Very preliminary version, please do not quote

The redistributive effects of changes in the Personal Income Tax during the Great Recession in Spain [Ψ]

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Abstract

In recent years, a variety of tax changes aiming for fiscal consolidation have taken place in Spain (both at the central and regional level). This has been regarded as crucial when the economic crisis is strongly hitting the Spanish labour market and the unemployment rate has boosted largely over 17 percent since 2009. In fact, public expenditures in the last three years have grown strongly due to the expenses on unemployment benefits and other welfare state protection programs. Regarding personal income tax changes introduced in 2011 and 2012 have generally implied more tax brackets and larger tax rates for medium to high incomes. So far, however, little is known about the impact these changes may have had on the income distribution. Making use of the tax-benefit model for the European Union – EUROMOD – this paper undertakes an evaluation of the effects of the recent changes in Personal Income Tax on the distribution of personal disposable income in Spain.

Keywords: personal income tax, redistribution, microsimulation, Spain.

JEL Classification: H23, H53, D3, D63.

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Introduction

Personal tax payments and a large list of benefits play a predominant role within governmental monetary redistributive policies in the aim of equalizing household effective disposable income in Spain. During the last decade of the past century and the first years of this current century most tax reforms in this country were conducted following the OECD trend of a reduction in the number of tax brackets and of the maximum tax rate. Thus, most generally, the role of changing household disposable income in order to decrease household income inequality was moving more and more from the action of personal income tax to that of monetary benefits. In fact, in 2005, old-age pensions was the most equalizing monetary policy in Spain followed by unemployment benefits, while the action of the personal income tax was only a 10 percent of the Spanish Gini coefficient that year.

In recent years, particularly since the beginning of the Great Recession in 2008, due to the need for a reduction of government deficit there have been a variety of tax reforms and expenditure cuts aiming for fiscal consolidation in many southern European countries. In the case of Spain, fiscal consolidation has been regarded as crucial when the economic crisis has been hitting the Spanish labour market most strongly and the unemployment rate has boosted largely over 17 percent since 2009. In fact, public expenditures in the last three years have grown strongly due to the expenses on unemployment benefits and other welfare state protection programs.

At the same time, during these years of deep economic crisis the level of inequality in household disposable incomes in Spain has been continuously rising in contrast with what had been happening in the last decade when the evolution of inequality was most stable. The stability of disposable income inequality in previous years was most likely a result of a decrease in market income inequality cohabiting with a fall in the redistributive impact of government action as a result of the several reforms of the personal income tax and the stability of government monetary transfers. In this setting, both regional and central governments have introduced personal income tax changes during the last two years in order to increase tax collection and thus with a completely different aim in comparison with that of previous reforms. In general the reforms have implied more tax brackets in many regions and increasing tax rates for medium to high incomes.

So far, however, little is known about the impact of these changes in personal income tax on the Spanish income distribution. In this paper, making use of the tax-benefit model for the European Union – EUROMOD –, we undertake an evaluation of the effects of the Spanish Personal Income Tax on the distribution of personal disposable income in the period 2005-2012.

The structure of the paper is the following. The next section describes the structure of the Personal Income Tax in Spain and details its main changes in recent years. Section 2 presents the methodology we use while section 3 presents some results. The last section concludes.

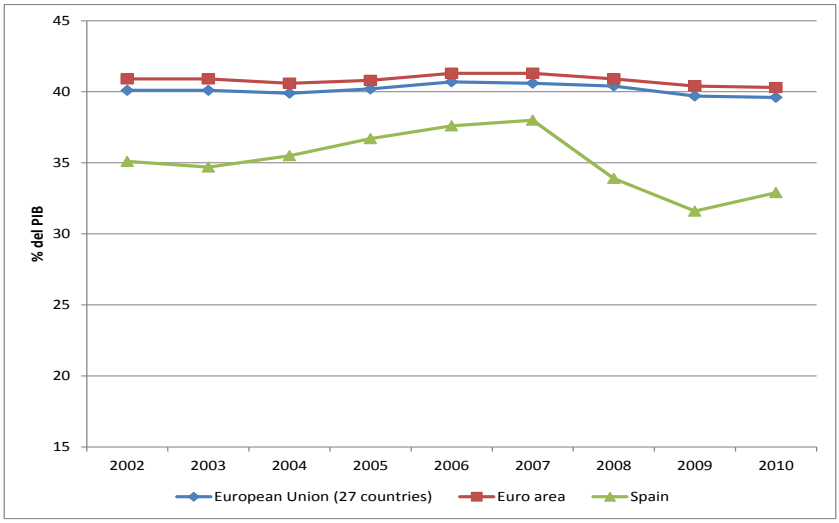
1. Personal Income Tax in Spain and main changes since 2005.

