Bontempi *et al.* (2010), Bordignon *et al.* (2001), Bresciani *et al.* (2003), Bernasconi *et al.* (2005) and Caiumi *et al.* (2013). Whereas several empirical studies had failed to demonstrate the existence of an econometric link between the user cost of capital and investment at macro level, see Guiso *et al.* (2002), we prove successful in that direction. Furthermore, our econometric estimation incorporates demand expectations, fore-

cast and financial uncertainty in addition to observed data on supply and demand factors, which confirms previous applied studies such as Bloom (2000), Antonietti *et al.* (2015), Guthrie (2012) and Tsenova (2014), of the importance of these elements for financial and real sector decision-making.

The results of the analysis provide evidence of a significant link between the user cost of capital to labour and corporate investment. Changes in the taxation system seem to be the main determinant of variation in the capital to labour cost, leaving a very limited role for other considered factors such as monetary policy and relative prices. The cost of capital to labour has been displaying a downward trend as result of a gradual reduction in corporate tax rates and/or bases. Cyclical fluctuations around that trend can be attributed mostly to temporary fiscal incentives.

According to the econometric model of investment, reductions in the user cost of capital relative to labour have a significant and positive effect on corporate investment in both the short- and the longer-term. We also find an influence of Keynesian type demand factors such as aggregate demand, demand expectations and uncertainty. Historically, temporary tax incentives seem to have made an important contribution to boosting investment and economic activity during downturns. Reductions in tax rates and/or tax bases appear to bring about permanent alleviation of user cost and stimulus to economic activity.

The outcome of the macroeconomic assessment of policy proposals to further reduce corporate tax rates in Italy show that decreasing the regional tax on corporate activity (IRAP) would be more beneficial than comparable decline in the corporate income tax (IRES). This is because the macroeconomic model incorporates not only the investment channel in the transmission of tax policy, but also other endogenous links with impact on labour demand. Bearing in mind that in the case of IRAP tax reduction would diminish both the user cost of capital and labour, which stimulates investment, as well as employment. Instead, IRES would encourage certain degree of substitution between capital and labour, dampening labour demand and, consequently, economic activity. An alternative equivalent increase in public investment could produce overwhelmingly stronger improvement in economic activity

through its positive effect on aggregate demand and positive spillovers on corporate investment and debt sustainability.

The paper is organised as follows: Section 2 provides an overview on the evolution of corporate tax legislation in Italy; Section 3 presents the methodology, data and parameterisation; Section 4 reports the empirical results for measuring the user cost of capital to labour and its underlying components, based on estimation of a full econometric model that includes the determinants of investment demand, to assess the impact of past tax policies and future tax proposals; Section 6 concludes.

2. Italy's corporate tax system

This section provides an overview of the structure of corporate taxation in Italy and its evolution through time. Starting in the early 1990s, the Italian tax system has undergone a number of more or less substantial reforms, delivering ample basis for analysis and comparisons. The longer-term goals of the Italian government are common to all market-based economies:

- reducing the tax burden on private agents to spur economic activity and future government revenue;
- minimising distortions from corporate income accounting giving preference to debt funding over equity financing;
- encouraging investment in productive activities as opposed to consumption and accumulation of financial or real estate wealth;
- supporting investment in sectors of strategic importance for the country's long-term competitiveness and welfare.

Moving towards those complex and sometimes conflicting goals involves difficult trade-offs and decisions. Over the short-term governments try to minimise economic volatility by providing temporary incentives to support the execution of investment plans during downturns, thereby reigniting economic growth. The recent global economic crisis and the size of Italy's and the euro area's public debt has further narrowed the feasible options for fiscal and economic policy manoeuvre.

When trying to quantify the impact of Italy's numerous tax reforms on the various components of the user cost of capital and

labour, it must be remembered that the devil is in the detail. In order to apply the theoretical formulas on user cost described in the next section, it is important to gain a deep understanding of the frequency of tax reforms and their legal basis, as well as the key changes they bring to parameters and user cost formation such as different tax rates, composition of the tax bases, depreciation rates, social security contributions, temporary and permanent allowances.

We start our review at the beginning of 1996, two years before one of the most important and comprehensive reforms in Italy entered into force. This reform is known as “Visco's reform” after Vincenzo Visco, the Minister of Finance responsible for its design and implementation. Prior to this reform, the corporate tax system consisted mainly of a **corporation tax** – *Imposta sul Reddito delle Persone Giuridiche (IRPEG)* and a **local income tax** – *Imposta Locale sui Redditi (ILOR)*. Both taxes were levied on corporate profit at a national uniform rate with ILOR non-deductible from the tax base. Two more taxes applied: a **tax on business net worth** – *Imposta Patrimoniale*, and a **local property tax** – *Imposta Comunale sugli Immobili (ICI)*. The health care system was financed by social contributions paid by both employers and employees.

Tax incentives were provided to encourage new investment in capital. The first such measure was introduced in 1994, drafted by Italy's Finance Minister Giulio Tremonti, and known as “Tremonti law”.² The new rules granted firms special deductions from taxable income IRPEG for a period of three years, namely from the beginning of 1994 to the end of 1996. For each fiscal year, the special deductions were computed as 50% of the cost of new investment that exceeded the average of the cost of new investment made during the previous five fiscal years. These investment tax incentives applied in addition to the normal depreciation allowances, with the result that, for income tax purposes, the investor was able to write off more than the cost of the investment and, thus, effectively reduce corporate income tax.

In the face of this tax system structure, Visco's reform had several objectives. Firstly, it aimed at reducing Italy's corporate tax burden to be closer to that in other European countries, through

2. D.L. 357/1994 became Law 489/1994.

the imposition of a new **regional tax on business activity** *Imposta Regionale sulle Attività Produttive (IRAP)*, which substituted for a number of taxes such as ILOR, Patrimoniale, payroll contributions to finance the health system and other minor taxes. The IRAP could be considered a net income type of value added tax levied at source.³ IRAP had a broad base, and applied to the value added produced by companies, i.e. profit inclusive of interest payments and labour costs. Outlay for capital goods was deducted from the tax base in line with normal income tax depreciation rules. Due to its broad tax base, IRAP, in theory, did not produce distortions in the choice between capital and labour. However, in practice, in cases where tax depreciation exceeded economic depreciation, capital could be favoured over labour. Another consequence of the broad base was that the statutory rate was significantly lower, i.e. 4.25% on average with sectoral differentiation.⁴

Secondly, the reform introduced a *Dual Income Tax (DIT)*,⁵ which, along with IRAP, aimed at reducing the historical bias towards debt-financing. This bias generally occurs because interest payments are typically deductible from the tax base, which encourages enterprises to finance their operations with debt rather than equity (see Graham, 1996 and 2000). On the other hand, there were perhaps other objective reasons, rooted in the structure of the financial system in Europe in which, traditionally, banking institutions, rather than stock markets, provide the bulk of financial intermediation to companies.

The DIT only affected corporate income – the “duality” referring to the different returns on capital. Business income was split into two parts, to which different tax rates were applied: a standard 37% rate on capital income minus “ordinary income” (i.e. return after-tax on new equity and retained earnings); the tax rate on “ordinary income” was 19%. To determine “ordinary income”, the Ministry of Finance set an annual “normal return” on the basis of the market interest rate. To cap potential revenue losses for the

3. When IRAP was introduced, academic debate was in favour of it, but there were few examples of its application in practice.

4. The rate was 2.5% for the agricultural sector and 5.4% for the banking and financial intermediation sector.

5. D. lgs. 18.12.1997, n. 466.

state, the cumulative result of all allowances could not be reduced further than an effective average tax rate of 27%.⁶

Implementation of the IRAP and the DIT resulted in a reduced tax burden on firms in general, and particularly on those wishing to increase their capitalisation. These taxes also contributed to reducing the gap between the cost of capital from debt-financing and from own equity.

To reinforce the incentives to invest, the government decided to expand the definition of “ordinary income” coverage.⁷ Additional incentives broadened the tax base to which the 19% tax rate applied, and corresponded to the volume of investment financed by equity in 1999 and 2000. At the same time the minimum effective tax rate floor was reduced from 27% to 19%.

Visco's reform was in place for just a few years, as in the second half of 2001 the new government changed the structure of the corporate tax system substantially, and especially the DIT, which first was limited before being abolished in 2004.⁸ Other fiscal incentives were introduced in 2001 (from 2001Q2 to 2002Q4) and in 2009 (from 2009Q3 to 2010Q2). These provisions were referred to as “Tremonti-bis”⁹ and “Tremonti-ter”¹⁰ since they reproduced similar provision introduced previously, namely in 1994.

