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Fiscal policies developed by the European Mediterranean
countries to combat unemployment

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EXECUTIVE SUMMARY

This project analyses the recent taxing reforms and policies carried out by the European Union countries, but specially the Mediterranean countries to combat unemployment as it has been very affected by the economic crisis of 2007. These countries are France, Greece, Italy, Portugal and Spain, and this work pays special attention to them as they have been severely in trouble after the crisis, and their reforms to improve their economies and decrease unemployment have followed a similar trend. For the better understanding of the analysis, the situation of the European Union before the crisis is described and to see if policies will actually help the economy, the relationship between taxes and economic growth is explained. The work finishes with an econometric analysis of Spain, as is the closest country, to see what impact taxes and economic growth have in unemployment.

KEY WORDS

Crisis, Economic growth, European Union, Labour taxation, Mediterranean countries, Tax wedge, Unemployment.

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1. INTRODUCTION

Since the beginning of the economic recession in 2007 one of the main concerns regarding to the economic policy of the governments part of the European Union has been the unemployment, and in particular for the countries located in the Mediterranean, which have been the countries suffering more from this problem.

This crisis has shown the weaknesses of the European Union and the Euro Area, which contributed to the increasing and unsustainable national debt and deficit levels. This has forced to some countries to introduce very strict policies to reduce their deficit, although further measures need to be taken. However, the European Union is showing that under these hard situation, remaining as a unionized block of countries, it is supporting some countries that otherwise would have had even worse consequences because of being more vulnerable.

Many studies have been published about this topic and have approached the identification of the determinants of unemployment with varying results.

With that being considered, this work will be focused on analysing how the southern Mediterranean countries are acting to fight and recover from the crisis and which fiscal reforms are they introducing. There will be a general overview of Europe, but more focus will be made on the Mediterranean countries as these countries are likely to have a very similar trend on their policies and have been severely punished with the economic crisis. They have already implemented many reforms, taken strict measures which have improved their economy, but there is still need and place for more changes and improvements. These Mediterranean countries are: France, Greece, Italy, Portugal and Spain. Questions as if they have adopted the correct measures and if they are following the right path will try to be answered through this analysis.

I have chosen to do this project because I initiated studying economics in high school in 2007, when the economic crisis explode. Since the first moment I got in touch with economics, the topic of crisis has always been present and has aroused my interest. Also, as a student finishing my degree I am worried about the current situation of unemployment in our country and in the closest countries, so I decided it would be interesting to analyse the relationship between taxes and unemployment.

Studying in more depth the reforms and measures taken by the European Union and more particularly by the Mediterranean countries, has helped me to see in which directions these countries are going and if they are being effective. This analysis has sense in time of this crisis, to define the role of the government about the fiscal consolidation plans and the reforms in taxation and public spending. It is also important to analyse the composition and efficiency of public spending and to see in which areas the countries should improve and apply better policies.

This work can be divided into four different parts. The first one will be an introduction of the topic. In the second part the actual situation will be described, to understand how the countries work as members of the European Union. The literature published about this topic will be mentioned and the taxes to analyse will be defined. The third part will be the actual analysis of the tax reforms carried out by the European countries in general and by the Mediterranean countries in particular. It will start showing the situation of the European Union before the crisis, and will answer the question if there is a relationship between taxes and economic growth. The general trends in the EU will be shown and with more detail the reforms by the countries to be analysed. This part will end with an econometric analysis of the case of Spain, as it is an issue that is very dear to our hearts. The final part will be a conclusion of the topics discussed and will give recommendations for future reforms that could be implemented to continue with the fight against unemployment.

2. LITERATURE REVIEW

A lot has been written about the tax reforms carried out by the European countries, before and after the crisis, and the European Commission also regularly publishes reports about taxation and reforms. Many economists have been writing about this topic during the last years. To analyse the tendency of the European countries before the crisis, Bertarelli *et al.* (2014) published an article where the fiscal convergence by the members of the EU, during 1991 and 2008 was analysed, showing that there was a first process of convergence in the 90s although that tendency did not follow a regular path, as in 2000 the European Union experimented a divergence in its taxation trends. Continuing with the taxation convergence but during the crisis, Vintilă and Țibulcă (2012) stated that there was convergence in the taxation tendencies between the Member States, basing their analysis on estimations about the taxing revenues collected by direct taxation and social security contributions. Delgado and Salinas (2008) discussed the relationship between the economic growth and taxation,

where a final idea could not be concluded as they reached the conclusion that economic growth depended on too many variables. However, they visualized a tendency in most of the studies of a negative relationship between the two variables analysed. A year later, Delgado (2009) analysed the taxing structure or “tax mix” of the European Union to revise the literature which relate tax mix and economic growth and also researched the most relevant data about taxing available in Eurostat, to analyse the huge differences between the members and figure out the possible causes. Castro (2008) goes further in the relationship between taxes and economic growth by considering theories and evidences between the quality and composition of public finances and economic growth. It concluded the huge differences in the composition of revenues and expenses between countries, meaning efficiency, which was the cause of the opposed trends of growth among the members. His study showed how public administration was one of the main factors for a sustainable a long run economic growth.

There are still plenty obstacles that the European Union has to overcome in order to obtain its desired level of economic growth. Godar *et al.* (2014) recently published in the Global Labour University a study analysing the perspectives and obstacles of the EU, and how to combat the urgent need for fiscal consolidation. The publication reports that tax evasion is still not fought as hard as it should be and that taxation could still be more redistributive in most of the countries. European Union and Member States are not the only ones analysing and publishing about what has happened in last years. The work of other institutions as OECD (2014), also help to revise the recent works done about the topic. In one of its recent publications it gave detailed detail of taxing reforms and taxing data from the OECD members, which include many European members. The work paid special attention to personal income tax and social security contributions, to see the real impact that these taxes have on household’s net income and in the economy. The work concludes a strong trend of a continuous progressivity among these taxes in most of the countries.

As mentioned before, the European Commission periodically publishes reports summarizing the taxation trends of certain periods. Two years ago, European Commission (2013), reflected the difficult fiscal position of many members who decided to increase fiscal burden to improve their economies, but stated the need for fiscal consolidation. It summarized the fiscal reforms carried by the European countries between mid-2012 and 2013.

Considering a more recent one, European Commission (2014), identified the main trends in taxation reforms between June 2013 and June 2014, and included an overview of the main tax reforms of the Member States. Recommendations as shifting the most detrimental taxes for growth away were also given and a more detailed advice about which policies would benefit each country.

3. ACTUAL TAXATION

As the countries we are going to analyse are members of the European Union, we first need to know how the European Union's tax system works.

The responsibility of collecting taxes and fix tax rates falls in the national governments, not in the European Union. The last one supervises the rules and fiscal decisions made by national governments on tax rates (like corporate and income tax) to ensure that they are consistent with the goals of job creation of the EU. The European Union needs that any member blocks the free movement of goods, services and capital around the EU, that they don't favour a company of a country rather than another one, and that they don't discriminate to consumers, workers or companies.

The EU can't take fiscal decisions unless all the other members agree. It cannot either determine the quantity of the expenditures of each country, provided that they don't exceed some limits, because if they do, they endanger the economic growth of the Euro Area.

3.1. Fair tax competition between EU countries

The EU pays special attention to corporate income tax because of the risk of tax exemptions or special regime applied in one country can attract business unfairly, although the EU countries have promised to follow a code of conduct that prevents them from this kind of practices. Because of these reasons also, all members have agreed minimum rates for VAT and special taxes on gasoline, tobacco and alcohol which are obliged to comply.

Rules and rates over personal income tax are concern of each national government, unless they affect cross-border interests. So its main goal is to ensure that there are no fiscal problems or pension transfer that can affect in the decision of where to live of an individual.

3.2. Prevent tax fraud and tax evasion

But EU also helps to prevent cross-border tax evasion. Governments lose income if their residents don't declare their income or revenues obtained in other countries. Residents can deposit their money in other countries for a higher profitability as long as they don't do it to avoid paying taxes, that's why most of the countries have agreed to exchange financial information of non-residents. The ones who are an exception (like Austria or Luxemburg) apply retentions to these deposits and then transfer a big part of it to the home country of the owner of the account.

EU countries lose more than a billion of Euros of revenues every year because of tax fraud, tax avoidance and black economy, which is about a 20% of the total fiscal revenue. Even that the fight against these practices concerns its own government, the coordinated operation of all of them is necessary, as fraud usually goes out of borders.

3.3. Tax on financial transactions

The performance of the financial sector, a major recipient of government help, was one of the main causes of the economic crisis. A tax on financial transactions can ensure that this sector contributes to partially cover the cost of the crisis and rectify what is seen as disloyal in the taxation field and in the public budget. Right now, 11 countries of the EU are developing a system to establish a tax of this type, with a broad base and which will ensure a big revenue, despite the high international mobility of financial transactions.

4. TAXES TO ANALYSE

When analysing the fiscal system, these are the main taxes which are going to be seen in more detail:

4.1 Direct taxes

Personal income tax: Personal Income Tax (PIT) is a direct tax levied on income of a person. A person means an individual, an ordinary partnership, a non-juristic body of person and an undivided estate. In general, a person liable to PIT has to compute his tax liability, file tax return and pay tax, if any, accordingly on a calendar year basis.

Corporate income tax: Corporation Income Tax (CIT) is charged on all profits (income and gains), wherever arising, of companies resident in the State, with some exceptions, and non-resident companies who trade in the State through a branch or agency.

Social security contributions: The Social Security tax is a tax applied to income related to labour. All employees and self-employed entrepreneurs pay into Social Security through the Social Security tax, which is also known as Old-Age, Survivors, and Disability Insurance.

4.2 Indirect taxes

VAT: The Value Added Tax, or VAT, in the European Union is a general, broadly based consumption tax assessed on the value added to goods and services. It applies more or less to all goods and services that are bought and sold for use or consumption in the Community. Goods which are sold for export or services which are sold to customers abroad are normally not subject to VAT. Differently, imports are taxed to keep the system fair for EU producers so that they can compete on equal terms on the European market with suppliers situated outside the Union.

Excise duties: Excise duties are indirect taxes on the consumption or the use of certain products. In contrast to Value Added Tax (VAT), they are mainly specific taxes, i.e. expressed as a monetary amount per quantity of the product.

The most commonly applied excise duties are those on: alcoholic beverages, manufactured tobacco products and energy products (motor fuels and heating fuels, such as petrol and gasoline, electricity, natural gas, coal and coke).

