

A VIEW ON INCOME REDISTRIBUTION IN PORTUGAL AND IN THE EUROPEAN UNION*

Nuno Alves**

“A too great disproportion among the citizens weakens any state.”

David Hume, *Of Commerce*

ABSTRACT

This article assesses the impact and efficiency of redistributive policies in Portugal and in the European Union. The analysis is based on microdata from EU-SILC 2010 and focuses on the role of cash benefits (excluding pensions) and income taxes. The Portuguese economy has a high level of income inequality in the context of the European Union and a degree of redistribution close to the European average. In terms of efficiency, the evidence suggests that cash benefits (excluding pensions) in Portugal are relatively well targeted towards the lower income levels and income taxes have a higher degree of progressivity compared to the European average. The analysis also highlights the heterogeneity of the redistributive process in the various income deciles in Portugal.

1. Introduction

The market equilibrium tends to generate an excessive level of income inequality among economic agents. Public policies in advanced economies have therefore as one of their goals ensuring a more equitable redistribution of resources. This redistribution is essentially based on transfers targeted to the most vulnerable segments of the population, as well as on the progressivity of income taxes. The society values this redistribution not only for strictly utilitarian reasons – assuming that the marginal utility of consumption decreases with the level of income – but mainly to correct distortions in the income distribution arising from the absence of an effective equality of opportunity among citizens. However, the maximization of this objective should take into account the potential adverse incentives on labour supply and on the generation of income. This trade-off between equity and efficiency – whose magnitude depends on the elasticity of labour supply to changes in the structure of taxes and transfers – is the basis of an extensive economic literature (see Piketty and Saez, 2012). Nevertheless, when income inequality is excessive and based on market failures, an increase in income redistribution can actually promote a more efficient and more stable economic system (see Stiglitz, 2012).

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** Banco de Portugal, Economics and Research Department.

This study aims to analyze the role of redistribution policy in Portugal, framing the results in the context of the European Union. As usual in the literature, the term “redistribution” should be understood as a decline in income inequality arising from public policies (see Immervoll and Richardson, 2011). Due to the superior quality and comprehensiveness of national databases, empirical studies on redistributive policies are typically based on individual countries. However, a reading of these policies across countries can be useful in that it allows organizing the evidence around some common benchmarks. In this context, this paper builds on some recent contributions studying the impact of redistributive policies in the European Union (see Atta-Darkua and Barnard, 2011). To this end, we use the 2010 cross-section data of the European Union Survey on Income and Living Conditions (EU-SILC).

This study presents a number of weaknesses that should be emphasized at the outset. These weaknesses require some restraint in interpreting the results. First, the EU-SILC database, although arguably the most suitable for the present analysis, presents some limitations associated *inter alia* with the degree of disaggregation of the data and the fact that the sample does not fully represent the two extremes of the income distribution. Second, this study strictly focuses on the role of social benefits in cash (excluding pensions) and income taxes. Thus, we do not evaluate the role of social benefits in kind – which are the majority of social benefits, if one excludes pensions – or the impact of other taxes, in particular consumption taxes. Thus, the object of analysis does not cover the full set of public redistribution policies. Thirdly, the analysis is based on cross-sectional data for a single year, so it does not allow assessing the impact of the tax and transfer system on the intertemporal redistribution of income or the dynamic decisions of agents throughout their life-cycle (see, for a recent contribution, Brewer *et al.*, 2012). Finally, the analysis of the redistributive impact of income taxes and cash benefits shall be based solely on direct comparisons of the income distribution before and after transfers and before and after income taxes. This immediately raises a problem of lack of counter-factual. In fact, redistributive policies affect the incentives and budgetary constraints facing individuals, thus altering their economic decisions, particularly in terms of labor market participation and household composition. Identifying this counterfactual typically requires an approach based on general equilibrium models or quasi-experimental evidence, which is beyond the scope of this paper and remains a challenge to the literature in this area.

Conditional on the limitations described above, the analysis aims to answer several questions: (i) What is the importance of cash benefits (excluding pensions) in reducing income inequality?; (ii) What is the share of these benefits targeted at the lowest income deciles?; (iii) What is the degree of progressivity of income taxes?; (iv) In the European context, is the redistribution of income associated mainly with the tax system or with benefits in cash?; (v) How does Portugal compare with its European partners in terms of the efficiency of the redistributive process? The goal of this article is to gather evidence about these (and other) issues and thus help to inform some ongoing discussions on the Portuguese economy.

The paper is organized as follows. Section 2 briefly presents the database and defines the three concepts of income on which the analysis is based: original income (before taxes and cash benefits), gross income (after cash benefits and before taxes) and disposable income (after taxes and cash benefits). Section 3 describes some facts about income inequality in the European Union, using the various income concepts. This section will compare the degree of income redistribution in the different European Union countries. Section 4 distinguishes between the redistributive effectiveness and efficiency of cash benefits and income taxes. Section 5 summarizes the main conclusions and presents some avenues for future research.

2. The Database And The Income Definitions

2.1. The database

This study is based on the EU-SILC database, which is the ultimate source for research on income and living conditions of individuals and households in Europe. The EU-SILC 2010 is the latest available microdata for

research. The information on income refers to 2009 for the vast majority of countries, including Portugal. The analysis considers a set of twenty-seven countries, including most euro area and European Union countries.¹ In the following sections, references to the euro area and the European Union correspond to simple averages of the indicators calculated for the different countries.

The sample size in 2010 for all European Union countries amounts to about 550000 individuals. The sample for Portugal includes over 13000 individuals. All results presented in this article were calculated using the cross-sectional weights available in the database. The results thus correspond to an extrapolation of the indicators to the whole population in each country (see European Commission, 2010).

2.2. The income definitions

Underlying all comparisons of income inequality is an analytical framework of the income redistribution process. The analysis in this article is based on a comparison of three successive phases underlying the generation of disposable income. In a first step, we consider all types of income generated from market sources, plus pensions. This aggregate will be called original income. In a second step, social benefits in cash are added to original income, in order to obtain gross income. Finally, disposable income results from subtracting income taxes, as well as Social Security contributions paid by the workers, from gross income. Following this sequence assumes that cash benefits are received primarily and that the entire gross income is then subject to income taxes. The soundness of this assumption depends on the legal framework in each country (see Immervoll and Richardson, 2011). Note, however, that the results would remain qualitatively unchanged if a different sequencing was assumed (*i.e.*, the initial payment of taxes and the subsequent receipt of benefits). It is worth detailing the composition of each of the three income aggregates, namely because it allows clarifying the constraints imposed by the available information in the database (see also European Commission, 2010).