In part to offset the effect of abolition of the DIT, a **thin capitalisation scheme** was implemented in 2004, according to which companies excessively financed by debt could deduct interest rate payments only up to a certain upper threshold. At the same time, the statutory corporate income tax rate was reduced¹¹ to 33%, as the new philosophy was to decrease corporate tax generally without distinguishing among different sources of finance. Corporate tax was renamed into *Imposta sul Reddito delle Società* (IRES).

Another reform introduced in 2008,¹² imposed a further reduction in the statutory tax rates: from 33% to 27.5% for IRES and from 4.25% to 3.9% for IRAP. These tax policies were motivated

6. For further details on “Visco's reform” see Caiumi *et al.* (2013).

7. D.L. 63/1999 became law 133/1999.

8. D.lgs. 12.12.2003, n. 344.

9. L. 383/2001. Translated from Latin would mean “Tremonti II”.

10. D.L. 78/2009 became law 102/2009, translated as “Tremonti III”.

11. Already reduced from 37% to 36% in 2001.

12. L. 24.12.2007, n. 244.

mainly by international competition amongst countries to provide favourable treatment of investment activity and global capital mobility. In order to induce more neutrality amongst financing means further to the thin capitalisation scheme, accelerated and anticipated capital depreciation allowances were abolished and interest deductibility from the base rate was additionally restricted.

The reform package “*Salva Italia*” was introduced in December 2011 in the wake of the European debt crisis and currently is still in force. It is one of three exceptional budget adjustment packages enacted to reduce the public deficit and reassure financial markets. It provided *Aid for Economic Growth* (ACE), i.e. *Aiuto alla Crescita Economica*, following the example of the UK's Allowance for Corporate Equity, which is a fiscal measure aimed at stimulating companies' capitalisation and designed to favour entrepreneurship and economic growth. According to the ACE scheme, taxable income is split into two parts: ordinary, exempt from tax, and extraordinary, taxed at the normal IRES tax rate. The ordinary return is calculated by applying to new equities a notional rate, set annually by the Minister of Finance, which in the period 2011-2013 was 3%. In 2014 the notional rate increased to 4%. Although ACE is similar to DIT, it is designed to have a stronger impact on reducing the tax burden because it eliminates double taxation on business income.

Over the years, IRAP has achieved many of its original goals, such as expansion of the tax base, reduction of average tax rates, equalised treatment of companies with different sources of funding, facilitation of tax compliance, fair burden-sharing between employers and employees and, as Bird (2006) concludes, “IRAP appears to be the closest approximation to a good local business tax that now exists”. However, IRAP has been criticised by entrepreneurs and especially self-employed people, because in practice it is not purely value added. For example, some companies might be running zero profit or a small loss while simultaneously owing a IRAP tax payment, because the tax base includes both labour costs plus profit (or loss). Also, self-employed individuals are responsible for paying both the employer's and the employee's shares.

Pressure to reduce or even abolish IRAP has been recurrent over the last ten years. Several modifications to the implementation of IRAP have been made over the years. In 2008, 10% of IRAP was

deductible from the IRES tax base. In addition, for permanent employees, firms were allowed to deduct from the IRAP tax base all social contributions plus a fixed amount of 4,600 euro per employee. The 2011 “Salva Italia” law provided for deductions from the amount of IRAP paid on labour costs. To encourage the employment of women and young people, firms were allowed to deduct from the IRAP tax base 6.000 euro for each newly employed woman or young person (under 35 years) on a permanent contract.

To sum up, in analysing the Italian tax system we provide a detailed chronology of permanent and temporary tax changes and their diverse and time-varying parameters, that impact on the user costs of capital and labour. The various incentives have been substantial bringing in shocks of different magnitude not only to the corporate tax rates, but also to the tax basis and the formation of the user cost of capital and labour. In addition, there were temporary incentives at nearly a business cycle frequency. These changes are likely to result in important quantitative effects on user cost through time and across types of companies, e.g. financed by equity or debt.

On the structure of taxation, two conclusions can be drawn. First, after the reforms implemented between 1998 and 2001, which significantly reduced corporate taxation, subsequent interventions have been less drastic. Second, the main target of recurrent reforms has been the reduction of tax on self-financed companies in particular. In the following sections, we provide a quantitative assessment of how corporate taxation has shaped the user cost of capital and labour and how this has affected investment.

3. Methodology and data

According to the theoretical literature, taxation policies affect business investment through their impact on the user cost of capital and labour. This section explains our theoretical foundation, and our application of theory to the data. We focus particularly on quantifying the impact of the complex structure of the Italian tax system and its frequent reforms – initially on user costs and, consequently, on investment and macroeconomic activity. Our aim is to evaluate the user cost of capital to labour and its subcomponents, estimate the sensitivity of investment to

the user cost and incorporate those estimates in a macroeconomic simulation to assess the overall transmission of tax policies.

3.1. Determinants of the user cost of capital to labour

The foundations of the user cost of capital and the unit labour cost are neoclassical in character and represent the minimum return required by profit-maximising firms from one unit of investment and labour. Formal models on the user cost of capital and investment decisions by Dale Jorgenson unifying the classical and Keynesian strands of the literature date back to 1963. More recent extensions and representations of these models include Jorgenson (1996), Devereux and Griffith (1998) and Jorgenson and Yun (2012). The marginal labour cost and the importance of user cost of capital to labour have Keynesian origin. They are derived from the problem of a firm minimising relative capital to labour costs faced with fixed demand.

The user cost of capital represent the optimal solution to the problem of a firm maximising its present discounted value of current and future profit, subject to the capital accumulation equation and production function. As a result, the user cost of capital U^k can be defined as:

$$U_t^k = \frac{q_t(r_t - \pi_t + \delta_t)(1 - \tau_t F_t)}{p_t(1 - \tau_t)}$$

where τ is the statutory corporate tax rate; p and q denote output and investment prices respectively; π is the producer's inflation rate; r is the market interest rate; F is the present value of depreciation allowances per unit of investment, i.e. the discounted sum of depreciation allowances; and δ is the economic depreciation rate.

The user cost of capital U^k increases with the opportunity cost of holding capital rather than buying government bonds or lending to others at the rate r and the relative price of investment to output q/p . It decreases with the present value of the fiscal depreciation allowances F . The effect of τ on the user cost of capital is positive, but depends also on the interaction with the present value F and, if more detailed tax systems are considered (see below), the effect could be indeterminate. In this simple definition and in the extreme case of F equal to 1, taxation will be neutral with respect to the user cost of capital.

The above theory is augmented to incorporate the specifics of various tax policies. To do this, we modify the above formula to account for changes in the rules on accelerated fiscal depreciation allowances (F), different treatment of investment financing and temporary fiscal incentives for purchasing investments in Italy. With respect to the depreciation rate F , the law defines different depreciation rates for different assets and industries.

The user cost of capital is affected also by the way firms finance their investment, through equity or through debt. Taking this into account, we develop two different formulations for the user cost of capital – where firms are financed by debt, and where firms are financed by equity.¹³

In a rational expectations framework with complete financial markets and no market imperfection the Modigliani-Miller hypothesis would hold and companies' choice of funding would be irrelevant for their production decisions. However, financial markets imperfections and other frictions do exist, which could drive a wedge between the financing alternatives. Corporate taxation is one theoretical imperfection, which generally gives preference to debt finance and could discourage companies to resort to capital markets to fund their production and investment projects. At macro-level the volume and depth of the domestic financial markets could be unsatisfactory. Entrepreneurs in need of risky venture capital might face discouraging liquidity premium on the capital markets, leading to lower innovation and economic growth. By trying to equalise the treatment of the two types of funding, tax reforms try to encourage large eligible companies to access the capital markets. However, many companies for structural reasons do not have such choice and depend on bank loans, e.g. small and medium size enterprises. The results of the tax reform would depend on the financial choices actually available to companies and therefore is *a priori* ambiguous, see Bordington *et al.* (1999).

In the equity financing case, from the start of our period of analysis, 1996, to 1997, the formula can be modified as follows:

$$U_t^k = \frac{q_t \{ (r_t - \pi_t + \delta_t) [1 - F_t (\tau_t^i + \tau_t^s)] + \tau_t^k \}}{p_t (1 - \tau_t^i - \tau_t^s)} \quad (1)$$

13. Note that we do not take into account personal capital income taxation.

This formulation incorporates the value of the statutory tax rate on corporate income IRPEG τ^s , the local tax rate on corporate income ILOR τ^i and the tax rate on the net wealth of firms τ^k . In principle, τ^i and τ^s reduce the opportunity costs of financing investment. In 1996 the value of those parameters was 37% for τ^s , 16.2% for τ^i and 0.75% for τ^k .