The Spanish system of taxes and benefits was developed within an economic context where the quantity of revenue coming from direct taxes and spending on benefits was quite limited and, most importantly, was strongly related to social security contributions. In the last three decades the tax-benefit system in Spain has been modernized trying to move towards a similar structure to that of other European Union countries. Nowadays, the system consists of direct and indirect taxes, social contributions paid by employers and employees, State and Regional monetary benefits.

According to Eurostat data, in recent years incomes and expenditures (both State and Regions) account for 35% and 45% of the Spanish Gross Domestic Product, respectively. As shown in Graph 1, in 2002 taxes and social security contributions in percentage of GDP in Spain are approximately 5 points below the European average. The fiscal reforms carried out in that period, mainly in 2002 and 2007, reduced the number of tax brackets, equalized tax rates and lowered the highest marginal tax rate. Thus, in a context of economic growth the total Spanish revenue increased and became closer to that of other European Countries between 2004 and 2007, despite the aforementioned reforms. However, as Ruiz-Huerta et al. (2011) have emphasized, even when the economy was growing in 2007 Spanish Personal Income Tax (PIT) revenue remained below the European average. In fact, it appears that the reforms have reduced the Personal Income Tax potential capacity of tax collection and it is most likely that they contributed to the revenue plummeting during the crisis. This has implied that, in 2010 the gap between the Spanish Personal Income Tax revenue and the European

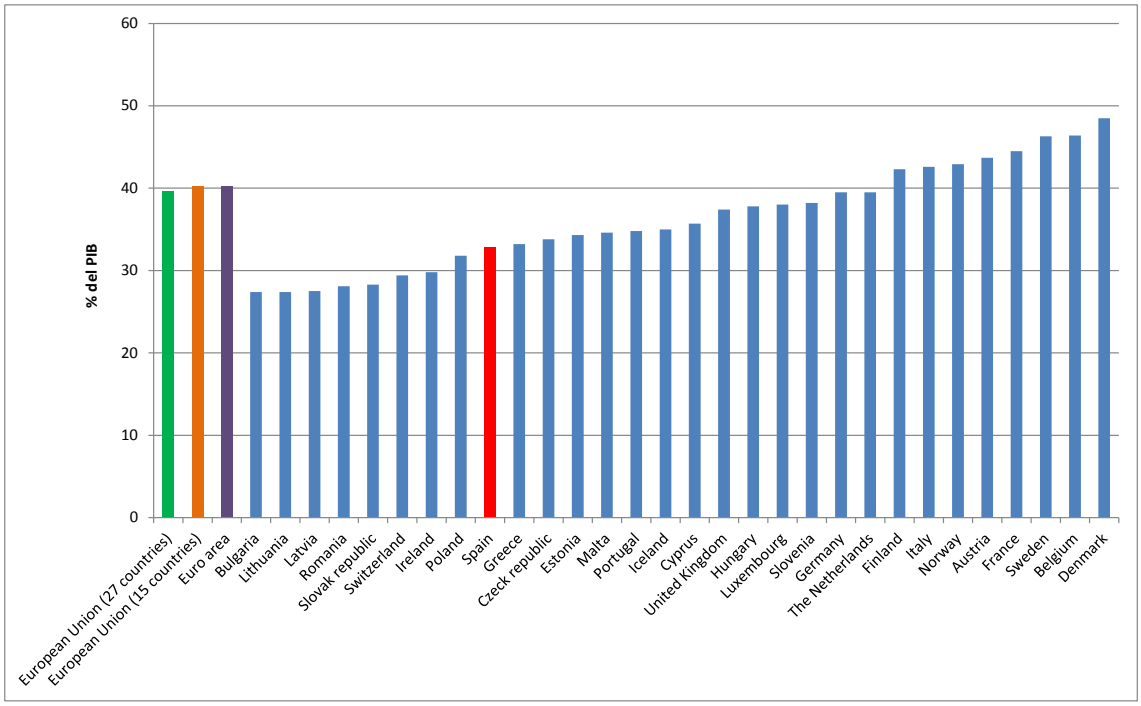
average was three points wider than in 2002 and, as shown in Graph 2, Spain has fallen in the middle to low group of EU countries in PIT and SSC revenue.