4.3 Others

Environmental taxation: Green taxes (also called "environmental taxes" or "pollution taxes") are excise taxes on environmental pollutants or on goods whose use produces such pollutants. Economic theory suggests that taxes on polluting emissions will reduce environmental harm in the least costly manner, by encouraging changes in behaviour by those firms and households that can reduce their pollution at the lowest cost.

Taxation of property: property tax is a levy on property that the owner is required to pay. The tax is levied by the governing authority of the jurisdiction in which the property is located; it may be paid to a national government, a federated state, a county or geographical

region, or a municipality. Multiple jurisdictions may tax the same property. This is in contrast to a rent and mortgage tax, which is based on a percentage of the rent or mortgage value.

5. BEFORE THE CRISIS: EUROPEAN UNION'S FISCAL CONVERGENCE

To understand the steps taken by the European Union and the Euro countries we must first know how they acted before the crisis and how the integration process was evolving.

The previous 20 years have shown the long process the European economy has faced with the integration, since it started in 1957 with the treaty of Rome. The acceleration process of integration started in 1990 when the European Union started with a great number of agreements between countries. By 1993, the Single European Act¹'s goal, which was the Single Market, was obtained with the “four freedoms” of movements of services, goods, people, and capital. The 90s were also very important because of the sign of the Maastricht Treaty in 1993, the Treaty of Amsterdam in 1997 and the introduction of the Euro in 1999. These events involve a before and after of European history because of the abandonment of monetary sovereignty and the introduction of the common currency, which was an irrevocable step to total integration. Then, countries were required to be admitted by the EMU, which required budgetary tightness as the ones specified in the Maastricht treaty. But also, the European integration happened as the same time as the whole world was also living an economic and trade integration, which helped this process.

Considering in more depth each relevant variable, which are deficit over GDP, revenue and expenditure over GDP and public, is safe to say that the EU treaties and the policies adopted, did helped in fiscal convergence in the Euro Area , although with very different patterns. The objective was to set effective fiscal discipline and the convergence of each fiscal indicator.

There has been a deficit reduction of all countries during the last decades, but below the EU average, except Greece and Spain, which show divergence because of the increase in debt. This reduction of deficit followed different patterns: it was reduced during the 90s, then worsened between 2000 and 2005, because of the economic deceleration and then again improved between 2005 and 2008.

¹ Signed in Luxembourg in 1986

In the two of the most important variables, total revenue and expenditure, there were different trends: on the revenue side tax policies were not adequately used to increase levying, and the decrease in expenditure was in most part due to the decrease in interest rates. So there was a convergence in the expenditure, because most of the countries decreased its government spending but revenue side remained constant. In the government expenditure, we have seen that public consumption over GDP didn't suffer any variation during the last years, because it slowly adjusts to the long term necessities of the countries. Social benefits expenditures have also been solid during the last years. Debt interest is the indicator that shows more convergence between all the countries, because of the strengthened policies taken under Maastricht requirements, as it can be seen with the slow process of a decrease in the interest rates. This decrease in interest rates mainly affected those countries with the higher interest rates, which certainly were the Mediterranean ones: Greece, Portugal, Spain and Italy. The studies about the public investment show no convergence at all at any period before the economic crisis.

So the requirements of the European treaties and the general decrease in total government spending led countries to convergence and to a better management of the deficit in the last two decades prior to the crisis. However, as most countries used this decrease in interest payments to reduce their deficit, they didn't use an active debt policy, that is, they didn't use a policy to control debt.

This shows the weakness of the UE under the Maastricht Treaty and the lack of instruments of coordination of domestic policies available to the EU institutions.

A better coordination of the policies of each country in the long run could have created a believable expectation of convergence which could help the creation of an integrated bond market, as suggested by the European Commission's president in 1993, Jacques Delors.

However, it is important to point that after the 2010 European sovereign debt crisis, "The Fiscal Stability treaty" was signed in 2012 with the objective to reaffirm the fiscal constraints acquired from the Maastricht Treaty and the Stability and Growth Pact as essential tools to rebuild financial stability inside the Euro Area and to enhance a long run and effective fiscal and economic integration. The fiscal discipline's goal is to keep a balanced-budget and a structural deficit target directed to the convergence of total revenue and expenditure which implies strong commitment to government policies.

6. IS THERE A RELATIONSHIP BETWEEN TAXES AND ECONOMIC GROWTH?

To analyse the fiscal reforms in the European Union in the last years, it is very important to first know if these fiscal policies are crucial to fight the crisis and foster economic growth, and if taxes and economic growth are actually related. There are different opinions whether taxation policies affect or not the economic growth of a country, and for its better understanding what has happened until now between taxes and economic growth will be explained below.

Economic literature has always dedicated a big effort to analyse theories about economic growth and the impact of taxes in economy. The degree and the way of public intervention can explain, with other factors, the differences in economic growth between countries.

Public sector's goals are efficiency, equity and stabilization, so a stable economic growth is a public objective, but without forgetting equity or a fair distribution of income in society.

Economic growth under taxation depends on the effects of taxes on agent's decisions about consumption and investment, and also on the effects of expenditure policies taken with the tax revenue.

Theoretically, a reduction in taxes increases profitability and promotes accumulation, innovation and development, and with it, growth rate. But in concern with public expenditure, if the expenses are productive like in infrastructures, R&D or human capital through education and health, a decrease in taxes and a decrease in productive public expenditure, can lessen growth. So in one way a reduction in taxes increases growth, but as it involves a decrease in revenue, and therefore to a decrease in public expenditure, can decrease growth. So the net effect of a difference in taxes in growth will depend on two effects: the effect of taxes over agent's decisions and the effect of decisions and actions about growth.

For neoclassical models of growth, Solow (1956), growth rate in the long run depends on exogenous factors such as growth of population, technological progress, so that fiscal policies do not really explain the differentials in growth rate, although they would explain the variances in the short run. For economist like him, fiscal policies affect the output level, but not the economic growth. In the Solow model, in equilibrium, saving is equal to investment,

and technical progress, which is exogenous, can improve growth. It is from here where convergence hypothesis was born.

Another theory is Laffer's curve (1980), which says that there is a U-inverted relationship between taxation and revenue. Under this theory, once we have reached a determined taxation level, an increase in taxes would decrease revenue and a decrease in taxes would increase revenue through an increase in activity.

It is necessary to analyse the relation between the size of public sector and economic growth, considering that there are other objectives like equity and redistribution, and that the composition of expenditure and fiscal structure are very important. We also have to check deficit and debt. To see that, there is an interesting research by Delgado y Salinas (2014), which analyses the relationship between economic growth and taxes and its difference in OECD countries and EU countries. This research concludes with the following ideas. For the OECD countries, there is a positive relation between tax burden and per capita income, but there is no relation at all for the EU-15 countries. However, relation between tax burden and economic growth for OECD countries is slightly negative, and very negative for the EU-15 countries. So, according to this research, tax burden has actually an impact on economic growth, and is negative.

Agell *et al.* (1997) made another research analysing the economic growth for the 1970-1990 period, with a simple regression of the average rate of the growth of the per capita income and tax burden which showed that there is a negative relation between the variables.

Although having this previous analysis, it is very important to consider that economic growth depends on multiple factors, and surely public sector is one of the most determinants, but the effect of fiscal policies in growth is different for every country, the period of times, the econometric models, the variables, and the fact that there isn't a general theory of reference, because if we take into account the empirical evidence available until now, we observe that the data is sensitive to each analysis and it isn't very conclusive, because the relationship between taxes and economic growth is attained to a multiple conditionings, like level and composition of taxes or structure of each country.

So there are two views about fiscal policies and economic growth theories:

-Neoclassical models of growth say that taxes are not relevant for the economic growth in the long run.

- Theories of endogenous growth say that there is a relation in way that an increase in taxes they affect the accumulation of human capital and productivity of labour negatively.

However, it is true that summarizing most of the researches done until now, we could say that most of them found a negative effect between taxes and economic growth. They also found a negative relation between degree of progressivity of fiscal system and economic growth. Moreover, there has been a general increase in indirect taxation and a reduction of direct taxation, and that has been good for the economy but the conclusions aren't very strong and more studies would be required.

7. ANALYSIS OF THE POLICIES TAKEN BY THE EUROPEAN AND MEDITERRANEAN COUNTRIES TO GET OUT OF THE CRISIS

Now it is time to see in more detail which has been the measures and fiscal policies adopted by the European Union member states, but specially giving attention to the Mediterranean countries, and how has been their performance in the most important areas of taxation.

The tax system of a country is the responsible for government revenues but it also has more economic and social effects. Tax systems must be properly designed to find the balance between the three main objectives: growth, sustainability and fairness. The objectives often seem to be contradictory but improving the efficiency and effectiveness of the tax system can actually improve public finances, increase growth, employment and competitiveness while considering fairness and income inequality. EU members need to improve their public finances, help economic growth and jobs, increase economic stability while being fair through a better tax system.

7.1 Main trends followed in taxation in the last years from the main indicators:

-Overall Tax burden: has been increased and expected to stabilize. Members have in the last period increased the overall tax burden (direct, indirect and social security taxes) for fiscal consolidation.

-Labour tax burden: has been decreased for low-income earners.

-Labour tax: few increases, removal of tax reliefs and allowances.

- Personal tax: has increased on passive income as well as for top income earners.
- Corporate income tax: most of them have narrowed the tax base to stimulate investment and competitiveness. Some increased it by restricting loss reliefs and interest deductibility.
- Consumption taxes: has increased by raising reduced tax rates or applying a broader standard rate.
- Environmental taxes: has increased but doesn't have a big impact on budget.
- Tax fraud and tax evasion: All member states introduced measures to fight it and to improve tax compliance.
- Property taxation: reduction of the tax relief on mortgage interest payments to decrease incentives to acquire more debt.

7.2 Reforms followed by the Mediterranean countries in each main area of the tax composition and economic factors

The following information analyses which have been the main changes and policies adopted by the members while looking into more detail the southern countries as they, in general, followed a similar trend.

7.2.1. Labour taxation

As we are now in an economic crisis and knowing the actual high rates of unemployment, the changes in labour taxes can be very harmful in concern to the incentive the people can have to work or for companies to hire new workers, considering fairness.

When taxes on labour are high employment can be badly affected, especially some groups, the more vulnerable ones: the low skilled or low earners and the second earners, because for them, the labour demand and labour supply is more elastic.