In the same period, firms predominantly financed by debt were also able to deduct their interest rate costs. This led to a modification of their user cost of capital.

$$U_t^k = \frac{q_t[r_t(1 - \tau_t^i - \tau_t^s) - \pi_t + \delta_t][1 - F_t(\tau_t^i + \tau_t^s)]}{p_t(1 - \tau_t^i - \tau_t^s)} \quad (2)$$

After Visco's reform in 1998, which introduced the new corporate taxes, IRAP and DIT, the user cost of capital for equity-financed firms became:

$$U_t^k = \frac{q_t\{(r_t - \pi_t + \delta_t)[1 - F_t(\tau_t^r + \tau_t^s)] - r_t^*(\tau_t^s - \tau_t^{ss})\}}{p_t(1 - \tau_t^r - \tau_t^s)} \quad (3)$$

where τ^r is the statutory tax rate on value added IRAP, τ^{ss} is the tax rate applied to new capital – new subscriptions capital and retained earnings set at 19%, and τ^* is the return on ordinary income.

In the case of debt-financing the user cost of capital is:

$$U_t^k = \frac{q_t[r_t(1 - \tau_t^s) - \pi_t + \delta_t][1 - F_t(\tau_t^r + \tau_t^s)]}{p_t(1 - \tau_t^r - \tau_t^s)} \quad (4)$$

In the last period of the analysis, the user cost of capital, currently in force, is affected by the introduction of the ACE:¹⁴

$$U_t^k = \frac{q_t\{[r_t - \pi_t + \delta_t][1 - F_t(\tau_t^r + \tau_t^s)] - r_t^* \tau_t^s\}}{p_t(1 - \tau_t^r - \tau_t^s)} \quad (5)$$

Comparing Equation (3) and Equation (5), we see that the introduction of ACE acted to lower the user cost of capital.

Marginal unit labour costs are derived from the first order conditions of a cost-minimisation problem facing a firm under perfect competition. The marginal labour costs U^l represent a relationship between real wages, augmented by the social contribution, to the price of output. In the case of labour costs being completely deductible from the tax base, the definition is:

$$U_t^l = \frac{w_t(1 + s_t)}{p_t} \quad (6)$$

14. We have not considered the 10% deduction of IRAP from IRES tax base.

where w represents per capita gross wage before personal income tax and s is the social contribution rate. Note that ideally the labour cost should take into account the anticipated values of its determinants during the entire lifetime of the equipment. However, because expectations of those variables are very difficult to measure in practice, we choose to stick to their observational equivalents.

After introduction of IRAP, corporate taxes influence the marginal labour cost because labour costs are not fully deductible:

$$U_t^l = \frac{w_t(1+c_t^s)(1-\tau_t^s) - c^i \tau_t^r}{p_t(1-\tau_t^s - \tau_t^r)}$$

where c^s is the amount of social contribution excluding health system payroll contributions; c^i denotes the contribution for workers' sick pay, occupational accidents and the bonuses paid by employers. Deductibility of social costs and other allowances directly affects the marginal labour costs. For example, before the "Salva Italia" tax reform the formula was:

$$U_t^l = \frac{w_t[(1+c_t^s)(1-\tau_t^s) - \tau_t^r c_t^i - \alpha^1 \tau_t^r (c_t^s - c_t^i)] - \tau_t^r \alpha^1 4600}{p_t(1-\tau_t^s - \tau_t^r)} \quad (7)$$

After the reform it was:

$$U_t^l = \frac{w_t \{ (1+c_t^s)(1-\tau_t^s) - \tau_t^r [(c_t^s - \tau_t^r)(\alpha^1(1-\tau_t^s) + \tau_t^s) + (c_t^i + \tau_t^s)] \} - \tau_t^r (1-\tau_t^s)(\alpha^1 4600 + \alpha^2 6000)}{p_t(1-\tau_t^s - \tau_t^r)} \quad (8)$$

where α^1 is the share of permanent employees in total number of employees and α^2 is the share of women and young people with permanent contracts in the total number of permanent contracts. The relative cost of capital to labour is determined by the ratio between the user cost of capital and the unit labour cost, i.e.

$$U_t^{k/l} = \frac{U_t^k}{U_t^l}.$$

As indicators for user costs we use the respective time-series data and taxation parameters provided for in the corporate tax legislation reviewed above.

3.2. Determinants of investment dynamics: theory and econometric modelling

According to the neoclassical theoretical literature the demand for business investment is influenced primarily by the current and

expected costs of production. In addition, in the Keynesian literature aggregate demand factors also play an important role. New-Keynesian models with financial markets imperfections (e.g. Bernanke and Gertler, 1989) suggest that information asymmetries and credit rationing could give rise to an external financing premium and that indicators such as internal cash-flow (pre-tax profits) should also be considered. Furthermore, there is a growing micro-economic literature with Keynesian flavour on the impact of uncertainty on investment. When optimal investment decisions are irreversible and inertial, then expectations and volatility of product demand have significant influence (for details see Guthrie, 2012 and Bloom, 2000).

Empirical studies usually try to encompass and test the relative importance of the factors suggested by the different strands of the theoretical literature (e.g. Angeloni *et al.*, 2003, Guiso *et al.*, 2002 and Antonietti *et al.*, 2014). They often find it difficult to validate the importance of the user costs of capital and labour for investment and macroeconomic performance. This highlights the need for further careful econometric investigation of the transmission of tax policies to the wider economy.

Even though the virtues of incorporating demand expectations and *ex-ante* uncertainty in economic models are well-understood in theory, in practice they are difficult to quantify. Their best measures are extracted from surveys of professional forecasters and the financial markets (e.g. sovereign debt spreads and term premia). Surveys measuring economic attitudes and confidence are increasingly used to identify the degrees of pessimism and optimism, which are important amplification mechanisms or independent sources of economic fluctuations. Indicators of subjective expectations and *ex ante* uncertainty have been derived from the Survey of Professional Forecasters, following the methodologies proposed by Zarnowitz and Lambros (1987), Giordani and Söderlind (2003) and Tsenova (2015).

We evaluate and test the link between investment and the user cost of capital to labour in the context of a range of other determinants. For this purpose, we employ both a VECM for investment applying Johansen's cointegration method, and the Engle-Granger two stage estimation method. First, we identify the long-run equilibrium relationship of corporate investment using several

variables traditionally suggested by theory, such as ratio of capital to labour costs, and aggregate demand. We test the residual of the regression for non-stationarity. Second, we model the short-term convergence dynamics of investment in relation to the same factors and additional exogenous variables characterising demand expectations and uncertainty.

To establish the presence of a long-run equilibrium relation between investment I , user cost

$$U_t^{k/l} = \frac{U_t^k}{U_t^l}$$

and aggregate demand C , and the parameters of this relationship, we estimate Equation (10). This equation incorporates a constant and a linear deterministic trend.

$$I_t = \alpha^C C_t + \alpha^U U_t^{k/l} + \alpha^T t + \alpha^0 + z_t \quad z_t \in iid(0, \sigma^z) \quad (9)$$

$$\Delta I_t = \beta^z z_{t-1} + \beta^C \Delta C_t + \beta^U \Delta U_t^{k/l} + \sum_{n=1..N} \sum_{l=1..L} \beta^{X^n} X_{t-1}^n + \varepsilon_t \quad \varepsilon_t \in iid(0, \sigma^\varepsilon) \quad (10)$$

where X represents the additional measures of expectations, disagreement and uncertainty, to augment the traditional benchmark equation, and l represents the order of lags, where $l \in (0, 1, 2, \dots)$.

Given that the dependent and independent variables are I(1) processes, the presence of a cointegration relationship between them would produce a stationary I(0) error term, i.e. temporary deviation from equilibrium. Alternatively, there might be a spurious relationship between the variables producing non-stationary persistent errors z_t . In order to test this possibility we assess the augmented Dickey-Fuller regression in which the first difference of the residual Δz_t is regressed on its own lag and its lagged difference, Equation (11).

$$\Delta z_t = \gamma^0 z_{t-1} + \gamma^1 \Delta z_{t-1} + \varepsilon_t \quad (11)$$

The relationships are estimated using Ordinary Least Squares (OLS) in order to identify and test the role of expectations and uncertainty factors on investment over and above the impact of fundamentals, rather than imposing *a priori* structural links via full information methods. We evaluate the stability of the coefficients through rolling regressions.