Original income includes employees' cash or near-cash income, non-cash employee income, cash benefits from self-employment, income from rental of a property or land, regular inter-household cash transfers received, interest, dividends, income received by people aged under 16, as well as old age and survivors' benefits.² The inclusion of pensions in original income, and not as social benefits in cash, is an important methodological choice in this study. This choice is based on three types of reasons. Firstly, the redistribution operated via the pension system has a very different nature from the other cash benefits, due to its intergenerational nature and to the fact that it is mostly based on contributory schemes. Secondly, given the weight of pensions in overall social benefits in cash (about two-thirds across the European Union and about 70 per cent in Portugal, according to Eurostat data), their redistributive impact requires an autonomous study, distinct from the other benefits. Finally, the exclusion of pensions from original income would imply that many pensioners would have an original income near zero. This methodological choice is implausible from an economic point of view, particularly when the social security systems are relatively mature. In the remainder of the article, and for simplicity of exposition, all references to cash benefits should thus be interpreted as excluding income from old-age and survivors' benefits.

Gross income is computed by adding cash benefits to original income. Cash benefits comprise benefits related to unemployment, sickness/accident, disability, child protection/family, social exclusion, benefits for education purposes and housing allowances (the latter are not strictly cash transfers). It should be

1 Iceland and Norway also participate in the EU-SILC and are included in the analysis. In the charts and tables, the countries are identified with the following acronyms: Austria (AT), Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Hungary (HU), Iceland (IS), Italy (IT), Lithuania (LT), Luxembourg (LU), Latvia (LV), Malta (MT), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK) and United Kingdom (UK).

2 In the EU-SILC database, survivors' benefits received by individuals older than the legal retirement age are reported together with old-age benefits.

noted that some of these benefits have a contributory nature, especially unemployment benefits. The distinction between the redistributive role of contributory and non-contributory benefits is an interesting area for future research.

Disposable income corresponds to gross income minus income taxes – including taxes on labor income, profits and capital gains – and workers' contributions to Social Security.³ On the basis of EU-SILC data, it is not possible to distinguish income taxes from those Social Security contributions. Additionally, it should be noted that income taxes reported in the survey correspond to the tax actually paid in each year, so tax refunds from prior years but received during the reference period are deducted in the calculation of income taxes and, similarly, any future tax refunds/payments relating to the reference year are not taken into account. This is an additional weakness of the information contained in the database. Again, for simplicity of exposition, all references to income taxes should be interpreted as including workers' contributions to Social Security.

Finally, it is worth noting that, in line with the official methodology in the European Union, this analysis is based on measures of equivalised income. Household income was thus re-scaled based on the size and composition of each household. In this article, we use the OECD modified equivalence scale, which gives a weight of 1.0 to the first adult in the household, 0.5 to other adults and 0.3 to each child (under 15 years). The equivalised income is attributed to all household members, thus assuming that the monetary resources – including the impact of redistributive policies – are equitably shared in each household. Note that this hypothesis is inescapable given that a significant share of redistributive policies is determined at the household level. All income measures reported in this article are therefore defined per equivalent adult.

3. (Re) Distribution Of Income In The European Union: Some Fundamental Traits

This section aims at uncovering some facts about income inequality based on each of the three income aggregates described above. The analysis will allow assessing the main features of the redistributive role of cash benefits and income taxes at the European level.

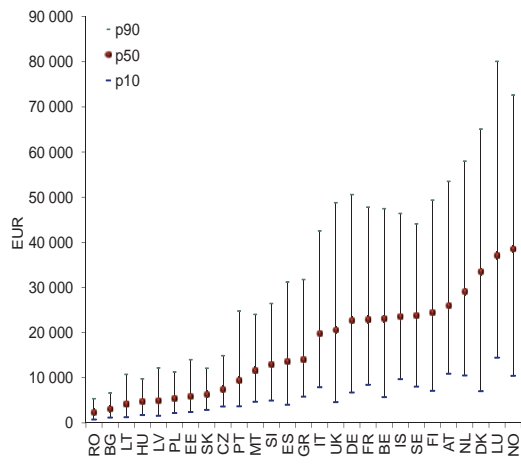
Chart 1 shows, for each European Union country, the 10th, 50th and 90th percentiles of the distribution of original income. The countries are sorted by median original income. Chart 2 mimics Chart 1 for disposable income. The charts immediately illustrate some important distribution and redistribution features in the European Union. Firstly, there is a high dispersion in original income in most countries, both in the lower and in the upper medians of the distribution. This essentially results from the inequality in labor income, influenced by the dispersion of wages and by the employment and unemployment characteristics in each country (see European Commission, 2012). In the Portuguese case, inequality is particularly marked in the upper median of the income distribution. In fact, the ratio between the 90th and 50th percentiles of original income in Portugal is the maximum across all European Union countries. Secondly, Chart 2 reveals that income taxes and cash benefits substantially decrease the income dispersion in all European Union countries, both by increasing the lowest incomes (in the case of the 10th percentile, by about 35 per cent, on average) and by decreasing the highest incomes (in the case of the 90th percentile, by about 25 per cent, on average). In Portugal, the income increase in the 10th percentile (15 per cent) is comparatively lower than the European average and the income decline in the 90th percentile (22 per cent) is close but still lower than the European average. Finally, it is interesting to note that the country rankings by level of median income do not change substantially after the redistribution of income. As an illustration, Portugal maintains its position regarding the level of median income between the Czech Republic and Malta.⁴

³ In strict terms, the computation of disposable income, as undertaken by Eurostat, would imply deducting also regular inter-household cash transfers paid. In order to focus the analysis on the redistribution achieved by public policies, these transfers were not deducted. All results are virtually unchanged by this methodological option.

⁴ For a detailed analysis of the evolution of inequality in Portugal throughout the last decades, see Rodrigues *et al.* (2012).

Chart 1

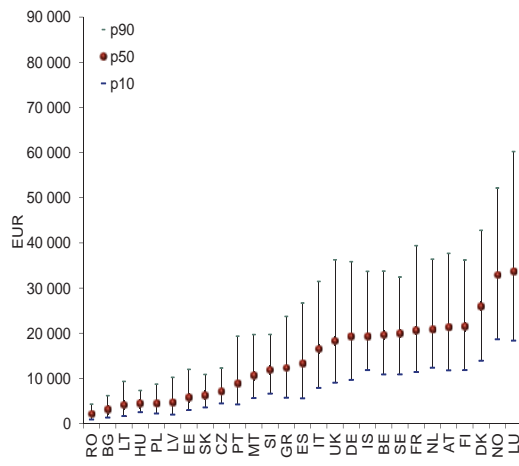
INEQUALITY IN ORIGINAL INCOME – 2009



Source: Author's calculations based on EU-SILC.

Chart 2

INEQUALITY IN DISPOSABLE INCOME – 2009



Source: Author's calculations based on EU-SILC.