There can be two type of labour reforms: a general decrease of labour taxation and/or a decrease in the tax burden of those more exposed in the market labour. Most of the countries tried reductions in the labour taxes by increasing the tax-free allowances or the tax credits for the personal income tax system. Italy and France also used measures which applied to all members related to social security contributions. The trend in the worst moment of the crisis was to increase the taxes for higher earners (surtaxes on top earners, new tax brackets for the higher incomes and increase the top-band rate of personal income tax).

But when public finances of some countries are going through a difficult time, reducing the tax burden is difficult. This loss of revenue must be combined with a decrease in expenditure, or shifting the taxes to taxes which are less detrimental to growth: pollution, consumption or property. However, these countries find it very difficult to decrease labour taxes because they need the revenue coming from them for fiscal consolidation. So they must mainly increase those taxes less detrimental to growth. Spain, France and Italy increased VAT and all the countries (both Mediterranean and European) increased excise duties on fuels and on tobacco and alcohol. These reforms have been done taking into consideration social needs and trying to benefit lower income workers, even though the scope is limited.

French tax regime is very complicated and with the last reforms, it is trying to simplify it. It has very high social and labour taxes and its unemployment is also high for young people and for long-term. Its high minimum wage increases its cost and has a harmful effect on the demand and supply of labour. So its reforms have been directed to decrease labour costs and to decrease the high protectionism from its labour market. France is now applying the CICE “Crédit d'impôt pour la compétitivité et l'emploi” (Tax credits to encourage competitiveness and employment) and measures like the Responsibility and Solidarity Pact, which will come into force in 2015 and 2016. It is now increasing the waiting period to receive a separation allowance for employees, which is directed to increase the activity of older workers, both from the supply and the demand side. For the short term improvement, it has reduced the cost and the tax wedge of work for low-wage earners.

Greece has had two important reforms in 2013 and 2014. Concerning the labour taxation, the state's role has been strengthened for setting minimum wages to encourage employment. It has also reduced social contribution by 3.9% (2.9% for employers and 1% for employees) which has slightly increased their salaries. It has reformed the regulatory framework for temporary jobs by making efforts to restructure corporations to improve their sustainability and avoid the conversion to temporary jobs. In 2013 it introduced the “ERGANI” Information System to control the employment information and making the submission of all labour data mandatory. This and the new introduction of the “ARTEMIS” plan will also help avoiding undeclared work.

Italy adopted in December 2014 the “Jobs Act” to introduce new measures as a higher flexibility of employment protection legislation (EPL) to promote a better allocation of labour resources. An example of this is the new out-of-court form, where if there is a

dismissal, the employer has to pay the employee a compensation of 1 month per year worked, a quantity not held by taxation. Active labour market policies (ALMPs) have been introduced to improve the matching process when there is a vacancy, and it encourages both the firms to offer new vacancies and the unemployed workers to accept the jobs. This new law also requires conditionality for those receiving unemployment benefits. More effort has been made in the participation of the female labour force by remodelling tax deduction for dependent married woman, reforms in the maternity allowances and with tax credits for low and medium income families with children.

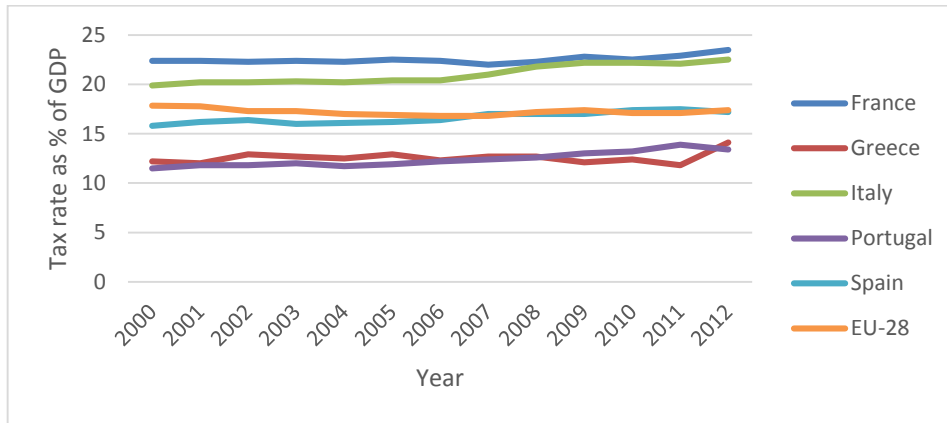
Portuguese government has also faced important labour reforms to improve its economy. There have been severe cuts or lowering in the payments and compensation funds in new contracts, freezing the minimum wage, cutting bank holidays, extending fixed-term contracts, widening temporary jobs, deregulation and European Social Fund (ESF) funded wage subsidies. For young people important measures have been taken in concern to their traineeships and their social security contribution reimbursement, being the PES reform program, “Public Employment Services” a very important one.

In Spain the most important reform done has been the one for labour laws, but there is still need for more reforms. Spanish “Derecho Laboral” was very rigid but it finally started to make some reforms after being under pressure to improve its structure. The more remarkable ones are to make firings more flexible if a business is in an economic bad situation, to decrease the compensation of firings and to make easier the probationary temporal contracts. Labour tax rates have been decreased, both the personal and for corporates. More than 50% of its unemployment is temporal, and as many of them find jobs outside the country or in the black market, its corporate tax revenue is low. This situation could be improved by liberalizing the labour market: with lower taxes for vulnerable groups and more incentives for investment.

Also, in the late 2013, the European Commission introduced the National Youth Guarantee Implementation Plan (YGIP) to ensure a good quality job offer, training or traineeship for young people under 25 years old and unemployed once they finish their education. The plan has two points. The first is a prompt intervention and activation directed to prevent and support the young people from the exclusion of education and training in the labour market, and the second is directed to the integration, with the actions and measures needed to offer these good quality job offer. The graph below shows the evolution of labour taxation during

2000 and 2012, where it can be seen that mainly stayed stable, which a small trend of increases.

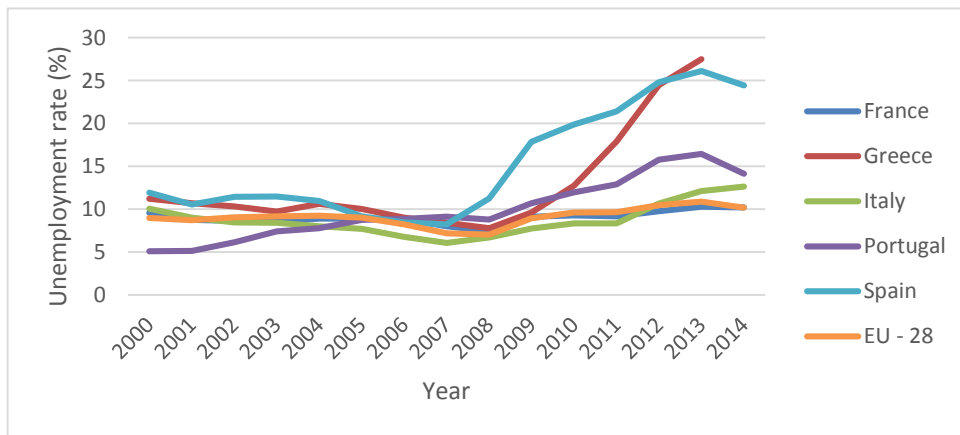
Graph 1. Evolution of Taxes on labour as % of GDP, 2000-2012



Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

Here would also be interesting to see the unemployment rate of this countries, using the Harmonised unemployment rate (HUR), which is a measure that is internationally comparable as it takes very similar factor into account in its calculation.

Graph 2. Evolution of Harmonised unemployment rate, 2000-2014



Source: Self elaboration from <https://data.oecd.org/unemp/harmonised-unemployment-rate-hur.htm>

As we can see there are two periods to distinguish, from 2000 to 2007 which was a growth period and unemployment was relatively low and was decreasing; and the second period, from 2007 to 2014 when the crisis begun and unemployment started rising considerably, until reaching high levels as those in Spain and Greece.

7.2.2. Corporate income tax (CIT)

The system of personal and corporate income tax is complicated as it can increase administrative expenses. It is very sensitive because changes in here can affect dramatically some vulnerable groups. Governments try to pay attention when taking decisions about these taxes because fairness and equality are two of the three goals of the tax system. The general trend has been to increase the tax for rich and top earner companies and to decrease the one for low earner worker and companies, but with some exemptions.

France increased the application of temporary surcharge until 2015 increasing its rate to 10.7%. But on the other hand, it decreased the CIT with an important change to promote employment and competitiveness with the incorporation of a tax credit called “*crédit impôt pour la compétitivité et l’emploi*” by increasing the tax credit to 6% of gross wages below 2.5 times the minimum salary. This measure is expected to cost 20billion Euros in the following years from the total budget, and to help the public finances. It will be financed with a cut in public spending and an increase of the VAT and environmental taxes. Following these initiatives, it also included new exemptions for young innovative businesses with creative activities, but the cost of this last one is not as important as the previous one. The “*contribution de solidarité des sociétés*” will be removed in 2017. It will also decrease the statutory rate of CIT gradually to 28% by 2020.

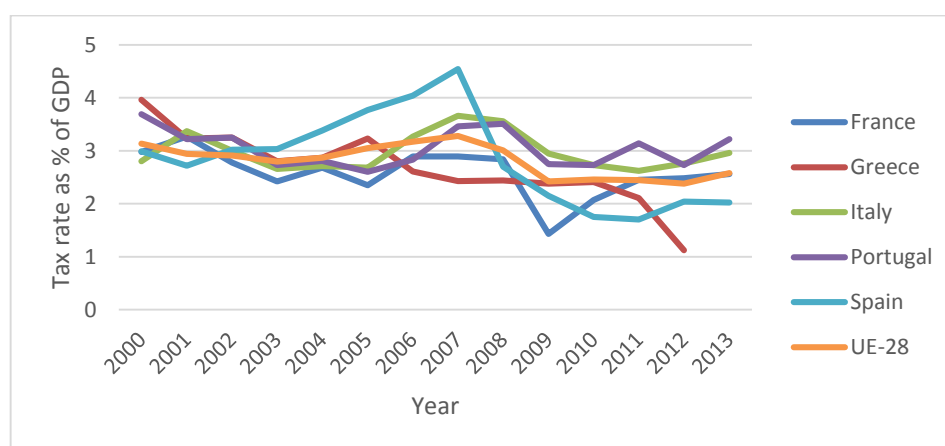
Greece limited its deductibility of interest through a new definition of the EBITDA (Earnings before interests, taxes, depreciation and amortization) in determining the tax base. It introduced a new plan for the control of foreign companies. However, it decreased the CIT making R&D costs deductible. Also, a withholding tax rate on dividend distributions and profit capitalizations has been decreased to 10%. Greece is making severe reforms in CIT and PIT since July 2013.