To check robustness we perform alternative estimations applying Johansen's maximum likelihood cointegration methodology. The nature of the cointegration process is diagnosed through Trace and Lambda tests.

3.3. Macroeconomic simulation

The transmission of tax policies is further investigated incorporating investment dynamics and its determinants using the Prometeia empirical macroeconomic model. Taking into account the latest data and parameter estimates, we use the model to evaluate the overall macroeconomic effect of tax system reforms over the years. We conduct a forward-looking comparative analysis on the transmission of permanent changes in the corporate income tax rate (IRES) and regional tax rate on corporate activity (IRAP). In addition, we compare and contrast their transmission to other shocks on investment, such as public investment and uncertainty.

The Prometeia empirical macroeconomic model is a large-scale multi-sectoral quarterly model evaluated and used to produce Prometeia forecasts. Over the years, it has been elaborated to keep abreast of econometric theory and forecasting practice. The details of institutional forecast models are rarely published in their entirety, but the model's complexity can be deduced from Ferrari *et al.* (1992), which provides a detailed account of the structure of an early predecessor.

The model has prevailing New-Keynesian features, incorporating detailed sectoral disaggregation for the Italian economy, inclusive of nearly 1,000 structural equations, of which 150 are stochastic in nature. It can be used to investigate both cyclical and structural factors in the short- and medium-term. It incorporates financial, monetary and real sectors, inclusive of government, services, manufacturing, construction and agriculture. The model takes account of detailed public sector revenues and expenditure such as income taxes on households and firms, deposit and bond interest, housing and land, indirect taxes (VAT and fuel excise duties), social contributions, interest payments, goods and service expenditures, wages, pensions, health care and public investments.

3.4. Data

The study utilises public data from the National Accounts ESA 95 statistics provided by Istat, and financial statistics compiled by Banca d'Italia. The period of analysis spans the available time-series data from 1996Q1 to 2012Q4.

Investment I is defined as gross fixed capital formation of the economy and includes machinery equipment, transport equipment and intangibles. Due to data limitations, we cannot distinguish among investment by the different sectors of the economy. Aggregate demand C is measured as household consumption plus exports of goods and services. The macro-economic simulations also take account of investment in fixed capital (construction), distinguishing between the public and private sectors. Public investment is approximated by the time series on public investment in construction. According to data with annual frequency, investment in construction comprises predominant part of public investment and therefore constitutes a good proxy for this economic concept.

To estimate the user costs of capital and labour, output prices p are captured by the time series on producer prices of manufacturing goods, the investment price q is measured by the deflator on investment in machinery, equipment and transport, and w is wages before taxes in the private sector. In the formula for the user cost of capital we use a depreciation rate of 12% per year, which corresponds to the average of several depreciation rates for machinery and equipment, and is close to the standard applied in other studies (see Bontempi *et al.*, 1995). For equity-financed investment we use the interest rate on corporate bonds, while for debt-financed investment we use the average interest rate on corporate loans. The separate measures for the user cost of capital for companies financed by equity and companies financed by debt are aggregated on the basis of a simple average due to lack of reliable statistics on their respective share.

In the analysis incorporating demand expectations and uncertainty, we use sovereign bond yield data for the spread between the 10-year government bond yields for Italy and Germany, $R_t^{Long(IT-DE)}$, the Italian business climate survey and the corresponding aggregate indicator based on an EC survey $y^{se IT}$, and proxies for euro area

expectations and uncertainty taken from individual reports in the ECB's Survey of Professional Forecasters. More precisely, we take short-term expectations on the output growth gap in the euro area $\Delta \hat{y}^e Euro$, i.e. the difference between the short-term (one-year-forward) and long-term (five-years-forward) point forecasts of output growth in the euro area; disagreement (uncertainty) about short-term forecasts for the unemployment rate in the euro area, measured by the distance between the 95th and 5th percentile of the cross-sectional distribution of point forecasts, $\phi^{e(95\%-5\%)Euro}$. In the macroeconomic simulations, we use also disaggregated data for some sectors, e.g. employment, output, marginal labour cost, user cost of capital in the sectors agriculture, industry, construction, private services and public services.

4. Empirical results

Based on the methodology already described, we assess the historical impact of taxes on the ratio of the user cost of capital to labour and its components. We also estimate the effect of the user cost of capital to labour on investment dynamics in the short and longer terms. We apply the Prometeia empirical macroeconomic model, which incorporates the investment equation, and evaluate the macroeconomic consequences of changes in tax policies, comparing them to other policy interventions.

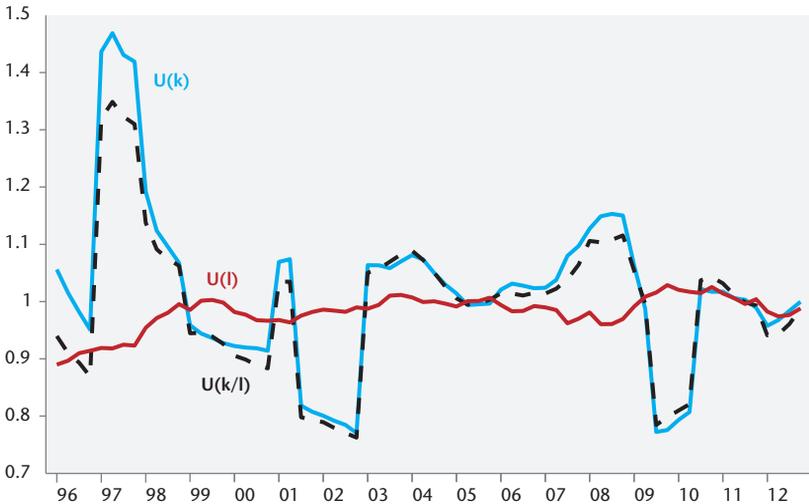
4.1. Assessing the impact of the taxation system on the user cost of capital to labour

We measure and analyse historical evolution of the user cost of capital to labour and its components in order to distinguish between a longer term tendency and cyclical fluctuations in the variable. At the same time, we try to assess the time-varying impact of the taxation system on the user cost of capital to labour, from the impact of other factors such as monetary policy transmission and relative price movements. The effect of the taxation system is further decomposed into contributions from temporary tax incentives and changes in tax rates (and/or tax bases).

The results of the evaluation, depicted in Figure 1, show that the longer-term component in the movement of our measure of the user cost of capital to labour has generally been declining over

the sample period. At the same time, the time series of the user cost of capital to labour is characterised by pronounced shorter-term fluctuations. Comparison of the dynamics of its components reveals that the user cost of capital is the major determinant. In contrast, the user cost of labour has very limited fluctuations, but plays an important role in dampening the upper extremes in the levels of the user cost of capital to labour. This is because episodes of higher capital costs coincide with modest declines in the level of the unit labour cost. Thus, labour costs contribute to softening extreme upward pressures on capital costs.

Figure 1. Evolution of the user cost of capital to labour

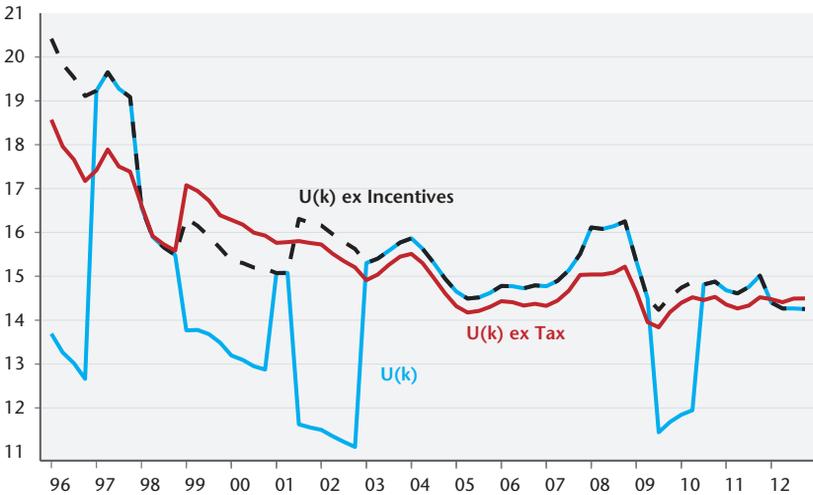


Note: $U(k/l)$ is the ratio of the user cost of capital to labour; $U(k)$ is the normalised user cost of capital for 2005 value = 1; $U(l)$ is the normalised cost of labour for 2005 value = 1.