Chart 3 shows the income inequality for the three income concepts described in Subsection 2.2, based on the Gini index. The Gini index measures the degree to which the distribution of income among individuals deviates from an equal distribution, and ranges from zero (perfect equality) to one (where a single individual would receive all the income generated in the economy). The countries are sorted by the level of disposable income inequality. On average, cash benefits and income taxes reduce income inequality – as measured by the Gini index – by 22 per cent in the European Union and by 20 per cent in Portugal. In absolute terms, the Gini index is reduced by about 0.08 percentage points in both the European Union and in Portugal. The chart uncovers that, on average, countries with lower (higher) inequality in original income are also those with lower (higher) inequality in disposable income. The chart also allows concluding that, on average, cash benefits contribute more to reducing inequality than income taxes.

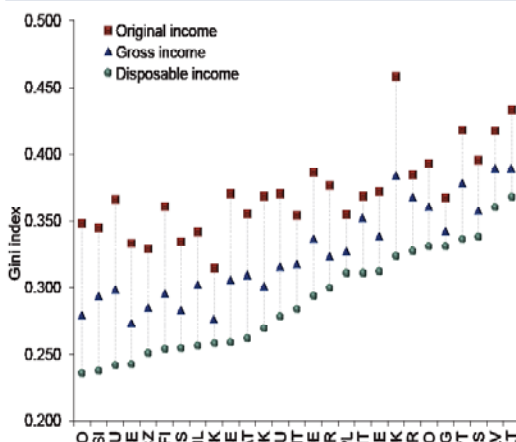
In order to provide a more aggregated reading of these results, Chart 4 shows simple averages of the indicators presented in Chart 3 for different sets of countries, in the spirit of the decomposition of welfare states proposed by Esping-Andersen (1990). The chart allows identifying rather different situations in the distribution and redistribution of income. At one extreme lie the Nordic countries, with levels of original income inequality which are already relatively low, and which are coupled with high levels of redistribution – mainly via cash benefits – implying particularly low levels of disposable income inequality. The continental European countries participating in the euro area also share these characteristics, albeit with a slightly higher level of inequality before and after the redistribution of income. At the other extreme lie the southern European countries – including Portugal – and the Baltic countries. These two groups are characterized by a relatively high inequality in original income, coupled with a relatively low income redistribution. In the case of southern European countries, the particularly low redistributive impact of cash benefits is on average even below the one stemming from income taxes.⁵ This evidence is broadly consistent with the so-called “Robin Hood paradox”, *i.e.*, with the idea that income redistribution is less prevalent precisely where it is most needed (see McCarty and Pontusson, 2009). Finally, it is worth underlining the case of the United Kingdom, which has unique features, given that a high level of original income inequality is accompanied by a relatively high redistributive effort, both through cash benefits and income taxes.

Chart 5 allows quantifying more precisely the importance of each instrument in the income redistribution. The countries are sorted by the redistributive impact of cash benefits. It is apparent that, in most countries,

⁵ This result is highly influenced by the case of Italy, which has a meager unemployment insurance mechanism.

Chart 3

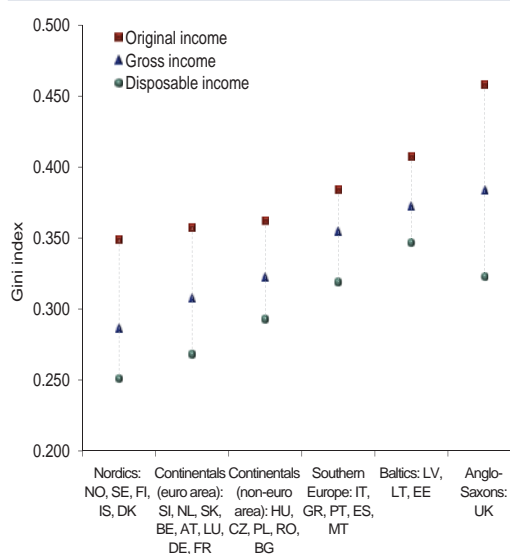
INCOME INEQUALITY – 2009



Source: Author's calculations based on EU-SILC.

Chart 4

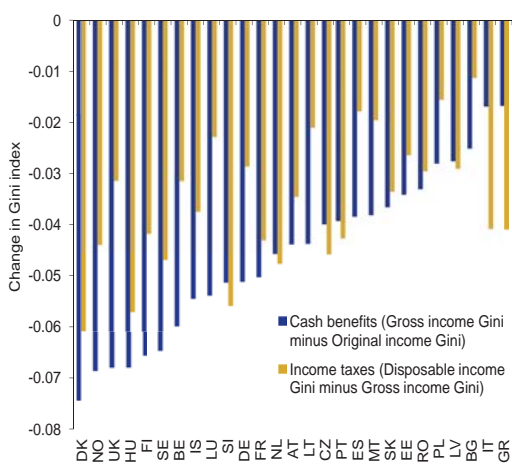
INCOME INEQUALITY – 2009



Source: Author's calculations based on EU-SILC.

Chart 5

IMPACT OF CASH BENEFITS AND INCOME TAXES ON INEQUALITY



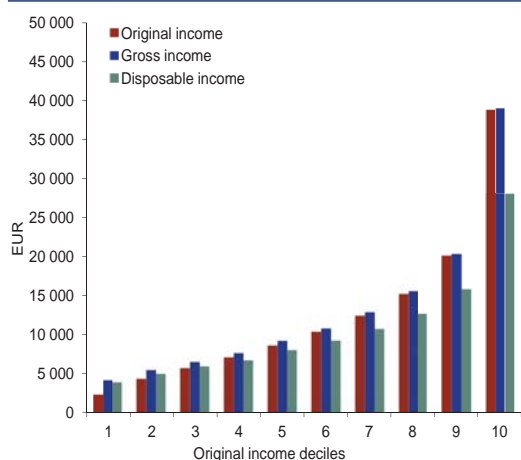
Source: Author's calculations based on EU-SILC.

income redistribution is mostly associated to cash benefits. This result is robustly found in the literature (see Bastagli *et al.*, 2012, OECD, 2012, or Atta-Darkua and Barnard, 2011). Nevertheless, it should be noted that the tax system always plays a key role in the redistributive process, since it allows obtaining the resources to implement, among other objectives, the set of social transfer policies. This endogeneity hinders a strict accounting of the contribution of each instrument in the redistribution process.