Italy tried to reduce the CIT for specific groups, with measures like introducing tax credits for art, cinema, tourist, R&D recruitment, new companies and investment in new machines and equipment. It has also increased the deduction for equity finance to avoid the problem of debt bias which is better analysed below.

Portugal reformed its CIT system completely in 2014, with a decrease of the statutory tax rate to 23% and a 17% reduced tax rate for taxable income higher than 15.000 Euros for small and medium companies. It also introduced the possibility of a special tax regime for small companies, and introduced new measures to simplify the payment of this tax.

Spain, for example, to avoid double deductibility has made losses on share capital held in other entities and permanent establishment losses not deductible. It has introduced new tax credits for R&D and for the employment of disable workers. It extended the patent box outline, which allows companies to pay a lower rate on those profits coming from patents. It increased the period of tax credit for training employees for new technologies and made permanent the tax credit for the filming industry. Since the beginning of 2013, impairment losses coming from the participation in the entities' capital and from permanent establishment outside the country are non-deductible. Graph 3 shows important changes of the Corporate Income Tax as % of GDP since 2000, where a general decrease was done just after the crisis, but then it slowly started to increase.

Graph 3. Corporate Income Tax as % of GDP, 2000-2013



Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

Debt bias

Most of corporate tax system help more those companies financed by debt than by equity, because interest costs are deductible, while equity returns are not. This therefore creates debt bias in favour of debt financing. This advantage can provoke notable risk because it incentivizes companies to be indebted. It may also erode the tax base with international profit shifting and the use of hybrid instruments. This could be solved or improved by taking away or limiting the deduction of interest costs, or by including an allowance for corporate equity returns. The actions taken by the members have been decreasing the deductible interest costs based on EBITDA. France limited the deductibility to 75% of net interest from 3million Euros threshold.

Italy for example adjusted rules on allowances for corporate equity, and included an incremental incentive for companies which involve their selves in European stock markets. Portugal lowered the threshold limiting the deduction from 3 million Euros to 1 million.

7.2.3. Personal income tax (PIT)

France tried to decrease tax expenditure by removing some tax benefits like the exemption for child-related pension bonuses and the family allowance to decrease its budgetary deficit. It removed the exemption for pension premiums and for workers' group insurance in the beginning of 2014. In the same year, it reduced the PIT with the indexation to inflation of the scale of the income tax. New PIT brackets were created in 2013 to simplify the system. Since then also dividends and interest are being taxed following a progressive tax scale. To decrease tax expenditure, a lot of tax credits were removed, like the family quotient and the overtime wage exemption.

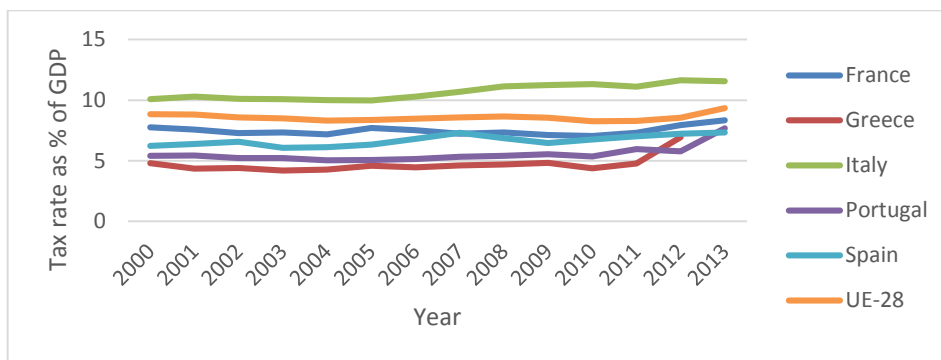
Greece changed the PIT in several ways. It started a total tax reform in January 2013. This new system will have 3 brackets instead of eight which go from 22% to 42% tax rate for employment income of salaries and pension. A solidarity contribution is being applied for the top of the headline rate. Income earned by professionals has now a 26% tax until the 50000 Euros. This new Law 4110/2013 also implies notable tax reliefs, as for the principal home rental rate, for education, mortgage interest and medical insurance. Moreover, this law includes a 20% tax on capital gains. Since February 2014 the farmer's salary was counted as business income, with a 13%tax rate.

Italy, in the last two years, has decreased the PIT for low-income earners two times: increasing tax credits for the law on stability and implementing a new personal income tax for workers earning less than 26.000 Euro per year. It has also decreased the tax for entrepreneur companies, for home repair works and for business modernizing works. Also, it introduced the partial deductibility of property tax for self-employed workers. On the other hand, it increased the PIT in the way of a decrease of tax credits for insurance premiums.

Portugal introduced an extension of the 3.5% surtax and increased the higher withholding tax rate while Spain increased the period for complementary surcharges on personal income.

Graph 4 shows a stable trend during the period as, in general terms, the countries decrease the PIT for low income earners and increased it for top income earners.

Graph 4. Personal Income Tax as % of GDP, 2000-2013



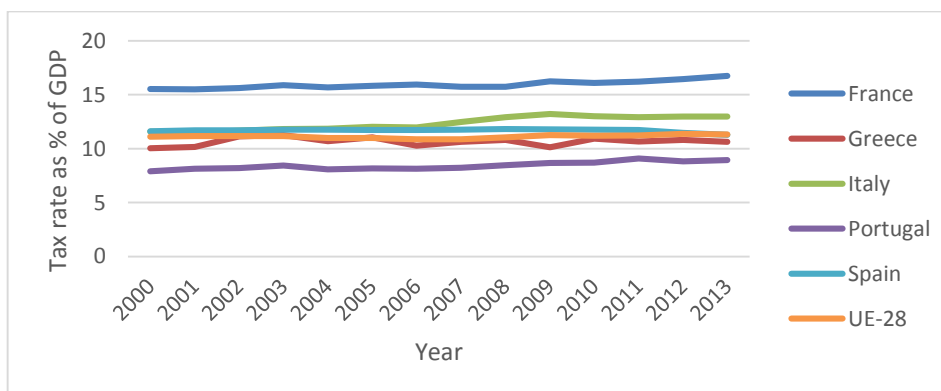
Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

7.2.4. Social security contribution

In France, Social Security Contribution was decreased after the responsibility and solidarity pact implementation with a further decrease of 10 billion Euros in worker's SSC. During 2013 and 2014 the social contributions exemptions for low wage earners have been enforced including the Competitiveness and Employment tax Credit (CECI). The government is planning to decrease 1.5 times the minimum wage employer social contribution and also to decrease the family contribution.

In Italy, they were reduced by a reduction in insurance premiums and contributions for industrial accidents. Portugal included a new option of payment of SSC for self-employed workers which is based in their level of. In January 2013, to incentivize the recruitment for workers younger than 45 years-old workers it allowed the reimbursement of the SSC of those workers. Spain included a new flat rate for SSC for general risks paid by employers, which applies for new workers hired in 2014.

Graph 5. Social Security Contribution as % of GDP, 2000-2013



Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

7.2.5. Value added tax

Most of the Members still have capacity to increase the base of taxes which increases the revenue. The tax system could also be simpler: they contain too many allowances, different reduced rates and other exemptions which are called “tax expenditure”. So countries have made efforts by simplifying the system to gain in efficiency and reduce the tax expenditure.

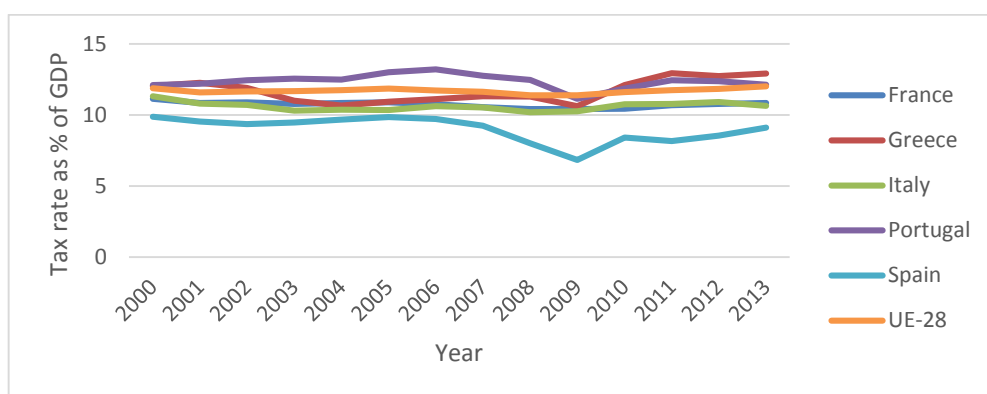
The Standard VAT rate was increased in most of the countries. The clearest example of this comes with the VAT where Greece, France, Spain and Italy have increased their VAT bases, and Italy and France have decreased the exemptions of some goods and services. However some like Greece and Spain have applied new reduced rates, lowering the initial ones, and increased the application in some further goods and services. This is the opposite of what should be done, and it has been proven with bad effects on their budget.

In France, the standard VAT rate was increased to 20% at the beginning of the last year, which applied to more goods and services that were previously considered intermediate. However, to improve the energy efficiency of houses and the repairmen of social houses the application of the reduced rate has been increased. France now applies the reduced VAT rate to energy and social housing services.

Greece increased the Standard VAT rate in July of 2010 to 23%. VAT rate for restaurants, catering services, prepared food, coffee and other drinks was reduced to 13%. Italy increased the standard VAT in October of 2013 to 22%.

Portugal increased the standard VAT in the beginning of 2011 to 23%. It has recently introduced a VAT cash accounting method, and made changes for the recovery system of unpaid VAT. It also increased the VAT in the Azores. Spain, in September of 2012, increased the VAT to 21% while it reduced the VAT for goods as art pieces, antiques and collectibles in 2014.

Graph 6. Tax on Goods and Services as % of GDP, 2000-2013



Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

The graph below shows how the taxation of goods and services remained almost flat until the beginning of the crisis, and after an immediate general decrease, Mediterranean countries started to slowly increasing this tax. All the countries have increased the VAT rate in the last years, especially since the beginning of the crisis, but more emphasis in simplifying the tax rates should be made to decrease tax expenditure and increase its effectiveness.