The pronounced downward swings in the user cost of capital are due to temporary corporate tax incentives, as demonstrated by the differences in the dynamics of U^k and U^k excluding tax incentives, see Figure 2. Tax incentives seem to have achieved substantial ante-cyclical reductions in corporate costs with potentially stimulating effect on economic activity. The effects of some incentive programmes are more pronounced than others. For example, in 1999-2002, Tremonti's law had a larger impact on the user cost of capital than Visco's incentives, because the latter applied only to

firms that had undertaken new capital increase either through new subscriptions or retained earnings.

Figure 2. Evolution of user cost of capital excluding fiscal incentives and taxes

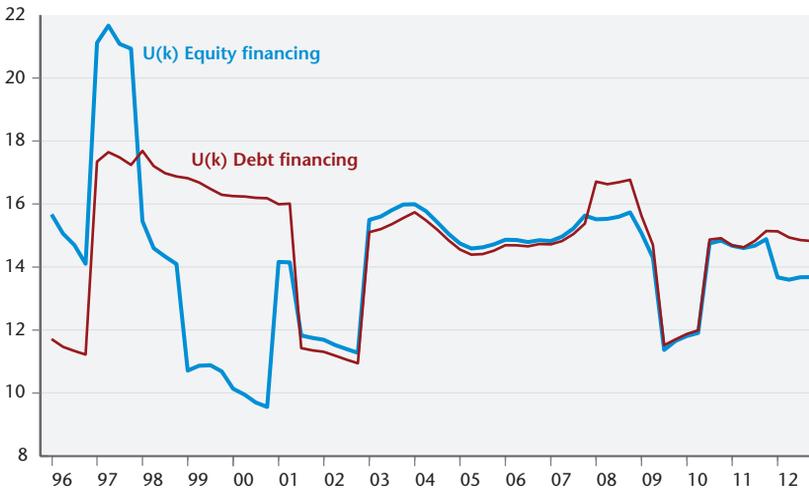


Note: $U(k)$ and its components are reported in real absolute terms, i.e. percentages.

The user cost of capital shows a pronounced declining trend with rates of over 19% in 1997 and nearly 14% in 2012, see Figure 2. The sliding trend in the user cost of capital could be associated mostly with the statutory tax on corporation income, which has been reduced progressively since the beginning of 2000. Although the IRAP tax rate has been stable, its tax base has been reduced through time. The difference in the dynamics of U^k without tax incentives, and U^k without taxes, is an indication of the contribution of tax rates on the capital costs of companies. While before 1998 tax rates weighed heavily on user costs, there are periods thereafter when their contribution was zero or even negative. At the same time, real interest rates and relative prices have contributed towards the declining trend in user costs. These effects are due to Italy's decision to join the euro area and the resulting downward convergence in nominal rates on government bonds and, to lesser extent, on loans to businesses. However, during the financial crisis, interest rates exerted pressure on user costs in the opposite direction.

Before mid-2001, there was a substantial difference in the user costs of capital for firms financed through equity and through debt, see Figure 3. While before 1998 the user cost under debt financing was lower, in the period 1998Q1-2001Q2 this tendency was successfully reversed by IRAP, which was levied also on the interest paid by firms, and by the equity capital incentives enacted with the DIT. Since then, the user costs of both groups of companies have generally been aligned. The introduction of ACE in 2012 reduced the user cost of capital for companies financed by equity, while the respective cost for debt-financed companies remained the same.

Figure 3. User-cost of capital debt vs. equity-financing



Note: User cost of capital for equity-financed and debt-financed firms. $U(k)$ and its components are reported in real absolute terms, i.e. percentages.

Altogether, taxation policies have a significant impact on the user cost of capital to labour, we find that while, in general, tax incentives account for cyclical fluctuations in this indicator, tax policies affecting the tax rate and/or tax base of corporate income tend to influence its trend. In addition, fiscal distortions on financing decisions have been reduced considerably.

4.2. Assessment of the impact of the taxation system on investment

According to the theoretical literature, the user cost of capital to labour is at the heart of the transmission of fiscal and monetary

policies to the supply side of the economy. Also, the user cost of capital and its relation to investment and capital accumulation generate persistent fluctuations, which policy-makers have been trying to control or at least influence. The snag is that the user cost is difficult to measure precisely and many empirical studies fail to provide evidence of the importance of their respective indicators for the dynamics of investment and the macro economy in general. In this sub-section, we test the significance of the link between our measure of the user cost of capital to labour and investment and try to quantify the relationship.

We evaluate an econometric model of the dynamics of investment in the longer and shorter terms. Applying the methodology described in the previous section, we find evidence of the presence of a significant long-term equilibrium relationship between investment I , aggregate demand C , and the user cost of capital to labour $U^{k/l}$. Equation (12) reports the results of the estimation. Within the sample period, this relation is accompanied also by a slight downward deterministic trend, which could represent a crude measure of exogenous technological progress giving rise to the increased efficiency of investment per unit of output.

$$I_t = 2.569^{***}C_t - 0.106^{***}U_t^{k/l} - 0.007^{***}t - 20.597^{***} + z_t \quad R^2_t = 0.947 \quad (12)$$

(0.081) (0.020) (0.000) (0.947) $\sigma^z = 0.022$

Corporate investment I tends to rise with improvements in aggregate demand (both domestic and foreign) C and reductions in the user cost of capital to labour $U^{k/l}$. As suggested by the standard errors which are reported in parentheses, all the coefficients are significant at the 1% level. Investment does not seem to linger far from its long-term equilibrium given the relatively high explanatory power of Equation (12) at 95% and relatively low mean root standard error σ^z of the Error Correction Term (ECT) z .

To validate the estimated long-term equilibrium relationship, we test the hypothesis of presence of a unit root in the regression residual applying an Augmented Dickey-Fuller test, i.e. that the coefficient γ^0 in Equation (11) is significantly different from unity. Equation (13) summarises the OLS estimates, with standard errors in parentheses and t -test statistics of each coefficient in bold.

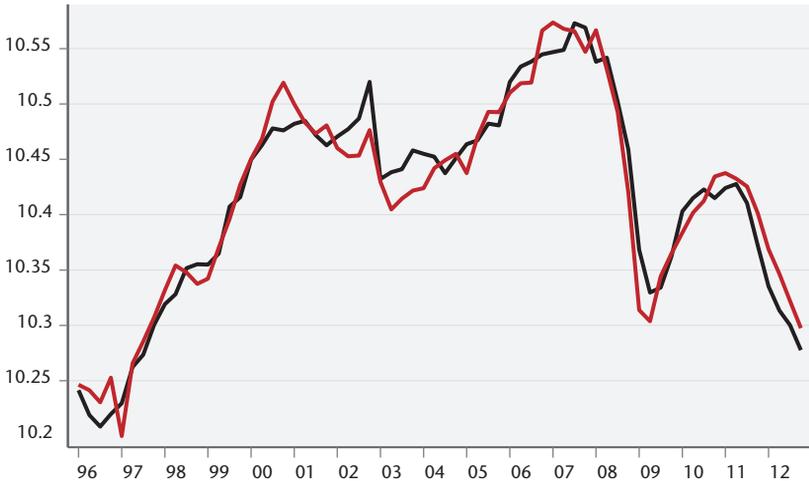
$$\Delta Z_t = -0.388z_{t-1} + 0.009\Delta z_{t-1} + \varepsilon_t \quad (13)$$

(0.1112) (0.125) (0.0018)

-3.46 **0.07**

Given that the coefficient is significantly negative with t -test statistics at -3.46 , which is less than the approximate critical value of -2.60 for a 1% confidence level and a small sample,¹⁵ we can safely reject the hypothesis of a unit root and presence of a spurious regression results underlying Equation 12.

Figure 4. Investment dynamics: observations vs. longer-term equilibrium I_t



Note: Variables are expressed in natural logarithm. The black line indicates actual observations of investment, the red line depicts equilibrium longer-term predictions.