Graph 1. Evolution of revenue from Personal Income Tax and Social Security Contributions the percentage of GDP, Spain and EU. 2001-2010.



Source: EUROSTAT. http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database. Statistics Database on line.

Graph 2. Revenue from PIT and SSC as a percentage of GDP. EU countries in 2010.



Source: Elaborated from EUROSTAT data, Statistics Database on line. http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.

In relation with the impact that this might have had on inequality and poverty, it seems, as a number of studies show, that the Personal Income Tax has not helped reduce inequality levels in Spain during the boom, since the potential revenue losses have not been compensated by greater gains in the tax progressivity. The studies carried out by Díaz de Sarralde et al. (2006) and Sanz et al. (2008) suggest that the 2007 reform increased tax progressivity only slightly, in contrast to the previous reforms, 1999 and 2003. Other studies, such as Arcarons and Calonge (2009), Picos et al. (2009) or Fuenmayor and Granell (2009) concluded that the 2007 reform increased the tax progressivity but maintained its redistributive impact due to revenue reduction.

Although the aim of this paper is to evaluate the redistributive effects of one specific policy: Personal Income Tax, giving a measure the evolution of the redistributive impact of different policies, personal income tax, social contributions, expenditures policies as pensions and means-tested benefits, is important. In fact, we feel compelled to describe the evolution in the social protection system due to the great quantity of reforms carried out[1]. In general, in the period between 2005 and 2011 we can distinguish two different policy periods. The first one, 2005-2008, is marked by the stability and the economic growth resulting in higher tax revenues that were used to extend the coverage of some benefits and even to reduce the tax burden temporarily. In the second one, since 2008, the stagnation and subsequent economic recession produced a huge drop in revenue and therefore the State and Regional governments have been forced to look for alternatives of fiscal consolidation.

At the end of the first period, in 2007, a fiscal reform was carried out; some of the changes introduced more progressivity in the PIT while others seem to have played the opposite role. Results from a variety of papers seem to suggest that the two forces might have been balanced. The reform consisted in a reduction of the number of brackets, from 5 to 4, and of the highest marginal rate, from 45% to 43%.[2] Besides, the reform changed the personal allowances applied in the tax base to tax credits and reformed the taxation of incomes from savings capital gains. This type of income was subject to tax at the marginal rate if generated in less than one year (speculative gains) to tax at 15% if

[1] See Adiego *et al.* (2010, 2011, 2012) for a detailed description.
[2] Take into account that in the same period the Comunidad de Madrid decided to have different rates tan the rest of regions (lower ones) in the regional part of the Personal Income Tax rate, using for the first time its legal capacity.

generated in a longer period, the system changed to tax them at the same rate, 18%, creating a new tax base called "savings tax base".

In the final part of the first stage and in the beginning of the second the government introduced in the 2008 State budget a raise of the brackets limits to adjust them to the inflation avoiding an increase in the tax due to the fiscal drag. This increasing was of two percentage in the brackets limits a produced a decrease of the tax burden. In addition, in that period the Central Government created a rent of first residence tax credit for people in the first bracket and also the Autonomous Communities designed an important variety or tax credits in their regional laws.