Finally, Charts 6 and 7 display, respectively for Portugal and the European Union, the impact of redistributive policies in each original income decile. In particular, the charts highlight the role of cash benefits in moving from original income to gross income and the role of income taxes in moving from gross to disposable income. Three main ideas emerge from the charts. Firstly, all income deciles visibly increase their income levels through benefits in cash, although more sharply – in absolute value and, obviously, relative to original income – in the lower income deciles. This impact on lower income levels is particularly

Chart 6

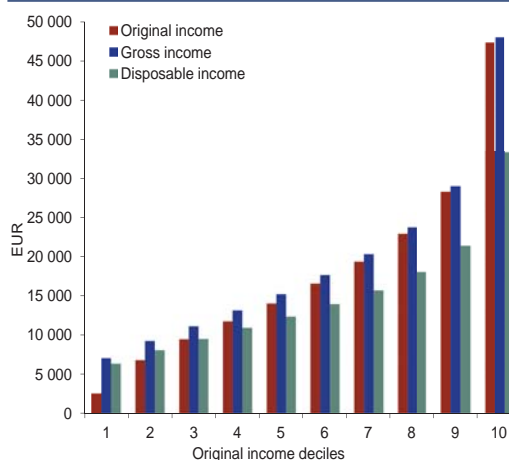
INCOME LEVELS BY ORIGINAL INCOME DECILES: PORTUGAL



Source: Author's calculations based on EU-SILC.

Chart 7

INCOME LEVELS BY ORIGINAL INCOME DECILES: EUROPEAN UNION



Source: Author's calculations based on EU-SILC.

marked in the European Union, with the lowest original income decile nearly tripling its income due to cash benefits. Secondly, income taxes decrease disposable income at all income deciles, but in particular in the highest. Finally, it is interesting to note that, in Portugal, income taxes net of cash benefits are negative in the first three deciles of original income, with increasingly positive values from the fourth decile onwards. In the European Union, the third original income decile already displays a relatively balanced level of income taxes and cash benefits. In all EU countries income taxes are progressive, with a strong incidence in the highest income deciles, and social transfers are targeted at the lower income brackets. It should be noted, however, that this evidence is partial, since it does not include all taxes paid by the population (in particular consumption taxes) and does not account for benefits in kind, as well as the provision of other functions of the State, which benefit the majority of citizens.

4. The Efficiency In The Redistribution Of Income In Portugal And In The European Union

The previous section identified the main features of the income redistribution process in Portugal and in the European Union, focusing on the impact of cash benefits and income taxes. However, a fundamental issue is to evaluate the efficiency of each of these redistributive policies, *i.e.* the extent to which resources are effectively targeted at the reduction of income inequality. This is the goal of this section. The section is organized as follows. In Subsection 4.1 the conceptual framework is presented. Subsections 4.2 and 4.3 sequentially apply this framework to social benefits in cash and income taxes, for each European Union country.

4.1. The conceptual framework

The overall redistributive impact of a policy is due, on one hand, to its magnitude – for example, the level of the income tax rate or the amount of cash benefits as a percentage of original income – and, on the other, to its efficiency. In this article, we will refer primarily to the notion of progressivity to assess the efficiency of each policy.

In simplified terms, a tax is progressive if the average tax rate increases with the level of before-tax income. In other words, a progressive tax implies that individuals with higher income levels pay a fraction of total taxes higher than the fraction of total income they receive. Although there is a general consensus around

this definition of progressivity, there is no strong consensus on the precise measurement of progressivity.

In this article, we adopt the progressivity indicator proposed by Kakwani (1977, 1979). This indicator measures the deviation of the distribution of the tax (or cash benefit) from a situation of proportionality.⁶

The redistributive effect of a tax can be decomposed according to the following formula:

$$Gini^{before\ tax} - Gini^{after\ tax} = \frac{g}{1-g} P^{Kakwani} - R, \quad (1)$$

where $Gini^{before\ tax}$ and $Gini^{after\ tax}$ are respectively the Gini coefficients before and after tax, g is the average tax rate (computed in relation to before-tax income), $P^{Kakwani}$ is the progressivity indicator proposed by Kakwani and R captures the decline in inequality due to the re-ranking of individuals along the income distribution after the change in tax (this last element does not weigh significantly on our results so it will not deserve further attention). Note that typically, in the case of income taxes, $g > 0$ and $P^{Kakwani} > 0$. In turn, cash transfers can be interpreted as a negative tax, thus typically implying $g < 0$ and $P^{Kakwani} < 0$.

Equation (1) is rather instructive to frame the analysis regarding the progressivity of taxes (and benefits). The redistributive effect of a tax, *i.e.* the impact on $(Gini^{before\ tax} - Gini^{after\ tax})$, works mainly through two channels: (i) the average tax rate (note that $\frac{g}{1-g}$ is a positive monotonic function in g) and (ii) the tax progressivity ($P^{Kakwani}$). A tax that is proportional to before-tax income has no progressivity ($P^{Kakwani} = 0$) and will thus have no redistributive effect, regardless of the level of the tax rate g . In turn, in a progressive tax system (where $P^{Kakwani} > 0$), income inequality will decline not only with an increase in progressivity but also with an increase in the average tax rate.

In this article, the Kakwani progressivity indicator will be the key indicator to assess the efficiency of the redistributive system. In fact, for the same level of tax (of cash benefits), the higher the progressivity, evaluated based on $P^{Kakwani}$, the greater the redistributive impact of the policy instrument.⁷ This analysis will be complemented with additional indicators measuring the extent to which the redistributive policies target the different deciles of the income distribution.

4.2. The efficiency of redistribution via social benefits in cash

This sub-section evaluates the redistributive efficiency of cash benefits in the European Union countries. Recall that these benefits include all cash transfers received by individuals/households related to unemployment, sickness/accident, disability, child protection/family, social exclusion, benefits for education and other housing allowances. It is important to highlight that the EU-SILC does not cover all the elements that are included in the official Eurostat statistics reported in the European System of Integrated Social Protection Statistics (ESSPROS) (see European Commission, 2010). In addition, as usual in these types of surveys, there is a tendency for some underreporting of income levels by households. In Portugal, the levels reported in the EU-SILC 2010, extrapolated to the total population, underestimate by about one quarter the total value of cash benefits for 2009 contained in the Bulletin of the Directorate General

⁶ The Kakwani progressivity indicator corresponds to the difference between the tax concentration coefficient and the Gini index of gross income. In this article, all computations of the Kakwani index were undertaken using the STATA program *sgini* (see Van Kerm, 2009).