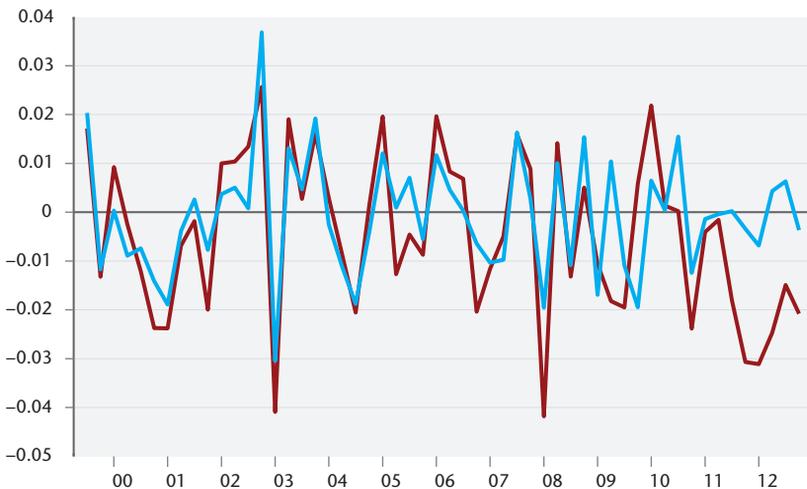
The estimated long-term dynamics of investment I to our measure of the user cost of capital to labour $U^{k/t}$ and aggregate demand C validate the findings in the theoretical literature and represent a rare empirical result. The predictions of the model suggest an equilibrium notion for private investment dynamics which could be analysed combined with actual observations, as depicted on Figure 4. Over time, there have been short periods when equilibrium investment has either over or under shot the path suggested by user cost $U^{k/t}$ and aggregate demand C . However, towards the end of the sample, i.e. after mid-2010, actual investment has persistently failed to reach its equilibrium, a feature that is likely associated with the Great Recession and the global economic crisis.

15. Enders (1995) pp. 223 and Hamilton (1994) pp. 763.

Shorter-term investment dynamics is determined by the distance from previous period's equilibrium, changes in the user cost, aggregate demand and a number of other potentially important non-fundamental factors. Table 1 reports the results of the alternative specifications.¹⁶

To evaluate the role of separate fundamentals, we estimate a benchmark specification in which changes in investment depend on changes in aggregate demand, user cost and the deviation of investment from its equilibrium, see Column (1) in table 1. Based on the estimated coefficients which are significant at the 1% confidence level, investment increases with aggregate demand and the reduction in the user cost of capital to labour, and tends to converge gradually to its longer-term equilibrium. The high significance of the reported coefficients and the relatively good explanatory power of the regression (R^2 of 59%), indicate that fundamental factors are central for explaining and predicting investment.

Figure 5. Insample prediction errors on short-term investment dynamics



Note: Red line indicates prediction errors from the benchmark equation table 1 Column (1). Blue line indicates prediction errors of augmented regression table 1 Column (4).

16. Note that to compare the explanatory power of the additional factors related to demand expectations and uncertainty, the sample is restricted to 54 observations, i.e. 1999Q3-2012Q4.

Table 1. Empirical estimation of the dynamics of investment in Italy

Long-term dynamics:

$$I_t = 2.569^{***} C_t - 0.106^{***} U_t^{K/L} - 0.007^{***} t - 20.597^{***} + z_t \quad R^2 = 0.947$$
(0.081) (0.020) (0.000) (0.947) $\sigma^z = 0.022$

Short-term dynamics:

$$\Delta I_t = \beta^z z_{t-1} + \beta^C \Delta C_t + \beta^U \Delta U_t^{K/L} + \sum_{n=1..N} \beta^{X^{n,l}} X_{t-1}^{n,l} + \varepsilon_t \quad \varepsilon_t \in iid(0, \sigma^\varepsilon)$$

	β^S (1)	β^S (2)	β^S (3)	β^S (4)
Z_{t-1}	-0.398*** (0.108)	-0.283*** (0.095)	-0.429*** (0.103)	-0.427*** (0.098)
ΔC_{t-1}	1.750*** (0.221)	0.741*** (0.278)	0.923*** (0.244)	0.795*** (0.239)
$\Delta U_t^{K/L}$	-0.82*** (0.030)	-0.076*** (0.027)	-0.026** (0.026)	-0.083*** (0.026)
$\Delta \hat{y}_t^e \text{ Euro}$		0.006** (0.003)	0.006** (0.003)	0.007** (0.003)
$\Delta \hat{y}_{t-2}^e \text{ Euro}$		0.012** (0.005)	0.011** (0.005)	
$\Delta \hat{y}_{t-3}^e \text{ Euro}$		-0.015*** (0.004)	-0.015*** (0.004)	-0.007*** (0.002)
$\phi_t^e \text{ (95\% - 5\%) Euro}$		-0.016** (0.007)		
$R_t^{\text{Long}(IT-DE)}$			-0.006*** (0.002)	-0.006*** (0.002)
$\Delta y_{t-2}^e \text{ IT}$				0.163*** (0.051)
σ	0.017	0.014	0.014	0.017
R^2	0.587	0.740	0.761	0.782
$R^{2\text{Adj}}$	0.563	0.702	0.726	0.749
F	24.2	19.1	21.4	24.0
ll	143.6	156.2	158.4	160.8

Note: I is investment; z is the error correction term (ECT); C is aggregate demand, consisting of household consumption plus exports of goods and services; y^{eIT} is the level of short-term expectations reported in the Italian business climate survey; $U_t^{K/L}$ is the ratio of user cost of capital to labour; $\Delta \hat{y}^e \text{ Euro}$ is short-term expectations on the output growth gap in the Euro area, i.e. the difference between the short-term (1 year forward) and long-term (5 years forward) point forecasts on output growth in the Euro area; $\phi^{e(95\% - 5\%) \text{ Euro}}$ is disagreement (uncertainty) about short-term forecasts of the unemployment rate in the euro area, measured by the distance between the 95th and the 5th percentile of the cross-sectional distribution of point forecasts; $R_t^{\text{Long}(IT-DE)}$ is the spread between the 10 year government bond yields in Italy and Germany; the variables I , C , $U_t^{K/L}$ and y^{eIT} are in natural logarithms; $\phi^{e(95\% - 5\%) \text{ Euro}}$ and $R_t^{\text{Long}(IT-DE)}$ are demeaned; standard errors are reported in parentheses; σ is measured in root mean squared errors; *** denotes 1% or less significance level, ** 5% or less significance, * 10% or less significance level; for consistent comparison the sample contains 54 observations, i.e. 1999Q3-2012Q4; F – F test statistics; ll – Maximum likelihood test statistics.

In order to assess the role of fundamentals in the context of other determinants, we estimate several different specifications for the short-term dynamics of investment, see table 1 Columns (2)-(4). The benchmark model is augmented to include indicators of euro area short-term output gap expectations $\Delta \hat{y}^e_{Euro}$, unemployment uncertainty $\phi^{e(95\%-5\%)Euro}$, the spread between Italian and German long-term government bonds $R^{Long(IT-DE)}$ and Italian business confidence in the short-term y^e_{IT} . These are forward looking indicators linked to demand expectations, which might be influencing investment decisions over and above the information provided by the observed data. Evidence of the significance of those indicators and the model specifications at the 1% significance level show that this is indeed the case. The incorporation of these demand expectations and uncertainty measures improves the explanatory power of the short-term model to 74%-78% (i.e. by 15%-18%).

All fundamental factors also remain significant, with the inclusion of additional factors mostly reducing the role of aggregate demand in the short-term, but not the user cost of capital to labour. This is understandable since the additional factors are mostly linked to demand expectations and uncertainty, rather than to supply. Additional factors have become particularly important during the global financial and economic crisis, which explains their usefulness for improving the predictability of investment changes towards the end of the analysed period, see Figure 5. The benchmark fundamentals model performs relatively well, but after mid 2010 tends to over-predict short-term investment.¹⁷

For robustness, we explore the time-variation in the equilibrium dynamics of investment, as in Equation (12), through rolling regressions with an expanding window from 2003Q1. The results show that the relationship between investment and its fundamental equilibrium determinants is relatively stable. However, while in the latter part of the sample, the link between user cost and investment remains relatively unchanged, the importance of aggregate demand increases after 2009. Before the Great Recession there

17. Because all fiscal incentive schemes are announced as temporary, we also explored the possibility of non-linear calendar effects on investment at the beginning and/or end of each period by the incorporation of time dummies. However, we could not find systematic evidence on the importance of calendar effects on investment.

was substantial stability of the coefficient of aggregate demand at about 1.6, while after the recession the demand coefficient tends to rise to the estimated value of 2.7 at the end of the sample. This suggests that the role of demand factors for explaining longer term investment has increased over the past several years while the role of supply factors, such as our indicator for the user cost of capital to labour, seems to have remained largely unchanged.