In 2008 and 2009, in response to the economic crisis and the strong unemployment growth, the Central Government adopted a package of measures of fiscal stimulus. Within them a tax credit of 400 euros for taxpayers that receive work, unemployment or pensions benefits income, applicable to 2008 income. At the end of 2009 and, above all, since 2010 onwards, in response to European Commission and the financial markets pressure related to the public debt, the Central and regional governments introduced measures to control the public deficit, also called "austerity measures" that consist essentially in the increase of tax rates and cuts in social welfare measures[3.] Indeed, in this same year 2009 some regions limited or cancel some of their family benefits[4]. In July 2010 the Central Government raised the rates of the Value Added Tax (VAT), the general rate rose from 16% to 18% and the reduced rate increased from 7% to 8%.[5]

Later on, in 2010 and 2011, the State and some regions modified the Personal Income Tax, with new brackets and larger marginal rates for the richer taxpayers, increased the highest tax rates and reformed the tax on savings incomes, with higher and progressive rates (flat rate eliminated). Specifically, the State introduced two new brackets for incomes between 120,000 and 175,000 euros, with State rates 22.5% and 23.5%. In relation to savings income from 2010 to 2011 the tax rate increased from 18% to 19% for incomes below 6,000 euros and from 18% to 21% for incomes above that figure. Some regions raised the rates for the highest brackets in the regional part of the tax,

[3] Véase Callan *et al.* (2011) para un mayor detalle.
[4] Child benefits in regions as Comunidades como Asturias, Extremadura, Madrid y Navarra.
[5] This indirect taxi s not included in EUROMOD. We are assuming in the simulation that this tax does not affect the household disposable income.

putting the total highest tax rates above the 48% (Catalunya - 49%, Extremadura - 48%, Asturias - 48.5%, Andalucía - 48% y Cantabria - 48%).[6]

In 2012, the State introduced another tax bracket for the general tax base, incomes above 30,000 euros would have a State tax rate of 30.5%, every rates was increased, pregressively. At the same time, two changes of the taxation of income from savings were included: an increase of income from savings tax rates and an extra bracket. Incomes below 6,000 euro would paid a tax rate of 21%, incomes above 6,000 and below 24,000 euro, 25% and incomes above 24,000, 27%. Further, some particular regions introduced changes in their tax rates too (Canarias or Región de Murcia for example).

Thus, during these last seven years a variety of changes of PIT have been implemented. On the one hand, the different reforms carried out during the years of economic expansion may have had reduced the redistributive effect of PIT given that the increase in tax reductions may have produced a loss in the redistributive capacity to lower incomes. However, during the period of stagnation it may be the case that the reforms carried out could have had a slightly more progressive character.

2. Methodology: EU-SILC data and, EUROMOD model, data, simulations and measurement.

2.1. Model

This paper makes use of EUROMOD - a tax-benefit microsimulation model for the European Union.[7] This model has been designed to be flexible enough to take into account the particularities of different national policies but also to provide a common framework for the implementation of policies and the production of comparable results across countries.[8] EUROMOD is unique for a wide range of analysis for international comparative research on the effects of policies and policy reform on income, welfare, poverty, inequality and social inclusion.

[6] The Comunidad de Madrid introduced in 2010 a change in its regional part of the tax, changing the children allowance .
[7] See Sutherland (2001).
[8] See Lietz and Mantovani (2007) for technical information on EUROMOD framework.

Because of its flexible structure, EUROMOD is also a suitable tool for within-country cross-region studies. In the case of Spain, as most benefits and elements of the income tax administered by regional governments are simulated by the model, these policies can be compared and analysed in the same way as EUROMOD is used for cross-country analysis.

2.2. Data

The database used by EUROMOD in the case of Spain is drawn from the 2008 national version of the Survey on Statistics on Income and Living Conditions (EU-SILC), known in Spain as *Encuesta de Condiciones de Vida* (ECV), provided by the Spanish Statistics Institute (INE). EU-SILC is a European project of comparative statistics of income distribution and social exclusion. The first aim of EU-SILC is to provide timely and comparable cross-sectional annual data with variables on income, poverty, social exclusion and other living conditions of the households and their members, it also provides longitudinal data with information about individual-level changes over a four year period. The sample size of the ECV survey for Spain is about 13,000 households and 30,000 individuals. Besides, the Instituto Nacional de Estadística de España (INE) has provided EUROMOD with an special breakdown of some particular benefits related to unemployment, old age, survivor, disability and family benefits, this has turned very useful for the simulations.