7.2.6. Competitiveness

Countries were aware of the decrease in their competitiveness so they changed some taxes to reduce the effects of the crisis. They mainly tried to help small companies and to stimulate the investments in the private sector. The changes were directed to increase investment and entrepreneurial activity, by incentivizing R&D&I and new small businesses. These tax incentives are complicated because as its effectiveness must be ensured. Spain and France applied reductions in corporate income tax. Italy lowered the standard IRAP (Italian Regional Production Tax) and allowed its tax base deduction for new workers hired with a permanent contract, in order to improve tax relief in new jobs. Portugal introduced a new reduced rate for small companies and extended the extraordinary surcharges.

Incentives for research and innovation

Most of the countries wanted to incentivize private investment in R&D&I, which is becoming more and more popular since the crisis. The main objective of these reforms is to incentivize the research and development of the most talented companies with not enough profits. These reforms are mainly being taken by France, Italy and Portugal.

It is very important to follow the course of these fiscal incentives and subsidies, so some countries like France monitor the programmes exhaustively to be sure that these measures are obtaining its objectives and are cost-effective.

Italy has implemented a tax credit for R&D&I from 2014 to 2016 for firms with a lower turnover than 500 billion Euros. Spain and Portugal changed the actual tax incentives to one where businesses are allowed to be reimbursed for non-used credits.

Incentives for entrepreneurship and investments

Entrepreneurial activity incentives and investment are needed to improve the economy and most of the countries are taking measures for that. In Greece, freelancers and self-employed have been the most affected by the crisis so to improve their conditions, the government has recently modified the terms and conditions of their benefits increasing the number of beneficiaries and extending their allowances.

Italy began a 15% tax credit for equipment and machinery expenses that were higher than the average during the last 5 years. Italy and Portugal gave tax incentives to some sectors like culture or creativity.

Portugal gave a temporary (from the 1st of June to the 31th of December of 2013) corporate income tax credit of 20% to the investment expenses lower than 5 million Euros. It also gave incentives for R&D until 2020 and a tax deduction for retained and reinvested earnings. Spain and Portugal reduced the tax on reinvestment profits especially for the smaller companies and also have tried to increase their equity investment.

7.2.7. Environmental and health taxation

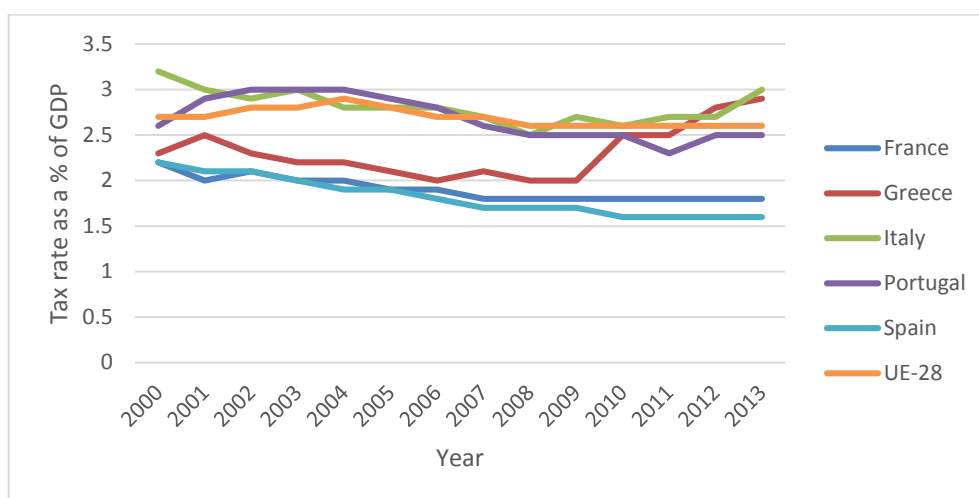
In environmental and health taxation is where there is more scope for reforms and structural changes. There is an important need for a change on taxes affecting negatively the environment, as energy and car company taxes. The taxes on those products harmful for health could also be increased, taking advantage of it by increasing the revenue.

Most of the countries are having this increase in revenue by increasing the taxes in pollution and resources. France is developing a better design on the car's taxation to increase the purchases of "green cars". The carbon tax has also been increased to 22€/tCO₂ and exemptions on energy tax were decreased or removed. These policies are expected to bring

a revenue of 4 billion of Euros. Other measures have also been taken but with less impact in the budget, as a broader base for polluting taxes.

Italy decreased the deductibility of the costs of cars which are for general use in 50% and in 20% the ones for personal use, and introduced a new tax on waste. Portugal included in 2014 a higher corporate tax for the expenses of company cars whereas Spain introduced a new duty in fluorinated taxes between 2013 and 2014.

Graph 7. Environmental taxes as % of GDP, 2000-2013



Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

As represented in the graph above, since the beginning of the crisis, the countries are increasing the environmental taxation, and this trend is planned to continue increasing as Europe has made considerable efforts suggesting the continuation of this increase

7.2.8. Excise duties

All the countries have generally increase the tax for alcoholic beverages. In Italy, the food and beverages of vending machines have increased to 10% and the editorial products have increased from 4% to 22%. It has also increased the taxes for alcohol, tobacco and lubricant oils and will severely increase fuel duties by 2017.

As we can see, as in the case of the Standard VAT, the excise duties have increased in every country in the last years. They are indirect taxes and are considered less harmful for economic growth, so although being so unpopular for the residents, these are taxes that usually government increase more to increase revenue.

7.2.9. Property taxation

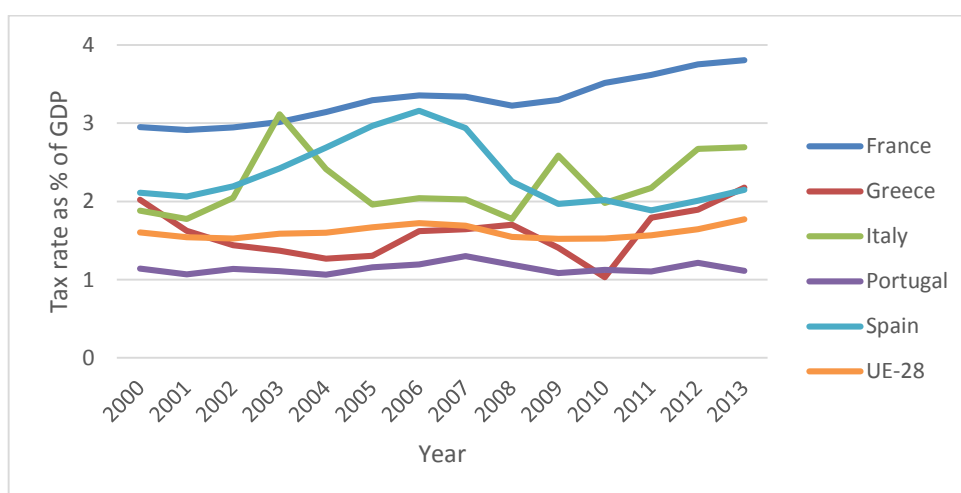
Most of the countries started to increase taxation of immovable property because it is considered to be less harmful for economic growth relative to other taxes. Measures in the area of property taxation are intended to be more progressive, increasing the taxes for luxury properties and to have less social impact as possible.

Italy created a new tax called TASI to have a more general and simple property tax. For that, it redefined the property taxation, with a new tax for indivisible services, introducing again the exemption from the current property tax for the main residence. It also decreased the transfer tax rate for these main residences to 2% in January 2014.

Greece introduced a new joint tax for a more efficient and simple property taxation system, with a principal tax and a supplementary one on real estate property. Spain has expanded the base of surcharge on real state taxation and increased the wealth tax.

It can be seen from the graph below how the countries and in the European Union in general taxation in property has been increased, with a special attention to France.

Graph 8. Property Tax as % of GDP, 2000-2013



Source: Self elaboration from <https://data.oecd.org/government.htm#profile-Tax>

Debt bias in housing taxation

In most of the countries, the mortgage's interest paid by owners on occupied housing is partially or totally deductible from personal income tax, while the return on the mortgage of imputed rent for living in the house is not taxable. This incentivizes household indebtedness, increases house prices and maximizes the risk of financial stability.

Some efforts are being done to avoid housing bias, decreasing the mortgage interest deductions. Spain removed completely the mortgage interest in new mortgages. Greece included a 15% withholding tax on capital gains on real state to equalize the tax of owner occupied housing with other investments.

7.2.10. Tax compliance and tax administration

EU is strongly fighting tax fraud and tax evasion. Until the explosion of the crisis, it was not known how big tax fraud and tax evasion was among the countries. To have a more fair and efficient system has become an important objective for the European countries.

Fighting tax evasion is very important, not only to reduce the tax gap, but also to have a more efficient tax collecting system. There are two big problems which are connected: the noncompliance of taxes and the bad tax system. Both must be solved by improving tax governance. Tax compliance can be increased with more simplified tax regulations which help taxpayers to fulfil their obligations. An efficient tax administration must have actions to detect tax fraud and also a more simplified tax system.

France has increased its revenue in 1.6 million in the last 3 years by making harder controls on online gambling and ecommerce, while also increasing the network of international agreements to share information.

Greece is now introducing to its system the Economic Adjustment Programme (EAP) financed by the EU and the IMF to improve tax administration and reduce tax evasion. This is trying to be done giving more autonomy to the tax authority, more audits to the government and to individuals and firms.

Italy started introducing stronger operations to find undeclared income and money laundering. This is being done through the tax reform law of March 2014. It is also currently working on the “delega fiscal” to define a more simplified and transparent tax system to increase growth and stability. Portugal has included the “lucky invoice” plan, to increase the compliance of tax payers that rewards those payers whose tax number is included on invoices reported to the tax authorities. Spain has being trying hard to reinforce its system and this has increased its revenue in 1.7 billion in two years.

General overview

For the better understanding of the information of this section, the table below summarizes the changes and the reforms carried out by the Mediterranean countries in the taxes that are more relevant for the labour market.