4.3. Assessing the historical role of corporate tax reforms

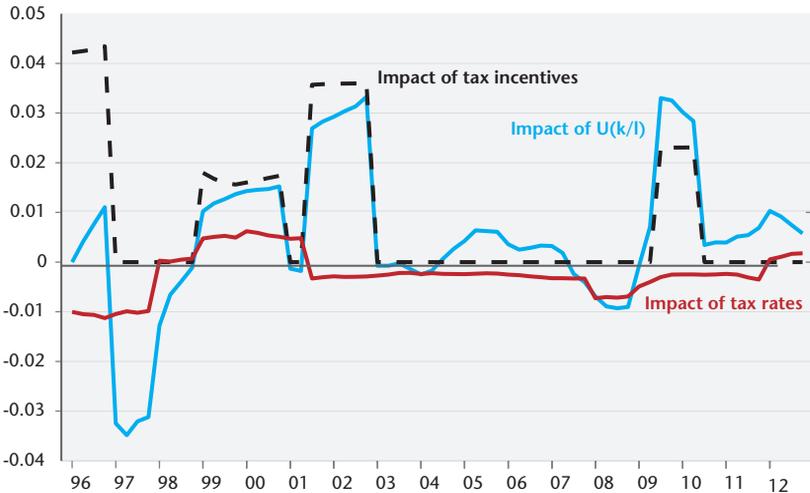
Given the solid evidence for the significance of the relationship between our measure of the user cost of capital to labour $U^{k/l}$ and the investment dynamics within the overall model of fundamental determinants of investment demand estimated in the previous sub-section, we need to distinguish the influence among the various underlying components of the user cost of capital to labour. This implies discerning the impacts of taxation system policy from that of monetary policy and relative price movements, as well as the contribution of temporary tax incentives from changes in tax rates and/or tax bases. We use the Prometeia macro-economic quarterly model to evaluate the overall contribution to economic activity within the context of complex endogenous multi-sector inter-linkages incorporated in that large-scale model.

We conduct several counterfactual assessments on the basis of our measure of user cost of capital to labour and its various components, incorporating them in the estimated model of investment demand and the Prometeia quarterly macro-econometric model. We assess the models' predictions keeping the estimated parameters fixed, for three additional scenarios: (1) assuming a constant user cost of capital to labour, i.e. the model's predictions reflect all factors except variation in the user cost of capital to labour; (2) assuming a measure of user cost of capital to labour that excludes temporary tax incentives; (3) assuming a user cost of capital to labour that excludes the influence of taxes, i.e. includes only the influence of monetary policy and relative price movements. The impact of the user cost of capital to labour is quantified by the difference between the predictions of the overall models and scenario (1). The contribution of incentives is estimated as the difference between the models' predictions and scenario (2). The

influence of tax rates is measured as the difference between the predictions of scenario (2) and scenario (3).

Figure 6 shows the evolution in the contribution of the user cost of capital to labour and its components to expected investment demand equilibrium. According to estimates based on the econometric model of equilibrium demand, the user cost of capital has an important influence on investment. Over the analysed period, the contribution of the user cost of capital to labour, over and above that of consumption and other determining factors, ranged between +4% and -4%.¹⁸

Figure 6. Impact of the tax system on predicted equilibrium investment demand



The high user cost of capital to labour was acting to discourage investment demand during 1997, under the influence of a relatively high user cost of capital due to permanent tax rates and expiry of the first round of Tremonti's temporary tax incentives in 1996. In 2008, the user cost of capital to labour suppressed equilibrium investment demand by about 1%. In most other periods, the user cost of capital to labour mostly contributed positively to investment demand. These positive effects were most pronounced in periods when fiscal incentives were implemented, with contri-

18. Since the respective contributions to short-term predictions are similar, their dynamics is not reported separately.

butions close to 1.5% during Visco's incentives (1999-2000), 3.5% during both Tremonti-bis and Tremonti-ter.

During periods of fiscal incentives, they dominated the impact of the entire user cost of capital to labour. The first Tremonti incentive plan (1994-1996) had a powerful effect on its own; its contribution to equilibrium investment hovered at above 4%. However, the overall impact of the user cost of capital to labour was suppressed by the negative impact of the overall tax rates and the unfavourable contribution of real interest rates and relative prices. Tax rates generally depress aggregate investment, which is consistent with the fact that taxes inevitably burden enterprises with higher costs. However, this negative contribution to equilibrium investment was quite small, and reversed to modestly encourage investment during the period of Visco's reform and the last two quarters of the period analysed.

Evaluating the contribution of taxation system policies using Prometeia's quarterly economic model, we find that Visco's reform enhanced quarterly GDP by 0.15 percentage points. During Tremonti-bis and Tremonti-ter, the tax system increased quarterly GDP by 0.2 percentage points. During the first round of Tremonti's incentives in 1996, quarterly GDP in Italy would have been 0.4 percentage points higher, had it not been for the negative offsetting impact of tax rates, monetary policy and relative prices.

Figure 6 shows that there is very little impact on investment demand from the user cost of capital to labour that could not be attributed to the two taxation components. This leaves a very limited role for the impact of monetary policy and relative price movements. This finding is confirmed by simulations of the Prometeia quarterly macro model. This is an important finding, given the key role attributed to the user cost of capital in transmitting monetary policy impulses to the real economy. It implies that fiscal policies, inclusive of tax incentives and tax rates, represent a more effective policy alternative to influence economic activity over the business cycle and over the longer-term.

4.4. Assessing the impact of future corporate tax reforms

In the current context of the Great Recession, fiscal spending constraints and international capital mobility, proposals for further

reductions in corporate taxes to support economic growth and fiscal sustainability are frequent in policy debates. In this section, we evaluate the macro-economic effects of two possible alternatives in that direction – a permanent reduction in the *tax rates on corporate income* (IRES) and the *regional tax on corporate activity* (IRAP), each at an amount equivalent to 1% of Italian GDP. We make a standard assumption of unfunded, i.e. deficit-financed, policy changes, in order to look into their effect independently. Alternative assumptions of funding such as increased revenues, including government debt, or reduced expenditures in other sectors, would have involved the evaluation of an entire fiscal package and could have potentially altered the final quantitative results.

We assess the Prometeia empirical quarterly macroeconomic model for Italy incorporating within its multi-sectoral structure the investment transmission channel of taxation policy that was estimated and explained above. The expected changes are evaluated taking the model's structure and the last period of analysis as the initial conditions.

To enable policy relevant judgements, we adjust the shocks to be ex-ante fiscally neutral in terms of generating revenue for the government.¹⁹ In practice, these adjustments are minor because the two tax schemes currently are rather similar. For example, in 2013 the revenue from IRES amounted to 36 billion euro and from IRAP to 32 billion euro, of which 10 billion euro was paid by the government administration. However, the bases of these two taxes are different and, consequently, so are their statutory rates. Thus, shocks are estimated to be similar in relation to their ex-ante effect on public deficit, namely 1% of GDP.

In both cases the user cost of capital to labour $U^{k/l}$ decreases. However, the reduction is less substantial for IRAP because its tax base includes both corporate profit and labour cost. Therefore, the tax rate reduction affects both the nominator and the denominator of the user cost $U^{k/l}$ and some part of the effect is cancelled out. For example, a 1 percentage point decline in IRAP would cause a 0.8 percentage point decline in the user cost of capital to labour $U^{k/l}$, as result of a -1.4 percentage points change in the user cost of

19. Inevitably, our predictions abstract from ex-post budgetary effects of reduced taxes on economic activity and budget revenues.

capital U^k and a -0.59 percentage points change in the user cost of labour U^l . A corresponding change in IRES would translate into a 1.3 percentage points decline in the user cost of capital to labour $U^{k/l}$, which would be due entirely to the reduction in the user cost of capital U^k .

Table 2. Macroeconomic effects of reduced corporate taxes and increased public investment equivalent to 1% of GDP

Changes in →	Δ IRAP		Δ IRES		Δ Public investment	
	After 1 year	After 4 years	After 1 year	After 4 years	After 1 year	After 4 years
Effects on ↓						
Δ I	0.67	1.78	1.83	2.27	0.28	0.64
Δ Total Investment	0.38	1.36	1.08	1.33	7.38	7.0
Δ GDP	0.10	0.59	0.20	0.19	1.14	1.35
Δ Consumption	0.12	0.87	0.00	-0.06	0.05	0.47
Δ Employment	0.10	0.97	-0.07	-0.23	0.48	0.99
Δ Consumer prices	-0.27	0.59	-0.01	-0.1	0.02	0.05

Note: Results are evaluated on the basis of the Prometeia quarterly macroeconomic model for Italy and expressed in percentage deviation from the model's baseline. As explained in the data sub-section I denotes investment (in equipment, machinery and intangibles); Total Investment includes additionally public investment (in construction).