The Spanish ECV survey sample is representative at the regional level and regions of residence are identified at NUTS 2 level. The database we use in our analysis is ECV 2007 where household characteristics and incomes reflect those of 2006. In fact, children born in 2008 were excluded from the sample. However the weights were not scaled up to reflect this exclusion. In the ECV 2008, income variables are available gross of taxes. Such variables were imputed by the Spanish Statistical Institute based on reported net income (for more information on the net to gross imputation see Paniagua and Méndez, 2008). Finally, in order to construct incomes for the years following the baseline (2007) we use the Consumer Price Index, the increase in labour costs and a detailed list of nominal increases of benefits in time.

In general, the data from the ECV entering EUROMOD are plausible in terms of labour market and income information for 2007. However, it is important to note some details in the macrovalidation of the different income sources and transfers from particular

benefits. Regarding national and regional child benefits, Adiego *et al.* (2011) report that these benefits are particularly well captured in EUROMOD given that the model provides an excellent estimation of the number of recipients and the quantity of expenditure on them.

2.3. Simulation

The Spanish Personal Income Tax is simulated with EUROMOD. It must be noticed that this analysis is based on simulations assuming that all legal rules apply and are fully claimed and complied. Thus, issues such as non take up of social benefits and tax evasion are not controlled for. This can result in the over-estimation of taxes and benefits. In addition, the analysis doesn't account for changes in individual behaviour such as labour supply or family formation. As baseline we used 2010 policies and the cahnges in PIT are simulated as if were implemented in 2010. So we managed to measure the effects of the PIT reforms, 2011 and 2012.

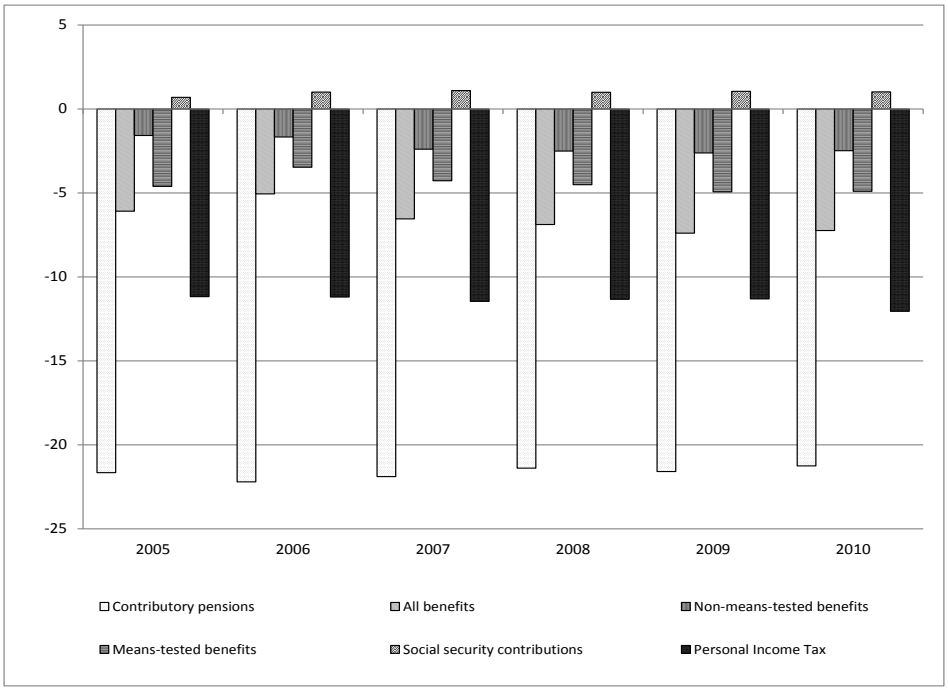
2.4. Measurement

In order to measure the impact of changes in the Personal income tax on the income distribution we first present some results on the percentage reduction of the Gini coefficient attributed to the Spanish Personal income tax in the period 2005-2010. After that we calculate the distributional effects of the changes to PIT undertaken at the regional and state level in 2011 and 2012. Further, in order to identify the roots of changes in the impact of PIT on redistribution we measuse the PIT dimension by the mean effective tax rate and level of progressivity through the Kakwani index.