⁷ In strict terms, cash benefits should be labeled as regressive, given that they tend to decline with the level of income. Therefore, one should in principle state that the redistributive effect would increase the greater the regressivity of a cash benefit and the greater the progressivity of a tax. However, for exposition purposes, this article will denominate a cash transfer as progressive if it declines income inequality, in line with the common intuition and the usual language in policy debates.

for the Budget,⁸ and by about one third the value of cash benefits (excluding pensions) in the National Accounts of INE.⁹

Table 1 presents, for each of the countries under review, the impact and efficiency of cash benefits in reducing income inequality. The countries are sorted by original income inequality. The first columns of the table display the size of cash benefits as a percentage of original income, the Kakwani progressivity indicator (negative, since we are analyzing “negative taxes”) and the overall redistributive impact of these benefits. The table shows that the overall redistributive impact of cash benefits stems from the combination of very different situations in terms of magnitude and efficiency of those transfers. Firstly, countries with higher levels of income inequality do not engage in higher income redistribution via cash benefits. In fact, with the important exception of the United Kingdom, the evidence points in the opposite direction, as was already visible in Chart 3. Secondly, there is a strong positive relationship between the magnitude of cash benefits (as a percentage of original income) and the respective redistributive impact (the correlation between these two variables in the sample countries is greater than 0.50). The association between the progressivity indicator and the overall redistributive impact is not as strong, but is also significant. Finally, there is not a statistically significant association between the size of benefits and the progressivity indicator.

According to data from the EU-SILC, the countries with the highest levels of cash benefits (as a percentage of original income) are the Nordic countries and the Baltic States. In turn, the countries in which cash benefits are more progressive (*i.e.*, in which the Kakwani progressivity indicator is more negative) are the United Kingdom, Portugal, the Netherlands, Denmark and Germany. This conclusion is generally robust when assessing the share of cash benefits targeted towards the two lowest deciles of the original income distribution.

In the specific case of Portugal, the impact of cash benefits in reducing inequality is slightly lower than the European Union average. This is usually interpreted as reflecting not only a lower degree of effectiveness but also a lower degree of efficiency of these benefits. Table 1 allows deconstructing this statement. In fact, the smaller redistributive effect of cash benefits in Portugal stems strictly from the fact that spending on these benefits is relatively low (about 6 per cent of original income, which compares with more than 8 per cent in the euro area and in the European Union).¹⁰ In contrast, in terms of efficiency, Portugal stands out as one of the countries where cash benefits are more progressive. It should be noted that this conclusion for Portugal is in contrast with some results presented in Immervoll and Richardson (2011), in which cash benefits excluding pensions exhibit a relatively low degree of progressivity in the OECD context. This may be related to some methodological options adopted in that analysis.¹¹ Nevertheless, this discrepancy highlights the importance of assessing the robustness of these results – particularly when aimed at informing policy decisions – and should be the subject of future analysis.

8 This value corresponds to the sum of unemployment insurance, sickness subsidies, family/children subsidies, Rendimento Social de Inserção (RSI), Complemento Solidário para Idosos (CSI), other social exclusion benefits and disability benefits.

9 Given that data from EU-SILC are the basis for the official statistics from Eurostat on the redistributive role of social benefits, it would be important to assess, in a comparative perspective, what is the relative impact of this underestimation across EU countries. This analysis goes beyond the scope of this article.

10 According to the SEEPROS statistics of the Eurostat, social benefits in cash (excluding old age and survivors’ benefits) in 2009 stood at 5.0 per cent of GDP in Portugal and slightly above 6 per cent of GDP in the European Union.

11 In particular, the progressivity analysis is based on concentration indices in which individuals are ranked by disposable income and not by original income (which would be the correct theoretical option). In an annex, Immervoll e Richardson (2011) show that the degree of progressivity depends significantly on this methodological option. In fact, while in the first case the degree of progressivity of the tax and transfer system in Portugal stands clearly below the OECD average, in the latter case the degree of progressivity of the tax and transfer system in Portugal stands clearly above the OECD average.

Table 1

IMPACT OF CASH BENEFITS ON INEQUALITY AND POVERTY							
	Cash benefits over original income	Impact on inequality			Impact on poverty		
		Kakwani progressivity index	Total redistributive effect (decline in Gini index)	Share of cash benefits towards the two lowest original income deciles (as a percentage of total cash benefits)	Decline in poverty rate	Decline in poverty intensity	Share of cash benefits contributing to a decline in poverty intensity
	%			%	p.p.	p.p.	%
UK	9.1	-0.95	0.054	0.58	13.2	11.0	50.1
LT	13.0	-0.59	0.037	0.36	9.8	6.0	21.0
PT	5.8	-0.82	0.037	0.45	7.2	4.7	34.0
LV	10.7	-0.37	0.024	0.24	6.5	4.5	18.8
GR	2.9	-0.72	0.018	0.40	3.5	1.7	23.6
DE	8.3	-0.75	0.045	0.47	6.5	7.2	36.5
RO	6.4	-0.63	0.028	0.34	4.5	3.9	27.2
ES	7.1	-0.70	0.037	0.41	6.5	4.5	31.0
FR	9.1	-0.73	0.046	0.45	9.6	6.3	31.6
BE	11.0	-0.75	0.061	0.48	9.7	8.6	36.2
EE	9.7	-0.49	0.029	0.32	6.6	4.3	21.0
FI	11.4	-0.75	0.064	0.46	10.5	7.5	30.6
IT	4.3	-0.49	0.016	0.27	3.3	1.7	16.6
LU	9.8	-0.72	0.049	0.42	11.1	6.1	28.1
BG	7.7	-0.43	0.023	0.24	4.9	3.0	19.4
DK	11.6	-0.78	0.066	0.52	10.2	6.8	24.9
MT	5.9	-0.73	0.034	0.47	6.6	4.4	35.1
PL	4.5	-0.73	0.027	0.46	5.2	3.0	27.8
NO	13.0	-0.73	0.067	0.44	9.7	7.1	25.1
HU	12.9	-0.67	0.056	0.42	12.6	7.8	29.2
AT	8.2	-0.67	0.040	0.41	7.0	4.6	23.8
SI	11.4	-0.62	0.050	0.35	8.8	5.4	22.6
NL	6.1	-0.78	0.040	0.50	6.6	4.0	24.5
IS	9.0	-0.75	0.046	0.47	7.7	4.4	20.6
SE	11.3	-0.70	0.055	0.44	8.5	5.9	24.0
CZ	8.3	-0.68	0.040	0.44	6.8	4.2	24.7
SK	7.6	-0.69	0.035	0.48	7.3	4.3	29.7
Euro area	8.1	-0.70	0.040	0.42	7.4	5.0	28.3
European Union	8.7	-0.68	0.040	0.42	7.7	5.3	27.7

Source: EU-SILC 2010.

Notes: The cash benefits exclude old-age and survivor pensions. The countries are sorted by the level of original income inequality. Data weighted with cross-sectional weights.