According to the simulations, a decline in the statutory IRAP rate of 1% of GDP results in a rise in Italian GDP of 0.10 percentage points after one year and 0.59 percentage points after four years, see table 2. Note that this is equivalent to a policy shift reducing the statutory rate by 2.9 percentage points, from the current 3.9% to 1%. The main drivers of the increase in economic activity are investment and household consumption.

This policy reduces the user cost of capital to labour, exercising upward pressure on investment demand in terms of both its equilibrium desired investment level and its short-term adjustments. Taking into account the endogenous inter-linkages in the macro-model, this materialises as a 0.67 percentage points rise in investment after one year, and a 1.78 percentage points rise after four years.

Because the policy reduces the unit cost of labour U^l by about 4 percentage points for the whole economy, increased investment activity is accompanied also by higher demand for labour. Employment increases gradually, by 0.10 percentage points during the first year and by 0.97 percentage points after four years. This contributes to increased disposable income, internal demand and

domestic consumption, the latter increasing by 0.12 percentage points after one year and 0.87 percentage points after four years. The reduced production costs exert downward pressure on consumer prices, accumulating to a consumer price reduction of 0.59 percentage points after four years. In addition, competitiveness improves, which strengthens exports.

The reduction in IRAP is relatively more favourable to employment in the service sector, which increases by 1.72 percentage points after four years. In contrast, employment in manufacturing increases by only 0.17 percentage points after four years. The difference in transmission is due to the higher contribution of labour to value-added in the services sector.

Alternatively, a decline in IRES equivalent to 1% of GDP implies a reduction in its statutory rate of 13 percentage points, from the current 27.5% to 14.5%. Based on current historical experience, this is a sizeable reduction. Note that a 10 percentage points cut in IRES took 20 years to materialise with only a single case of a 5 percentage points revision in the tax rate in 2008Q1.

In this scenario, the model predicts that the decline of IRES would be counterproductive, because it would cause reduction in labour demand by companies. Investment would still increase with respect to the baseline, by 1.83 percentage point in the first year and by 2.27 percentage points after four years. Compared to the reduction in IRAP scenario, the boost to private investment is stronger due to the larger decline in the user cost of capital (user cost of labour being unaffected) generating stronger demand for investment in capital. However, this produces a degree of substitution between capital and labour, resulting in a modest reduction in employment, by 0.7 percentage points after one year and 0.23 percentage points after four years. This policy leaves disposable income and consumption almost unchanged. Overall, GDP increases, but only by about 0.2 percentage points in the first year and thereafter. This has obvious negative implications for the expected sustainability of public debt.

In the transmission of this policy change labour demand plays a key role, which justifies a more detailed look into its determinants. The Prometeia model incorporates disaggregated equations for the determination of labour demand (i.e. employment) in 5 different

sectors: agriculture, industry, construction, private services and public services. In each sector labour demand increases with production while decreases with unit labour costs and their ratio to capital costs. When IRES declines, the user cost of capital to labour also declines, while its inverse increases, exercising downward pressure on labour demand. Sectors with higher capital intensity such as industry would be more affected, with higher incentive to substitute labour with capital. Instead, the construction and private services sectors with lower capital intensity and moderate sensitivity to the price of capital would experience lesser pressure.

For comparison, we evaluate a fiscal policy scenario in which government chooses to boost the economy through an equivalent increase in public investment of 1% of GDP, rather than a reduction in corporate taxes, to stimulate private investment demand. In this case, the model predicts an increase in employment and internal demand and endogenous decline in the user cost of capital. This also encourages private investment, which increases by 0.28 percentage points after the first year and 0.64 percentage point after the fourth year. Potential output increases by 0.14 percentage points after one year and 1.22 percentage points after four years. This policy has an immediate and powerful effect on Italian GDP, which increases by 1.14 percentage points in the first year and 1.35 percentage points after four years. The higher economic growth generated is able to deliver budget surpluses after three years and sustainable gradual downward convergence in public debt.

5. Conclusion

This paper evaluates the transmission of corporate tax policies to factor costs in production, investment and economic activity. It contributes to the assessment of the usefulness of optimally designed growth-friendly policies in the longer-term and over the business cycle. The overall effects of reducing the corporate tax burden need to be assessed in a macroeconomic equilibrium context accounting for endogenous spillovers and feedback loops across various sectors of the economy.

This paper provides a detailed analysis of the taxation legislation in Italy over the past two decades, and proposes indicators for

the user cost of capital to labour that provide rigorous measures of the impact of the taxation system, including the effect of tax rates and tax incentives and underlying factors such as monetary policy and relative price movements. The historical and future influence of changes to the taxation system are studied on the basis of an estimated econometric model of the determinants of investment demand and the Prometeia quarterly macro model.

The results of the analysis show that changes to the taxation system have an important influence on the factor costs of production, investment and overall economic activity. Variation in the user cost of capital to labour is driven mostly by changes to the taxation system, leaving a very limited role for other factors such as monetary policy and relative prices. This variation is characterised by a slight downward trend and marked cyclical fluctuations. This dynamics is dominated by the user cost of capital, but the user cost of labour also plays an important part in dampening upward peaks in the cost of capital. While the cyclical fluctuation in the user cost of capital is attributable mostly to temporary fiscal incentives, tax rate policies determine its trend.

The econometric analysis demonstrates that reductions in the user cost of capital relative to labour have a significant and positive effect on investment, both in terms of its longer-term equilibrium and its short-term dynamics. Naturally, Keynesian type demand factors also play a role, such as aggregate demand (in the short and long-term), demand expectations and uncertainty (in the short-term). Over the years, temporary tax incentives have made an important contribution to boosting investment and economic activity during downturns. Reductions in tax rates have had a smaller, but permanent effect imposing a minimal burden on economic activity.

The results of the macroeconomic assessment of further reductions in corporate tax rates in Italy shows that decreasing the regional tax on corporate activity (IRAP) would be more beneficial than a comparable decrease in corporate income tax (IRES). This is because, IRAP reduces the user cost of both capital and labour, which provides corporations with incentives not only to invest in new capital but also to increase employment. Reducing IRES would be counterproductive because it depresses labour demand. In this case cutting corporate taxes would encourage a degree of substitu-

tion between capital and labour, exerting downward pressure on employment and dampening the positive overall effect on economic activity. Although in this paper we focused on analysing cost factors, we do not ignore the importance of demand factors, which are shown to be very powerful. Assessment of an equivalent increase in public investment produces an overwhelmingly greater improvement in economic activity, with positive spillovers to investment and debt sustainability.

Corporate taxation policy and, especially, temporary fiscal incentives, seem to be more effective instruments for overcoming cyclical downturns than alternative tools, such as monetary policy, which does not appear to generate economically meaningful counter cyclical variation in the real rates of financing for Italian businesses. Temporary fiscal incentives generate important positive economic effects, with long-lasting consequences for economic dynamics and welfare. However, the gradual lowering of taxation rates has generally reduced the tax burden on companies to relatively minimal levels with valuable positive implications for longer-term economic growth. Nevertheless, consideration of future reductions to corporate tax rates should take account of the general macro-economic perspective and alternative options for achieving the economic growth and public debt sustainability offered by the rising power of Keynesian factors, including boosting aggregate demand and public investment.

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WHAT FUTURE FOR TAXATION IN THE EU?

edited by Catherine Mathieu and Henri Sterdyniak

This volume brings together a selection of papers given at the 11th EUROFRAME Conference on economic policies in the European Union: "What future for taxation in the EU?" held in Paris on June 4, 2014.

European economies have high taxation levels, which allow financing the European Social Models, characterised by a high level of public and social spending. Hence taxation issues are of first importance in Europe and have generated a huge number of analyses, reports and debates over the last decades. As concerns the future of taxation in the EU, a broad group of questions is: which tax reforms should be implemented at the domestic level? Do we need tax harmonisation and tax coordination at the EU level? How could tax reforms help in the resorption of euro area current imbalances?

In the introductory chapter, Catherine Mathieu and Henri Sterdyniak provide a summary of all papers given at the Conference. Six of the Conference papers are released in this volume, addressing taxation issues from different perspectives: the financial transactions tax (Stephan Schulmeister), the issue of sustainable tax policy concepts and indicators (Margit Schratzenstaller), the issue of a major tax reform in France (Henri Sterdyniak), tax progressivity in the OECD countries with a case study for Germany (Sarah Godar, Christoph Paetz, and Achim Truger); the interaction between the labour tax wedge and structural reforms in Italy (Michele Catalano and Emilia Pezzola); Tax policy, investment decisions and economic growth in Italy (Manuel Bonucchi, Monica Ferrari, Stefania Tomasini, and Tsvetomira Tsenova).

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