3. Results

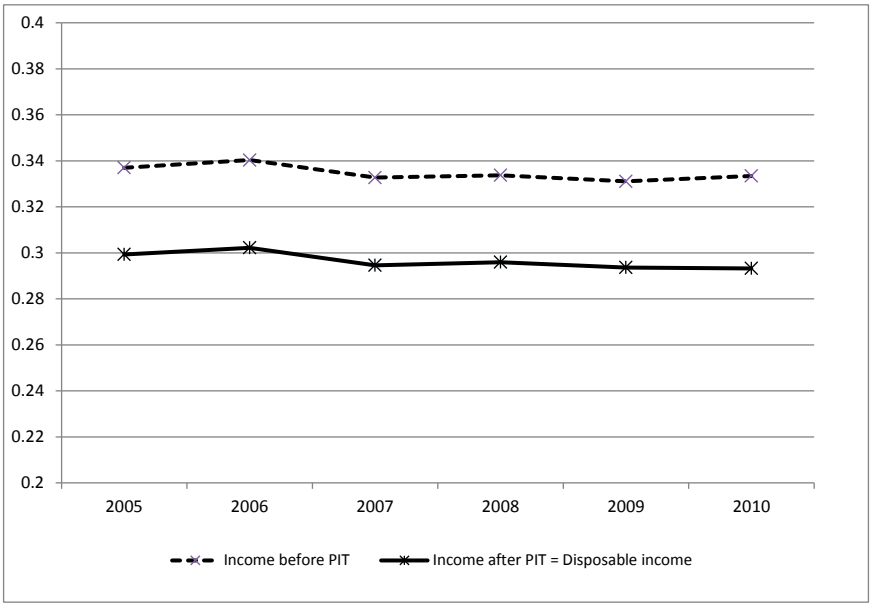
As it is shown in graph 5 Personal Income Tax is a relevant component within the Spanish Tax-Benefit system aiming at market income redistribution. PIT reduces approximately an 11-12% the Gini coefficient of income inequality in 2010.

Graph 5. Redistributive impact of Tax-Benefit policies in Spain 2005-2010. % reduction in the Gini coefficient attributed to each disposable income component



Source: EUROMOD 5.37. For years 2005 to 2007 incomes correspond to policy year. In 2008 and 2009 incomes are those in 2007 (ECV 2008) grossed up using upgrading factors.

Graph 6. Redistributive impact of PIT in Spain 2005-2010. Gini coefficient before and after income tax (eq. hh. income – Mod. OECD scale)

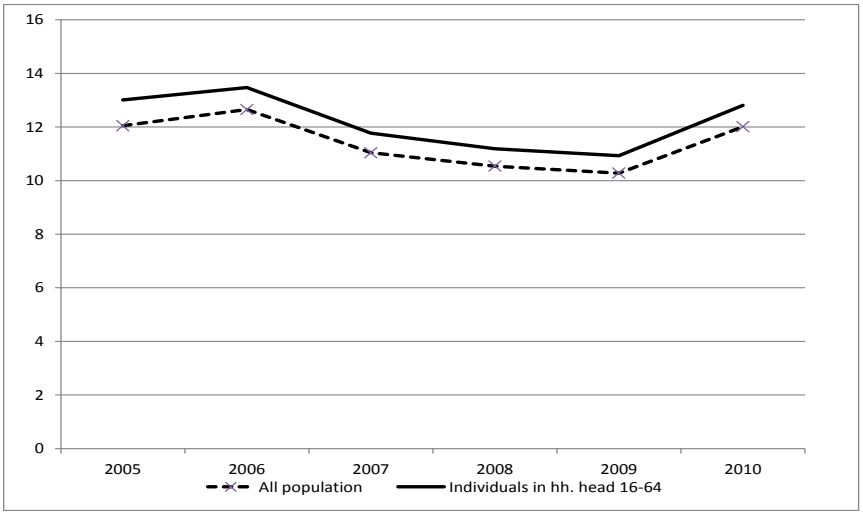


Source: EUROMOD 5.37. For years 2005 to 2007 incomes correspond to policy year. In 2008 , 2009 and 2010 incomes are those in 2007 (ECV 2008) grossed up using upgrading factors.