Table 1 also allows assessing the impact of cash benefits in the poverty rate and in poverty intensity across countries. Consistent with the poverty line definition adopted at a European level, an individual is considered poor when her disposable income is below 60 per cent of median disposable income in the respective country.¹² As in the case of inequality, a simple comparison between the rate and intensity of poverty before and after cash benefits was undertaken, keeping the poverty line fixed. In addition, the last column of the table presents the share of benefits which effectively contribute to reduce poverty intensity, regardless of actually raising individuals above the poverty line. The main conclusion from this exercise is that cash benefits contribute to significantly reduce the level and intensity of poverty in Euro-

¹² The poverty rate corresponds to the proportion of the population which is poor; the poverty intensity corresponds to the average gap between the income of the poor population and the poverty line, measured as a fraction of the poverty line.

pean Union countries. However, in the cross section of countries, there is not a significant relationship between the initial poverty rate and the size of cash benefits, although there is a slight positive association in the case of poverty intensity.¹³ In addition, it is interesting to note that there are some parallels between the efficiency of cash benefits in reducing inequality and the respective efficiency in declining the poverty rate and the poverty intensity. In Portugal, cash benefits have a slightly lower contribution than the European average in decreasing the poverty rate and the poverty intensity, but the share of benefits specifically targeted towards the poor is higher than the European average. In this sense, the evidence regarding the impact of cash benefits on poverty is similar to the one described for the case of inequality.

An intuitive way to evaluate the redistributive impact of a given policy is to analyze its importance in the various deciles of the income distribution. This assessment is presented in Charts 8 and 9. Chart 8 shows the share of cash benefits in total disposable income for each income decile. In turn, Chart 9 shows the fraction of total cash benefits received by each income decile. Note that the charts are based on disposable income deciles and not on original income deciles. The reason for this choice is due to the fact that cash benefits are much higher than original income in the first decile of the original income distribution (as evidenced in Chart 7), which would make Chart 8 unreadable for the remaining deciles.

The charts compare the data for Portugal with data for the euro area average, the European Union average, and the maximum and minimum values across the countries in the sample (which determine the shaded area). The charts illustrate some key ideas. Firstly, as expected, the magnitude of cash benefits declines with disposable income, reflecting the progressivity of these benefits already evidenced above (for Portugal and for all European Union countries). Secondly, cash benefits as a percentage of disposable income are generally lower in Portugal than in the European average, particularly in the two lowest deciles and in the two highest deciles of the disposable income distribution. This fact is also reflected in a relatively smaller fraction of total transfers targeted to these income deciles.

Finally, it is worth assessing briefly the potential redistributive impact of some policy developments regarding cash benefits in Portugal after 2009 (the reference year for income in the database). In recent years, cash benefits underwent significant changes in Portugal, particularly as regards the rules for calculating unemployment benefits, the degree of restrictiveness in accessing cash benefits, as well as their overall magnitude. According to information from the Directorate General for the Budget, expenditure on social benefits in cash remained relatively stable in nominal terms between 2009 and 2012, reflecting a significant increase in unemployment benefits – mainly associated to an unprecedented increase in unemployment – and a decline in family and youth allowances and in the minimum guaranteed income (Rendimento Social de Inserção) – which were primarily associated with changes in the rules underlying these benefits. These changes contributed to mitigate the redistributive impact of these benefits in Portugal – due to the decline in transfers with a relatively high degree of progressivity – and in this sense should have contributed to an increase in income inequality.

4.3. The efficiency of redistribution via income taxes

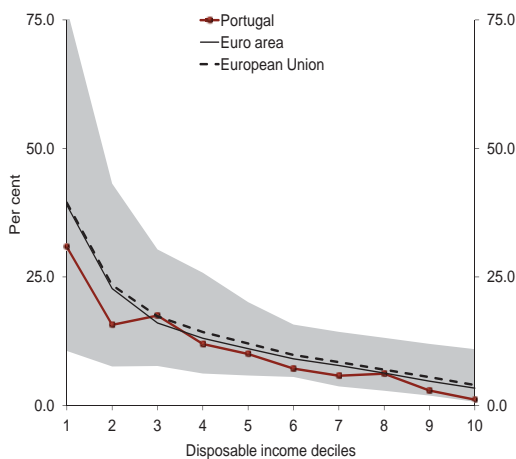
The analysis of the redistributive efficiency of income taxes is presented in Table 2. It should be recalled that these taxes include the workers' contributions to Social Security. The latter typically contribute to mitigate the tax progressivity computed in this article (for a simulation of this impact in Portugal, see Rodrigues *et al.*, 2012).

The table suggests that countries with higher average tax rates have, on average, a lower degree of progressivity, although this association is not particularly strong. This suggests that in some countries there may be some compensation between the level of the income tax rate and its degree of progressivity. Additionally, the comparison of Table 1 with Table 2 allows once again to conclude that the redis-

¹³ These results are available from the author upon request.

Chart 8

CASH BENEFITS AS A PERCENTAGE OF DISPOSABLE INCOME, BY DISPOSABLE INCOME DECILES

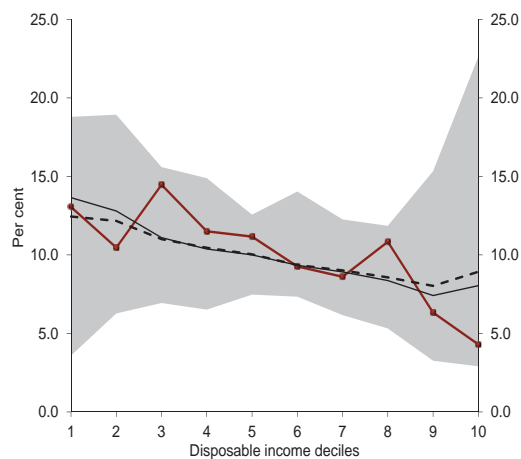


Source: Author's calculations based on EU-SILC.

Note: The shaded area is bounded by the maximum and minimum across countries in the sample.

Chart 9

SHARE OF CASH BENEFITS RECEIVED BY EACH DISPOSABLE INCOME DECILE (IN TOTAL CASH BENEFITS)



Source: Author's calculations based on EU-SILC.

Note: The shaded area is bounded by the maximum and minimum across countries in the sample.

tributive effect of cash benefits is globally higher than the one originated by income taxes, despite the weight of income taxes in gross income being about two and a half times the weight of cash benefits in original income.

According to the evidence in the EU-SILC, the countries with the highest income tax rates are some Nordic countries (Norway and Sweden) and some continental European countries (The Netherlands and Austria). Income taxes are progressive in all countries. The countries with the highest degree of progressivity are Hungary, the United Kingdom, the Czech Republic and Slovakia. Portugal has an income tax rate lower than the European average and a degree of progressivity above the European average. The combination of these elements implies that the redistributive impact of income taxes in Portugal is actually higher than the European average.

Table 2 also presents evidence on the share of income tax paid by the two highest deciles of gross income. According to the evidence from the EU-SILC, the highest income deciles in Portugal pay a fraction of total income taxes clearly above the European average (around 60 per cent in Portugal, compared with about 50 per cent, on average, in the European Union). This figure for Portugal has only parallel in the United Kingdom. It is important to assess whether this stems from particularly high tax rates on the highest income brackets in Portugal or whether it reflects the high income inequality in Portugal, as evidenced in Section 3.