Table 1. General overview of the main taxation trends followed

Country	Labour taxation	CIT	PIT	SSC	Competitiveness
France	- labour cost - wedge for low-wage earners Responsibility and solidarity pact	+ temporally + tax credits + exemptions for youth -CIT long run	- exemptions New brackets, more progressive Decrease tax expenditure	- Tax rate + exemptions low earners	+ tax credit for R&D&I
Greece	Set minimum wage ARTEMIS	-deductions +control +dividend distributions	Simplify system More progressive	- Tax rate for low earners	+help for self-employed +tax credits
Italy	Jobs Act to improve labour resource	+ tax credits + deduction for equity finance(-fraud)	- For low-earners and entrepreneurs	- Tax rate -insurance premiums	- IRAP rate -new workers with permanent contract
Portugal	PES reform General “cuts”	New system - in 6 % point - small companies	+ top earners	New system for self-employed - for <45ys workers	- rate for new workers
Spain	+ flexibility, liberalization - tax rate	+ tax credits for R&D, patents and disable - low earners	+ top earners	New rates +top earners	+ incentives + exemptions
UE-28	National youth guarantee plan - low-income earners	+ top earner companies - low earners	+ top earners + passive income	- tax reliefs and allowances	+ tax credit for R&D&I + incentives

Source: Self elaboration with the information of this section

8. RELATIONSHIP BETWEEN ECONOMIC GROWTH AND FISCAL WEDGE

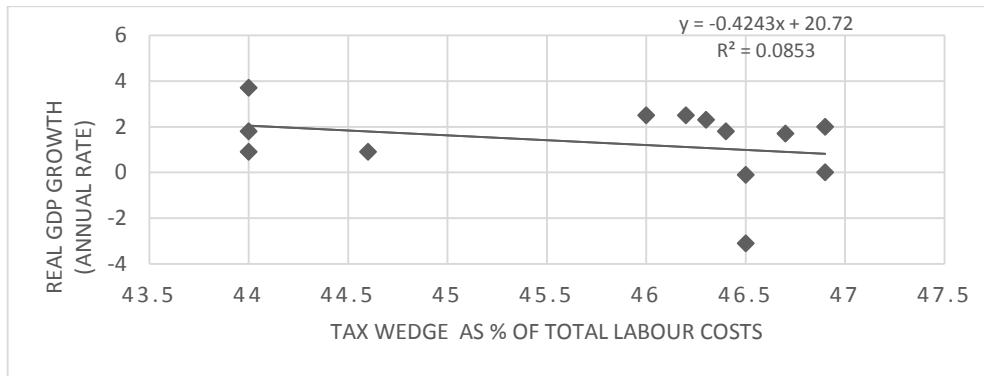
There is a very important indicator when analysing taxes that we have to consider after seeing all this tax reforms in the European countries which is the “Tax Wedge”.

Tax wedge is an indicator of the fiscal burden over labour. It is expressed as a percentage that represents taxes over labour wages and social security contributions over the total labour cost. It can be better understood as the tax burden over labour factor. Usually tax wedge is given for a single worker with 67% of average earnings and no children as a percentage of total labour costs.

In the last years, policy makers are trying to shift taxation away from low and medium income earners, which results in redistribution and improves employability.

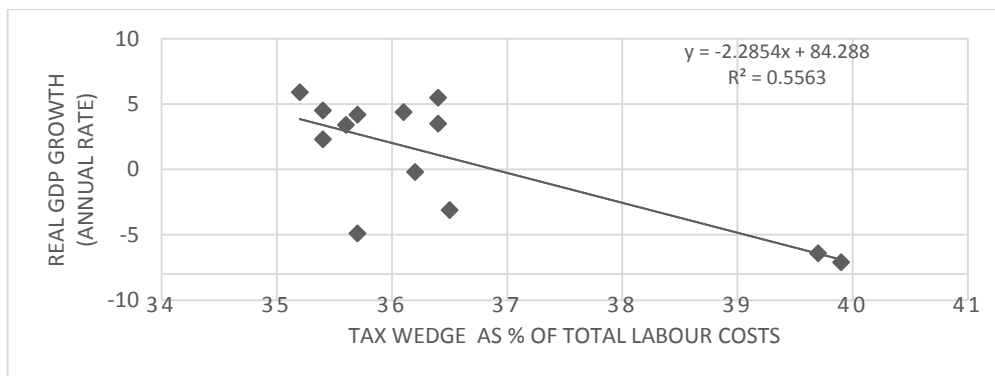
The following analysis will determine whether tax wedge has an impact on economic growth, an analysis done per country and for the European Union average. For that, the graphics below will show the correlation between economic growth measured by the real GDP annual growth and tax wedge over the last years, from 2000 to 2013.

Graph 9. Economic growth and fiscal wedge in France



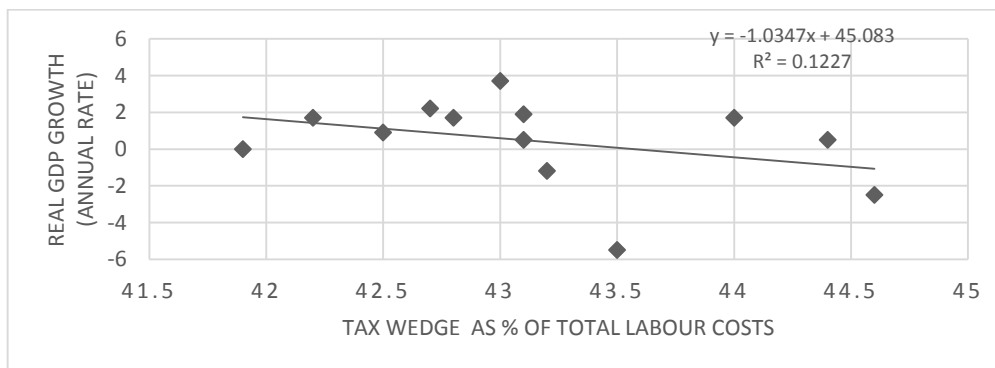
Source: Self elaboration from Taxation trends in the European Union, 2014

Graph 10. Economic growth and fiscal wedge in Greece



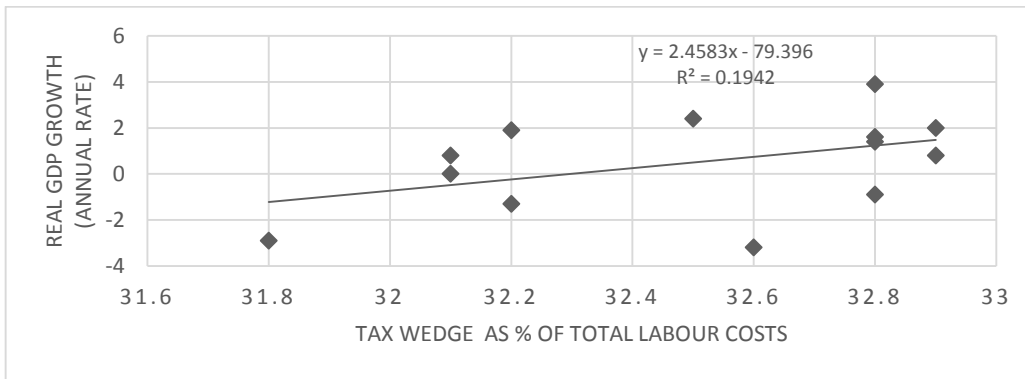
Source: Self elaboration from Taxation trends in the European Union, 2014

Graph 11. Economic growth and fiscal wedge in Italy



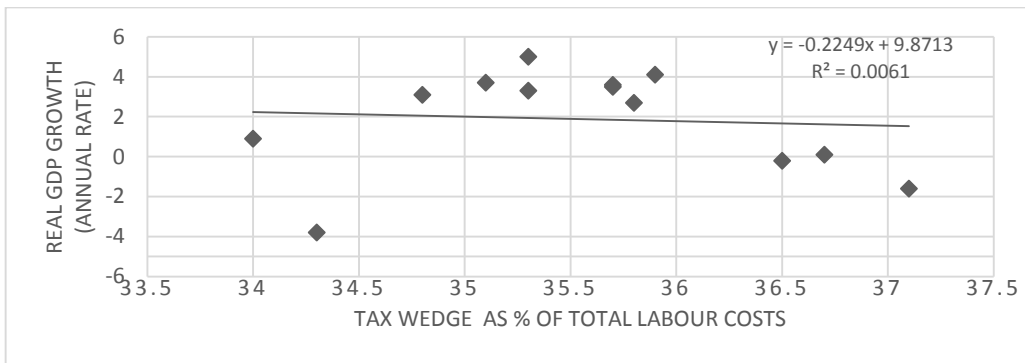
Source: Self elaboration from Taxation trends in the European Union, 2014

Graph 12. Economic growth and fiscal wedge in Portugal



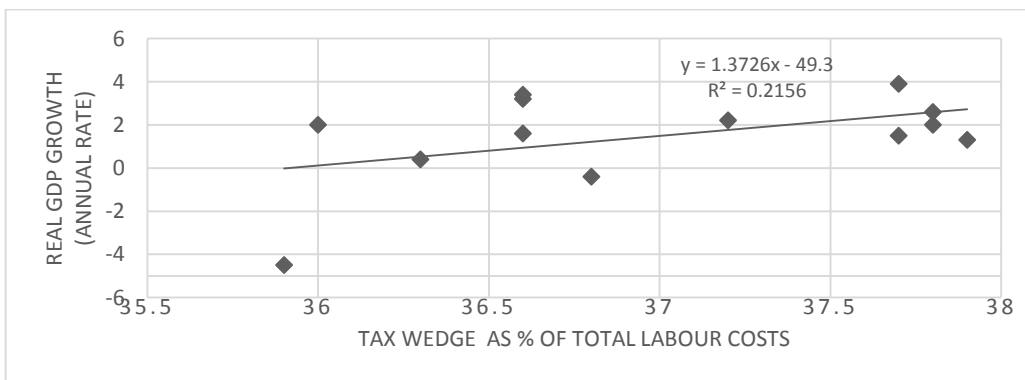
Source: Self elaboration from Taxation trends in the European Union, 2014

Graph 13. Economic growth and fiscal wedge in Spain



Source: Self elaboration from Taxation trends in the European Union, 2014

Graph 14. Economic growth and fiscal wedge in EU-28



Source: Self elaboration from Taxation trends in the European Union, 2014

As we can see in the graphs, after analysing the correlation between tax wedge and economic growth, there is a negative correlation in most of these Mediterranean countries although for the European Union average this is different as is positive. The highest negative correlation relies in Greece, meaning that the tax wedge has a very negative impact on its annual growth.