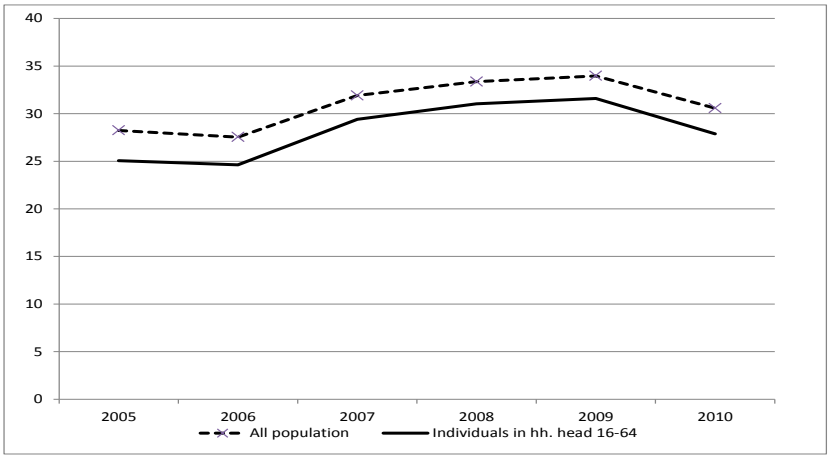
In comparison with other Tax-Benefit systems, PIT in Spain has a middle to low impact on individual income inequality (Fuest et al., 2009 and others). The main difference of Spanish PIT seems to be its dimension (low mean effective tax rates) while PIT

progressivity seems similar (just slightly lower) to that in other countries (in comparison with results in OECD, 2011).

Graph 7. Mean effective tax rate in Spain. 2005-2010



Graph 8. Progressivity of PIT in Spain 2005-2010. Kakwani index.
(eq. hh. income – Mod. OECD scale)



Trends since nineties until the beginning of the crisis in 2008 a variety of reforms in 1998, 2002 and 2007 have meant reductions in number of tax brackets and fall in high marginal tax rates (similar to OECD countries, OECD 2011). However, since Great Recession (2008) the need for fiscal consolidation has led regional and central governments to undertake significant reforms of PIT increasing brackets and marginal effective tax rates. In graph 6 can be seen that the redistributive effects of PIT in Spain from 2005 to 2010 are low.The reduction in the Gini index is 0.04 points. It is around 11% in Spain in contrast with the average income tax reditributive effect in Europe, 18.3%, see Fuest et al (2009).

The mean effective tax rate in Spain from 2005 to 2010 was between 10 and 14%, very low compared with the Denmark one (30%) or the German (20%), see graph 7. The roots of this difference between Spain and EU countries stems from a low mean effective tax rate (dimension) and not from low progressivity, see graphs 7 and 8. In fact, in progressivity terms the Spanish PIT is over that of other European income tax systems (comparing with OECD 2011 results)

Table 3. Percentage of positive tax returns

Upper Limit (euro per year)	Percentage of positive Tax Returns
17,707.20	56.67
33,007.20	27.81
53,407.20	10.48
120,000.20	4.33
175,000.20	0.39
300,000	0.21
over	0.12

Table 4. Percentage of change in income and change between 2010 ans 2012 policies

Deciles of income before PIT	% change in income (before/after PIT) 2010 policies	% change in income (before/after PIT) 2011 policies	% change in income (before/after PIT) 2012 policies	% increase in income reduction due to PIT 2012 compared to PIT 2010
1	3.31	3.32	3.45	4.10
2	1.99	1.99	2.06	3.68
3	2.58	2.59	2.68	3.91
4	4.14	4.22	4.38	5.85
5	6.06	6.08	6.34	4.54
6	8.10	8.12	8.47	4.59
7	9.97	9.98	10.45	4.79
8	12.58	12.61	13.22	5.09
9	15.12	15.14	15.97	5.63
10	21.10	21.12	22.53	6.80