Chart 10 aims to evaluate this issue, by showing the average income tax rate for each gross income decile, comparing the Portuguese economy with the European average, as well as with the maximum and minimum of the countries in the sample. The chart reveals that, in Portugal, the income tax rates across all income deciles stand below the European average, although there is a convergence in the upper income deciles. The relative disproportion in the fraction of income taxes paid by the highest income deciles in Portugal seems therefore to essentially translate the high income inequality prevailing in the Portuguese economy. Finally, Chart 11 shows the fraction of total income taxes paid by each income decile. Again, the uniqueness of the Portuguese case stands out, not only in the high share of income taxes paid by the highest income deciles, but also in the relatively small share of income taxes paid by those income deciles immediately above the median.

Table 2

IMPACT OF INCOME TAXES ON INEQUALITY					
	Tax rate (income taxes over gross income)	Kakwani progressivity index	Total redistributive effect (decline in Gini index)	Share of income taxes paid by the two highest gross income deciles (as a percentage of total income taxes)	
	%			%	
LT	15.5	0.13	0.022	54.6	
LV	17.2	0.16	0.030	55.8	
PT	18.9	0.20	0.042	61.2	
UK	21.1	0.23	0.058	62.4	
GR	22.3	0.16	0.042	55.2	
RO	18.3	0.16	0.030	53.1	
IT	24.0	0.14	0.041	52.5	
ES	13.2	0.16	0.022	53.3	
DE	24.6	0.16	0.044	52.3	
BG	9.2	0.13	0.012	49.9	
EE	14.2	0.17	0.028	51.9	
PL	21.9	0.07	0.016	45.0	
FR	17.4	0.12	0.023	48.9	
MT	15.6	0.19	0.034	53.0	
LU	21.3	0.16	0.036	52.0	
AT	26.4	0.14	0.046	50.6	
BE	24.1	0.18	0.047	49.0	
NL	33.2	0.11	0.047	44.9	
FI	23.1	0.15	0.043	48.2	
SI	22.2	0.22	0.057	53.2	
HU	21.4	0.24	0.057	57.8	
DK	32.1	0.08	0.037	42.8	
IS	25.3	0.09	0.028	42.6	
NO	26.2	0.14	0.044	45.8	
CZ	14.2	0.23	0.036	52.7	
SE	26.1	0.09	0.030	43.6	
SK	9.8	0.23	0.019	53.3	
Euro area	20.7	0.17	0.038	52.0	
European Union	20.3	0.16	0.036	51.9	

Source: EU-SILC 2010.

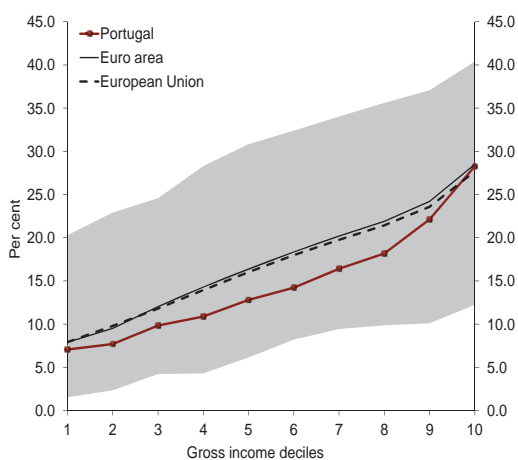
Notes: Income taxes include employees' social security contributions. The countries are sorted by the level of gross income inequality. Data weighted with cross-sectional weights.

Interestingly, the ranking of the different European Union countries in terms of average tax rates remains relatively unchanged over the various income deciles. Focusing on the highest income decile, the lowest average income tax rates, at around 15 per cent, are found in Bulgaria and Slovakia, and the highest, at about 40 per cent, are recorded in the Netherlands and in Denmark.

Finally, as in the case of cash benefits, it should be noted that in the recent past there have been changes in the income tax system with a significant redistributive impact. Since 2009, two developments in this field are worth highlighting. Firstly, there was a concentration of certain tax benefits in the lowest income brackets. This should have contributed to increase the progressivity of the income tax in Portugal. Secondly, it is worth underlining the set of changes in income taxation approved under the State Budget for 2013. These changes imply a significant increase in the average tax rate across all income deciles. The income tax rate on the highest income brackets in Portugal should now stand above the European average. The available information suggests that there should be a slight decline in the degree of progressivity of income taxes after these changes, since households with lower average income tax rates will record a

Chart 10

AVERAGE INCOME TAX, BY GROSS INCOME DECILE

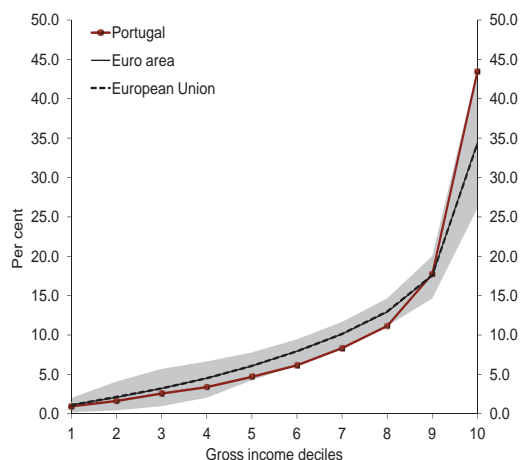


Source: Author's calculations based on EU-SILC.

Note: The shaded area is bounded by the maximum and minimum across countries in the sample.

Chart 11

SHARE OF INCOME TAX PAID BY EACH GROSS INCOME DECILE (IN TOTAL INCOME TAX)



Source: Author's calculations based on EU-SILC.

Note: The shaded area is bounded by the maximum and minimum across countries in the sample.

higher per cent increase in payable taxes.¹⁴ In terms of redistributive impact, the increase in the average income tax rate, by its magnitude, should dominate the decline in the degree of progressivity of the tax. These changes should thus contribute to reducing income inequality in Portugal. It should be noted however that this is a partial equilibrium assessment, since it does not address the general equilibrium impact on the generation and on the distribution of income in the economy.

5. Conclusions

Income redistribution is an important dimension of State intervention in a market economy. In fact, to a greater or lesser extent, redistributive policies aim at promoting greater equity and a greater equality of opportunity for all citizens. These goals are achieved through the strengthening of mechanisms of risk-sharing, through ensuring – conditionally or unconditionally – certain income floors, as well as through correcting market failures that generate an excessive level of income inequality. This paper aimed at analyzing the effectiveness and efficiency of redistributive policies in Portugal and in the European Union, focusing on the role of cash benefits (excluding pensions) and income taxes. The analysis was based on microdata from EU-SILC 2010. Despite some limitations of the database, several conclusions may be highlighted.