For France, Spain and Italy the correlation is also negative, but smaller than for Greece. For these countries the taxation over labour has also a negative effect on their economy's growth. Portugal is the only country that has a positive correlation, which matches to that of the average of European countries. Seeing this it is not clear if fiscal burden has a direct effect on the economic growth, and as said before, this is very difficult to analyse as economic growth depends on multiple factors which are different for every country and it has not been established a general model to see which factors are the ones to explain economic growth. What can be stated is that all the countries are trying to shift fiscal burden away from low and medium income earners as much as possible to encourage their employment as they are the more vulnerable ones in this situation of crisis, following the European recommendations

9. ECONOMETRIC ANALYSIS OF UNEMPLOYMENT IN SPAIN

To conclude with the analysis of the European tax reforms concerning to unemployment, this section will analyse the unemployment in Spain in the last years (2000-2013), as a dependant variable of other variables which are the Social Security Contribution, the annual Real GDP growth, the tax wedge and the Personal Income Tax. With an econometric analysis it will be easy to see how these variables have affected unemployment over the last years. It is important to notice that the temporal series 2000-2013 is a very short period for an econometric analysis, so the results must be understood and interpreted with caution. The relationship between unemployment and the variables can be represented in this linear regression model:

$$\text{Unemployment}_i^2: \beta^1 + \beta^2 \text{SSC}_i + \beta^3 \text{growth}_i + \beta^4 \text{wedge}_i + \beta^5 \text{PIT}_i + \epsilon_i$$

The following tables show the summary statistics with important information about each variable, like the mean, median and standard deviation and the time series plot of the variables, where it can be seen that most of the variables have followed a similar trend during the last years except the unemployment, which started to increase after 2007.

² Where i = number of data, in this case 14

³ Where β = unknown parameters

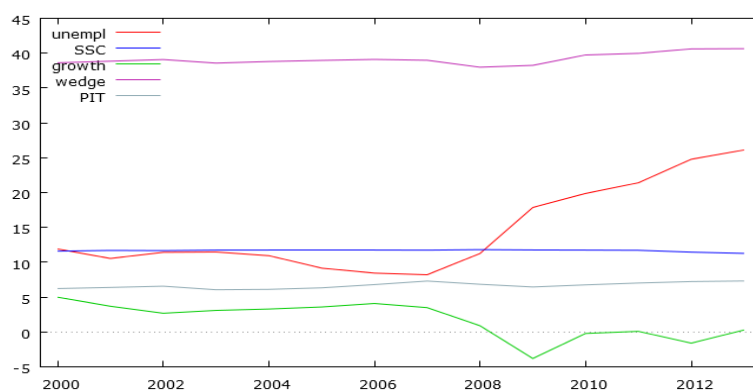
Table 2. Summary Statistics, using the observations 2000 – 2013

Variable	Mean	Median	Minimum	Maximum	IQ range
unempl	14.54	11.465	8.22	26.12	10.05
SSC	11.6857	11.73	11.28	11.83	0.0925
growth	1.76429	2.9	-3.8	5	3.6
wedge	39.165	38.98	37.99	40.66	1.19
PIT	6.68429	6.675	6.07	7.33	0.7675

Source: Gretl and <https://data.oecd.org>

Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis	Missing obs.
unempl	6.18206	0.42518	0.77409	-0.916661	0
SSC	0.14553	0.01245	-1.8504	2.52982	0
growth	2.52483	1.43108	-0.7649	-0.35446	0
wedge	0.80773	0.02062	0.66046	-0.501455	0
PIT	0.43307	0.06479	0.17857	-1.24207	0

Graph 15. Time series plot



Source: Gretl and <https://data.oecd.org>

9.1. Correlation matrix

For a better understanding of the relationship between the variables, a correlation analysis will be needed. Gretl directly gives a correlation coefficient of the variables, being the coefficient a measure of the linear association between two variables, that goes from -1 to 1. The correlation coefficient, for the period 2000-2013 and using a 5% critical value can be found in Table 3:

Table 3. Correlation coefficients, using the observations 2000 - 2013

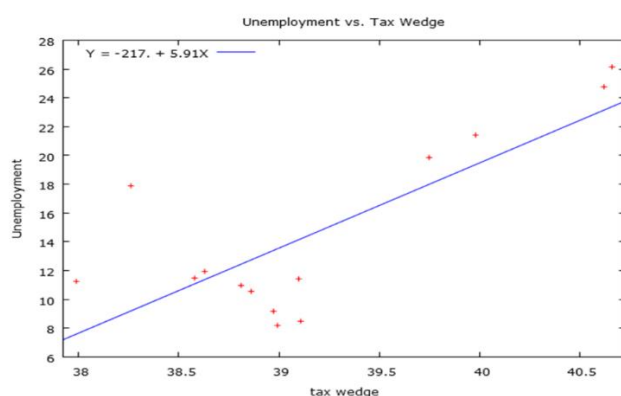
Unemployment	SSC	growth	wedge	PIT	
1	-0.66	-0.7528	0.7724	0.5256	Unemployment
	1	0.1637	-0.7582	-0.4776	SSC
		1	-0.3032	-0.3871	growth
			1	0.6468	wedge
				1	PIT

Source: Gretl and <https://data.oecd.org>

This is an interesting way of seeing how data is correlated. For example the correlation between Social Security Contribution and unemployment is - 0.66, which means that there is a negative correlation between them (an increase in one variable decreases the other variable); and the correlation between tax wedge and Personal Income Tax is positive in 0.6468, there is a positive correlation between them. It is important to remember that correlation doesn't imply causality.

Another tool of Gretl is the X-Y scatter which is useful to visualize patterns between variables. In this case the pattern between unemployment and fiscal wedge will be analysed. The following graphic shows this analysis where Y is the unemployment and X is Tax Wedge.

Graph 16. X-Y scatter for Unemployment and Fiscal Wedge



Source: Gretl and <https://data.oecd.org>

There is a positive slope, meaning that when fiscal wedge increases, unemployment increases too, although as the tax wedge increases, the dispersion increases, meaning that to one point the correlation is not that strong. That is, the correlation is stronger for a smaller tax wedge (especially between 38.5 and 39.2) and then the data is more dispersed.

9.2. OLS Regression

The linear regression model remains the same, where the unemployment is the dependent variable. The table below will show which effect the other variables have on unemployment.

$$\text{Unemployment}_i = \beta_1 + \beta_2 \text{SSC}_i + \beta_3 \text{growth}_i + \beta_4 \text{wedge}_i + \beta_5 \text{PIT}_i + \varepsilon_i$$

Table 4. OLS Regression, dependent variable= Unemployment (2000-2013) Table 4. OLS Regression, dependent variable= Unemployment (2000-2013)

	Coefficient	Std. Error	t-ratio	p-value	
Constant	20.666	99.4535	0.2078	0.84	
SSC	-11.3579	5.54591	-2.0480	0.0708	*
Growth	-1.52532	0.22664	-6.7303	<0.0001	***
Wedge	3.67601	1.15397	3.1855	0.0111	**
PIT	-2.19634	1.64213	-1.3375	0.2139	

Mean dependent var	14.54
Sum squared resid	32.04044
R-squared	0.935511
F(4, 9)	32.63945
Log-likelihood	-25.66073
Schwarz criterion	64.51675
Rho	-0.098297

S.D. dependent var	6.18206
S.E. of regression	1.88681
Adjusted R-squared	0.90685
P-value(F)	2.3E-05
Akaike criterion	61.3215
Hannan-Quinn	61.0257
Durbin-Watson	1.99348

Source: Gretl and <https://data.oecd.org>

The table above gives some information such as the fact that for an increase of 1 unit of % of Tax Wedge, unemployment will increase in 3.67% and that for an increase of 1 unit of % of Real GDP Growth the unemployment will decrease in 1.52%. These are reasonable results, however, the negative value of Social Security Contribution, -11.35 might seem contradictory. These conflicting results usually appear in cases like the one being analysed where the temporal series are too short and the regression model does not gather all the variables that affect the dependant variable.

The OLS output also helps to determine whether the coefficients are significantly different from 0 or not, looking at the p-value. The p-value indicates that at a 5% level of significance level all of the variables are significantly different from zero except for PIT, which P-value is equal to 0.2139.

Another important indicator is the R-squared, which is 0.935511 and indicates that 93.55% of the variation in unemployment can be explained by the variation of the other variables. This is understandable as unemployment depends on a lot of variables that cannot be precisely identified. The R- squared is slightly higher than the Adjusted R-squared, which adjusts the sum square of residuals at the degree of freedom, being the last one the difference between the sample size and the number of coefficients being estimated.

9.3. Forecast

Econometrics is also very useful to do predictions about the future basing on the actual data and in table 5 the forecast of unemployment for the next three years can be seen. It could calculate the forecast of longer periods but as the data used for this analysis is data between 2000 and 2013, forecasting the unemployment of the next three years would be more accurate. For the forecast shown in the table below, Gretl uses a 95% confidence interval, with $t(12, 0.025) = 2.179$.

Table 5. Unemployment forecast, 2014-2016.

Year	prediction	std. error	95% interval
2014	23.2796	4.54427	(13.3785, 33.1807)
2015	24.4448	4.66387	(14.2831, 34.6065)
2016	25.6101	4.79487	(15.1630, 36.0572)

Source: Gretl and <https://data.oecd.org>

Actually, if we compare this forecast to the real data of 2014 we can see that is smaller but close, being the real harmonised unemployment rate of 2014 in Spain of 24.4%.

As mention before, this econometric analysis has to be taken into account that the assumptions made through the analysis may not be very accurate as the time series of 13 years is a short period and also, as unemployment depends on a lot of variables, and it is very difficult to determine them all. Because of this, it is complicated to make a proper analysis of this variable and the results must be interpreted with prudence.

10. CONCLUSIONS

The European Union publishes every semester a report where they explain the reforms and evaluate the actions taken by the member, while also giving some recommendation about

the future steps. Considering those reports and after having presented the analysis in the previous sections, these are the suggested recommendations:

Most of the Member States have a high labour tax burden relative to other countries. It would be very beneficial for many members to decrease that burden, especially for low-income earners. But the lower budget after lowering these taxes needs to be compensated with revenue from other area or a reduction of public expenditures; otherwise public finances would be damaged.

The countries with a current high labour burden have the possibility to decrease taxes for low income earners by increasing those which are less harmful to growth like consumption, immovable property and environmental taxes. Although most of the countries have already taken similar measures of this, still have tax policy problems, showing that there is still need for more measures. These countries, like the Mediterranean countries, need to find the best balance between reducing expenditure and increasing revenue. They still have space to increase some taxes (the less harmful for growth), because their tax levels are low relative to the other countries, or they haven't increased enough the taxes in the last years.

Tax base is one the most important factor when improving the tax system. In general, those systems with a broader tax base (less exemptions and reduced rates) are more efficient and less distortive than the systems with narrow bases and higher rates. Most of the Mediterranean countries seem to have the last type of system with the narrow base, which usually leads governments to increase the tax rates to finance tax revenue and to obtain some fiscal consolidation objectives. They are also complicated and lead to losses in efficiency. Broadening their tax base would help to simplify their system as well as to decrease their administrative cost.