The 2007 PIT reform did not change the redistributive effect of PIT in Spain (in line with that obtained in other studies that use individual income and not household income, Sanz et al., 2008). The changes in PIT introduced in 2010 (reform of 400 euro tax credit and increase in capital income marginal tax rates) have slightly increased PIT's redistributive effect by increasing its dimension (even if progressivity has fallen somewhat).Now on we are focussing in 2011 and 2012 reforms, in 2011 the changes

were fundamentally increased rates and larger number of brackets. Changes in 2011 will only affect less than 1% of total tax returns so the impact of these changes will be limited, see table 3. This is confirmed by table 4 where changes in 2011 hardly change the effect of PIT on household incomes. Changes in 2012, instead, are expected to have a larger effect on revenue given that they imply changes in all tax brackets. Indeed, the increases in PIT revenue predicted by EUROMOD are 0.2% in 2011 and 5.6% in 2012.

Table 5. Redistribution of 2010, 2011 and 2012 policies (2010 baseline)

Redistribution	**2010**	**2011**	**2012**
Pre-tax Gini	0.3357	0.3356	0.3356
Post-tax Gini	0.2979	0.2978	0.2948
Redistributive effect	0.0378	0.0378	0.0408
Redistributive effect in %	11.26	11.26	12.16
Mean effective tax rate (PIT dimension), %	12.28	12.30	13.01
Progressivity, Kakwani, %	28.07	28.03	28.41

As can be seen the reduction in incomes takes place in every bracket but the percentage is greater for the higher incomes. Thus, PIT in 2012 has a relevant impact on household incomes and reduces incomes of high income groups relatively more than those of low income groups. The increase in relative income reduction is around 3% in the first four deciles and 6% in the highest income decile group. Further, changes in PIT in 2012 push the last two-three deciles income reduction due to PIT upwards.

Table 5 presents the redistributional effects of PIT reforms. As expected, looking at changes in deciles, the changes in PIT in 2011 hardly change the redistributive effect of PIT on household incomes. The changes PIT in 2012 have increased its redistributive effect from a 11.29% to a 12.15% (Gini index (S-Gini, ν=2) reduction due to PIT). This has come about by the effect of both an increase in PIT dimension on household incomes and an increase in PIT progressivity.

Table 6. Redistribution of 2010, 2011 and 2012 policies by type of household

Hh characteristics	% change in income (before/after PIT) 2010 policies	% change in income (before/after PIT) 2011 policies	% change in income (before/after PIT) 2012 policies
Head of hh. working age 16-64	9.50	9.53	10.03
Head of hh. not working age >64	4.58	4.59	4.78
Household with children	8.95	8.98	9.47
Household without children	8.30	8.31	8.73

Table 6 shows the different redistributive effects by type of household, as expected the 2012 reform increased PIT payments mainly for households where the head is working age (over 16 and below 65). The 2012 reform had a similar impact on households with and without children. The distribution of households with and without children along income deciles is so that households with children are quite equally distributed along the income distribution, 12% of them are in the first decile (equivalent income before PIT) and almost 10% of them are distributed in all other deciles. Focusing in the number of losers and its distribution table 7 shows that due to the progressive reform of marginal tax rates losers of the reform are most concentrated from the 4th gross income decile upwards.

Table 7. 2012 reform, % of losers

Income deciles before PIT 2010	Losers 2012
1	44.09
2	55.32
3	66.46
4	78.91
5	91.88
6	97.66
7	99.06
8	99.54
9	99.74
10	99.76

4. **Conclusions**

Redistributive effects of PIT in Spain are low in the EU context all along 2005-2010. The roots of this difference between Spain and EU countries stems from a low mean effective tax rate (dimension)and not from low progressivity. The changes in PIT introduced in 2010 (reform of 400 euro tax credit and increase in capital income marginal tax rates) have slightly increased PIT's redistributive effect by increasing its dimension (even if progressivity has fallen somewhat). The redistributive effects of PIT in Spain grows slightly due the 2012 State changes while staying constant after some state and regional changes undertaken in 2011. This increase of the redistributive effect of PIT after State changes in 2012 changes is related both to an increase in PIT dimension and an increase in PIT progressivity.

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