First, redistributive policies significantly reduce income inequality in the European Union, although with a high heterogeneity across countries. Countries with the lowest disposable income inequality combine a relatively low level of original income inequality with sizeable income redistribution via cash benefits and income taxes. This outcome is necessarily founded on a set of institutions, policies and social preferences geared towards reduced income disparity among citizens. In turn, Portugal has one of the highest levels of income inequality in the European Union – particularly marked in original income and in the upper half of the income distribution – and a degree of redistribution via cash benefits and income taxes close to the European average.

¹⁴ It should be noted that this fact is consistent with a higher increase, in percentage points, of average tax rates in the higher income brackets. In fact, when a tax is progressive to start with, even a proportional increase – which, by definition, does not alter its progressivity – implies a higher increase, in percentage points, of income tax rates in the higher income brackets.

Secondly, the redistribution of income in European countries operates mainly via cash benefits – clearly targeted at the lower income brackets – and, to a lesser extent, through the progressivity of income taxes. Nevertheless, the tax systems always play a key role in the redistributive process, since they ensure the provision of social benefits and, *inter alia*, the financing of the most powerful tool for fighting inequalities in the long run: the investment in education.¹⁵ In a society with excessive inequalities as the Portuguese, there is a marked discrepancy between those who sustain the tax base and those who benefit the most from cash benefits. This discrepancy implies important dilemmas, in particular due to the need to undertake interpersonal comparisons of welfare gains and losses, as well as to the fact that the political institutions and social choices do not always favour a further redistribution of income, even when it obeys to the Pigou-Dalton principle (*i.e.*, when it generates greater social equality).

Thirdly, a comprehensive evaluation of the redistributive process should seek to identify the efficiency of each policy instrument. The Portuguese case clearly illustrates this assertion. In fact, the evidence based on EU-SILC suggests that cash benefits (excluding pensions) in Portugal have a relatively low redistributive impact in the European context. However, the decomposition of this impact shows that it arises exclusively from the relatively small size of those benefits in Portugal. In terms of efficiency, Portugal is actually one of the countries in which cash benefits (excluding pensions) are more targeted towards the lowest incomes. With respect to income taxes, their redistributive impact in Portugal is above the European average, which results from a higher progressivity of income taxes in Portugal. This article also showed that the high fraction of total income taxes paid by the top income deciles in Portugal – one of the highest in the European Union – is due primarily from the high gross income inequality in Portugal, given that average income tax rates paid by those income deciles do not differ substantially from the European average.

Finally, it should be noted that this article did not address several important issues in the ongoing debate on redistributive policies in Portugal. First, the pension system – due to its intertemporal impact on public finances and its importance as an intergenerational solidarity instrument – deserves a particularly careful sustainability analysis, which goes beyond the scope of this article. There is also a set of policies implementing a universal provision of goods and services which are deemed essential to the community and which have a crucial role in reducing inequality in the long run. These policies, with a significant impact in terms of social welfare, were also not object of analysis in this study. Secondly, an assessment of redistributive policies in a country must be accompanied, or even preceded, by an examination of pre-distributive policies, *i.e.*, the institutional framework and policies that determine the market generation and distribution of income. Competition policies, the functioning of the judicial system, research and development policies, the functioning of the labor market and, crucially, the policies aimed at enhancing human capital in the medium term, are key elements in this pre-distribution process. Thirdly, there is a broad consensus that redistribution through the tax and transfer system should become increasingly integrated and coherent in order to increase social welfare for the same level of resources. Some recent contributions of exceptional quality may establish a benchmark in terms of international best practices (see Mirrlees *et al.*, 2011). These issues require further study in the future and, hopefully, should be part of the set of available information for structural decision-making in these areas.

¹⁵ See Alves *et al.* (2010) for an analysis of the role of education in explaining income inequality in Portugal.

REFERENCES

- Alves, N., M. Centeno and A. Novo (2010), "Investment in Education in Portugal: Returns and Heterogeneity", *Economic Bulletin Spring*, Economics and Research Department, Banco de Portugal.
- Atta-Darkua and A. Barnard (2011), "Distributional effects of direct taxes and social transfers (cash benefits)" in *Income and Living Conditions*, Eurostat.
- Bastagli, F., D. Coady and S. Gupta (2012), "Income Inequality and Fiscal Policy", *IMF Staff Discussion Note*, SDN/12/08.
- Brewer, M., M. Dias and J. Shaw (2012), "A dynamic perspective on how the UK personal tax and benefit system affects work incentives and redistributes income", *IFS Briefing Note* BN132.
- Comissão Europeia (2010), EU-SILC 065 (2010 operation) – Description of target variables, Eurostat.
- Comissão Europeia (2012), *Employment and Social Developments in Europe 2011*, Chapter 2 "Are our societies working fairly? Recent changes in income inequality".
- Esping-Andersen, G. (1990), *The Three Worlds of Welfare Capitalism*, Princeton University Press.
- Immervoll, H. and L. Richardson (2011), "Redistribution policy and inequality reduction in OECD countries", *IZA Discussion Paper* No. 6030.
- Joumard, I., M. Pisu and D. Bloch (2012), "Less income inequality and more growth – are they compatible? Part 3. Income redistribution via taxes and transfers across OECD countries", *OECD Economics Department Working Paper*, No. 926.
- Kakwani, N. (1977), "Measurement of tax progressivity: an international comparison", *The Economic Journal*, 87(345), pp. 71-80.
- Kakwani, N. (1979), "Measurement of tax progressivity: a reply", *The Economic Journal*, 89(355), pp. 653-657.
- McCarty, N. and J. Pontusson (2009), "The political economy of inequality and redistribution", Chapter 26 in W. Salverda, B. Nolan, T. Smeeding (eds.), *The Oxford Handbook of Economic Inequality*, Oxford University Press.
- Mirrlees, J. S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (2011), *Tax by Design: the Mirrlees Review*, Oxford University Press.
- OCDE (2011), *Divided We Stand: Why Inequality Keeps Rising*, OECD.
- OCDE (2012), "Income inequality and growth: The role of taxes and transfers", *OECD Economics Department Policy Notes*, No. 9.
- Piketty, T. and E. Saez (2012), "Optimal labor income taxation", *NBER Working Paper* 18521, a publicar no *Handbook of Public Economics*, Volume 5.
- Rodrigues, C. F. (coord.), R. Figueiras and V. Junqueira (2012), *Desigualdade Económica em Portugal*, Fundação Francisco Manuel dos Santos.
- Stiglitz, J. (2012), *The Price of Inequality*, Allen Lane, Penguin Books.
- Van Kerm, P. (2009), "sgini – Generalized Gini and concentration coefficients (with factor decomposition) in Stata", CEPS/INSTEAD, Luxembourg.