Being part of the European Union simplifies their systems in some terms and helps their economic growth in the sense that there is a more simplified market, but the problem is that there is coordination just for some aspects. There is no coordination for taxation, so from the European Union should be considered if more coordination between countries would be beneficial.

Mediterranean countries have already taken hard measures, they have made huge efforts and this can be seen with a slight improvement of their finances, but there is still need for further changes. As it has been shown since the beginning of the European Union, convergence

between countries has helped economic growth, so tax consolidation among Member States is necessary for the good purpose of the European Union. Countries that need to improve their actual situation should try to adhere to the European recommendations to make the convergence possible.

It is also clear that labour carries a high tax burden, which is not beneficial for economic growth so this taxation needs a shift to other taxes that are less detrimental for growth. However, the increase of these last taxes would not make a big impact on the government's budget, so other measures as simplifying the tax systems need to be done.

The countries analysed seem to have too many exemptions and allowances that make their systems more complicated, so they should continue with the efforts carried out during the last years of making their systems simpler to decrease tax expenditure.

Finally, tax evasion and fraud needs to hardly be punished, so more consensus between the countries, not only European, need to be arranged to improve the tax compliance.

European countries and specially the Mediterranean ones, are currently moving towards the right direction, and improvements in their economies can be seen. However, there is still scope for new reforms and actions to be taken.

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ANNEX

Annex 1

Tax wedge for a single worker with 67% of average earnings (%of total labour costs)													
Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
France	44	44	44	44.6	46.2	46.4	46	46.3	46.5	46.5	46.7	46.9	46.9
Greece	35.4	35.7	35.6	35.2	36.1	35.4	36.4	36.4	36.2	36.5	35.7	39.9	39.7
Italy	43	43.1	43.1	41.9	42.2	42.5	42.7	42.8	43.2	43.5	44	44.4	44.6
Portugal	32.8	32.9	32.9	32.8	32.8	32.1	32.8	32.5	32.1	31.8	32.2	32.2	32.6
Spain	35.3	35.1	35.8	34.8	35.3	35.7	35.9	35.7	34	34.3	36.5	36.7	37.1
UE-28	37.7	37.8	37.9	37.7	37.8	37.2	36.6	36.6	36.3	35.9	36	36.6	36.8

Annex 2

Real GDP growth (annual rate)													
Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
France	3.7	1.8	0.9	0.9	2.5	1.8	2.5	2.3	-0.1	-3.1	1.7	2	0
Greece	4.5	4.2	3.4	5.9	4.4	2.3	5.5	3.5	-0.2	-3.1	-4.9	-7.1	-6.4
Italy	3.7	1.9	0.5	0	1.7	0.9	2.2	1.7	-1.2	-5.5	1.7	0.5	-2.5
Portugal	3.9	2	0.8	-0.9	1.6	0.8	1.4	2.4	0	-2.9	1.9	-1.3	-3.2
Spain	5	3.7	2.7	3.1	3.3	3.6	4.1	3.5	0.9	-3.8	-0.2	0.1	-1.6
UE-28	3.9	2	1.3	1.5	2.6	2.2	3.4	3.2	0.4	-4.5	2	1.6	-0.4

Annex 3

Spain tax rates 2000-2013					
year	unempl	SSC	growth	wedge	PIT
2000	11.92	11.61	5	38.63	6.24
2001	10.56	11.71	3.7	38.86	6.4
2002	11.44	11.69	2.7	39.1	6.58
2003	11.49	11.76	3.1	38.58	6.07
2004	10.96	11.77	3.3	38.81	6.13
2005	9.17	11.73	3.6	38.97	6.34
2006	8.46	11.73	4.1	39.11	6.81
2007	8.22	11.75	3.5	38.99	7.32
2008	11.27	11.83	0.9	37.99	6.85
2009	17.87	11.78	-3.8	38.26	6.47
2010	19.88	11.76	-0.2	39.75	6.77
2011	21.41	11.73	0.1	39.98	7.03
2012	24.79	11.47	-1.6	40.62	7.24
2013	26.12	11.28	0.3	40.66	7.33

Annex 4

Social security contributions, 2000-2013														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	15.52	15.5	15.63	15.89	15.67	15.84	15.96	15.73	15.73	16.26	16.11	16.23	16.45	16.75
Greece	10.05	10.17	11.13	11.27	10.69	11.04	10.27	10.63	10.8	10.12	10.94	10.66	10.8	10.62
Italy	11.59	11.49	11.66	11.81	11.86	12.03	11.97	12.47	12.92	13.21	13.02	12.92	12.97	12.98
Portugal	7.9	8.15	8.2	8.44	8.08	8.17	8.13	8.22	8.46	8.66	8.71	9.1	8.81	8.93
Spain	11.61	11.71	11.69	11.76	11.77	11.73	11.73	11.75	11.83	11.78	11.76	11.73	11.47	11.28
UE-28	11.11	11.16	11.17	11.16	11.00	10.98	10.86	10.88	11.04	11.26	11.21	11.22	11.37	11.33

Annex 5

Tax on personal income, 2000-2013														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	7.75	7.57	7.29	7.34	7.18	7.72	7.53	7.23	7.35	7.13	7.05	7.3	7.94	8.35
Greece	4.8	4.35	4.4	4.2	4.27	4.58	4.47	4.61	4.69	4.83	4.38	4.78	6.95	
Italy	10.08	10.29	10.11	10.08	10.01	9.98	10.3	10.68	11.13	11.24	11.32	11.11	11.63	11.57
Portugal	5.41	5.43	5.23	5.22	5.03	5.08	5.14	5.34	5.41	5.53	5.36	5.96	5.77	7.68
Spain	6.24	6.4	6.58	6.07	6.13	6.34	6.81	7.32	6.85	6.47	6.77	7.03	7.24	7.33
UE-28	8.85	8.82	8.58	8.49	8.31	8.37	8.46	8.59	8.65	8.55	8.25	8.29	8.57	9.33

Annex 6

Harmonised unemployment rate (HUR), 2000-2014															
Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
France	9.56	8.74	8.63	8.54	8.89	8.89	8.85	8.01	7.45	9.12	9.28	9.16	9.77	10.28	10.2
Greece	11.23	10.68	10.33	9.74	10.61	10.01	9.03	8.42	7.78	9.63	12.76	17.9	24.48	27.5	
Italy	10.05	9.01	8.47	8.43	8	7.71	6.79	6.08	6.71	7.75	8.35	8.35	10.64	12.13	12.65
Portugal	5.08	5.13	6.14	7.4	7.77	8.77	8.87	9.13	8.78	10.68	11.98	12.88	15.78	16.46	14.12
Spain	11.92	10.56	11.44	11.49	10.96	9.17	8.46	8.22	11.27	17.87	19.88	21.41	24.79	26.12	24.44
EU - 28	8.98	8.73	9.05	9.17	9.24	9.01	8.22	7.17	7.04	8.94	9.62	9.65	10.46	10.88	10.19

Tax on Annex 7

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	2.98	3.27	2.78	2.42	2.68	2.35	2.89	2.89	2.84	1.43	2.07	2.45	2.48	2.56
Greece	3.96	3.23	3.25	2.8	2.87	3.23	2.61	2.43	2.44	2.38	2.41	2.11	1.12	
Italy	2.8	3.37	3	2.66	2.71	2.68	3.27	3.66	3.56	2.95	2.73	2.62	2.76	2.96
Portugal	3.69	3.22	3.25	2.73	2.81	2.6	2.83	3.46	3.51	2.75	2.73	3.14	2.73	3.22
Spain	2.99	2.72	3.02	3.03	3.38	3.77	4.04	4.54	2.7	2.15	1.75	1.7	2.04	2.02
UE-28	3.14	2.94	2.91	2.80	2.87	3.05	3.17	3.28	3.01	2.42	2.46	2.45	2.38	2.58

Annex 8

Tax on property, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	2.949	2.912	2.945	3.016	3.144	3.293	3.353	3.34	3.225	3.299	3.513	3.618	3.751	3.807
Greece	2.02	1.625	1.441	1.369	1.27	1.307	1.62	1.646	1.7	1.409	1.031	1.792	1.895	2.176
Italy	1.884	1.776	2.047	3.115	2.413	1.959	2.04	2.027	1.776	2.585	1.982	2.172	2.672	2.692
Portugal	1.143	1.068	1.138	1.107	1.062	1.157	1.193	1.302	1.192	1.086	1.123	1.105	1.217	1.114
Spain	2.112	2.06	2.193	2.422	2.689	2.966	3.16	2.938	2.256	1.967	2.017	1.886	2.01	2.148
UE-28	1.60	1.54	1.53	1.59	1.60	1.67	1.72	1.69	1.55	1.52	1.52	1.56	1.64	1.77

Annex 9

Tax on goods and services, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	11.15	10.84	10.89	10.79	10.84	10.89	10.75	10.55	10.41	10.41	10.45	10.68	10.78	10.84
Greece	12.04	12.27	11.91	11.01	10.66	10.94	11.12	11.32	11.29	10.63	12.11	12.94	12.74	12.93
Italy	11.32	10.81	10.71	10.3	10.38	10.34	10.63	10.53	10.2	10.25	10.76	10.78	10.91	10.65
Portugal	12.1	12.2	12.45	12.55	12.49	13.01	13.21	12.76	12.46	11.15	11.85	12.45	12.38	12.14
Spain	9.88	9.54	9.35	9.47	9.67	9.86	9.71	9.24	8.01	6.84	8.41	8.16	8.54	9.12
UE-28	11.89	11.60	11.66	11.68	11.74	11.87	11.72	11.63	11.39	11.39	11.62	11.75	11.84	12.02

Annex 10

Environmental taxes as a % of GDP, 2000-2013

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	2.2	2	2.1	2	2	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Greece	2.3	2.5	2.3	2.2	2.2	2.1	2	2.1	2	2	2.5	2.5	2.8	2.9
Italy	3.2	3	2.9	3	2.8	2.8	2.8	2.7	2.5	2.7	2.6	2.7	2.7	3
Portugal	2.6	2.9	3	3	3	2.9	2.8	2.6	2.5	2.5	2.5	2.3	2.5	2.5
Spain	2.2	2.1	2.1	2	1.9	1.9	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6
UE-28	2.70	2.70	2.80	2.80	2.90	2.80	2.70	2.70	2.60	2.60	2.60	2.60	2.60	2.60