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Robin Hood versus Piggy Bank: Income redistribution in Portugal 2006-10

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Summary: The redistributive effect of the Portuguese welfare state through pensions, benefits and taxes is investigated in detail over the 2006-10 period using disposable income as benchmark. All social and fiscal policy instruments analysed contribute significantly to the reduction in inequality and poverty, with benefits other than pensions being the most cost-efficient. However, the impact of the economic crisis and austerity policies implemented from 2010 has reversed the previous trends and affected negatively the efficacy and efficiency of all instruments.

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1. Introduction[1]

Portugal is a member of Esping-Andersen´s *Continental-European group* of countries typified by "transfer-heavy and service-lean" welfare states. It is also one of the most unequal (and poorest) of the EU countries. The aim of this paper is to analyse the redistributive character of the Portuguese welfare state over the 2006-10 period, a complex and difficult time, and the most recent period for which data is available.

Income inequality in Portugal is one of the highest in the EU. As Rodrigues and Andrade (forthcoming) discuss, it increased in the early nineties and then remained relatively unchanged until the mid-noughties, when the successful implementation of social policies aimed at decreasing poverty together with the continuing expansion of the welfare state achieved a reduction in inequality (and poverty). Rodrigues *et al.* (2012) show the Gini coefficient fell from 0.381 in 2004 to 0.337 in 2009. However, the deep financial crisis, economic austerity and Troika agreement led to a new turning point and rise in the Gini to 0.342 in 2010.

The reduction in inequality in 2006-09 is mainly explained by the stronger growth in the income share of the lower incomes: the 1st decile share grew at an annual rate of 2.6% compared to the 0.4% average. Figure 1 shows that the share of the two lowest deciles (and 5th) rose virtually consistently until 2009, but then either remained unchanged or fell, while the inverse occurred with the share of the two highest.

Figure 1: Income deciles shares 2006-10 (2006=100)
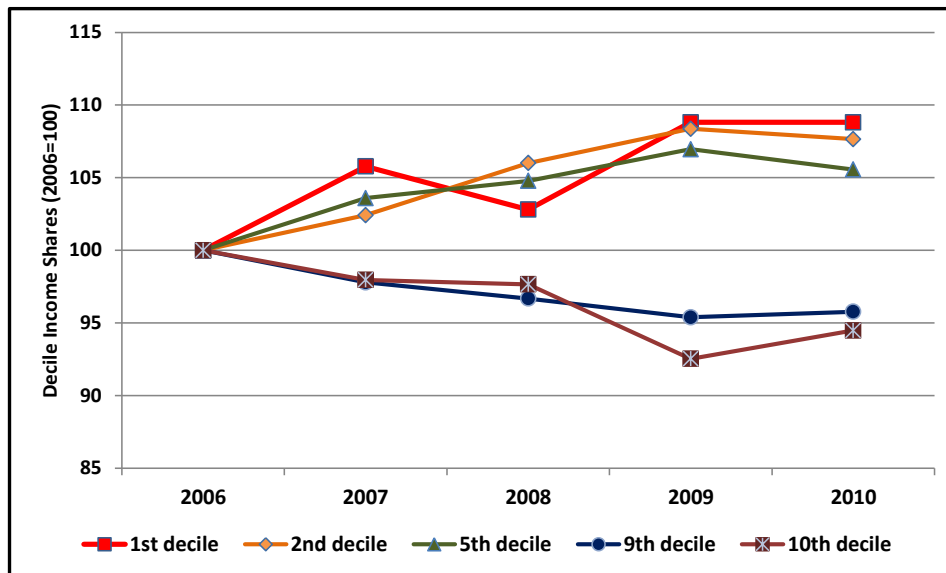
Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

Simultaneously, public social expenditure has grown from 9.7% of GDP in 2000 to 12.7% in 2007 and 18% in 2010, as shown in Rodrigues and Andrade (2013). Its two highest components are 'old age' (mainly pensions) and 'health' expenditures, reflecting the rapid ageing of the population. Rising tax rates have led to tax revenues exceeding 30% of GDP.

This paper discusses the effects of three redistributive instruments, pensions, benefits and taxes, and how efficient they have ultimately been in reducing inequality and poverty in Portugal. It takes a different approach from the multi-country/one year analysis in, for example, Čok *et al.* (2013), Förster and Whiteford (2009), Fuest *et al.* (2009), Immervoll and Richardson (2011), Kenworthy and Pontusson (2005), and Marx and van Rie (forthcoming), and it complements the analysis of the Portuguese tax-benefit system in Gouveia (2011) and Alves (2012). It is organised as follows: section 2 discusses briefly how social programs and taxes affect income distribution; section 3 introduces and applies the income accounting framework to Portuguese disposable income; section 4 analyses the redistributive effect of the above three instruments; section 5

studies redistribution towards the lowest quintile; and section 6 concludes the paper.

2. How social programs and taxes affect income distribution

Förster and Whiteford (2009) stress that the analysis of the impact any welfare system has on income redistribution and inequality reduction needs to take into account its design features, particularly how the system is financed and what relationship exists, if any, between income, contributions and entitlement. Targeting and progressivity are essential parts of its design and influence the resulting redistribution effects on household income. Werding (2003) identifies two main types of welfare systems: Beveridgean and Bismarckian, where the former is funded by general taxation and built on universal flat rate provision based on residence and need criteria, whereas the latter presumes a relationship between contributions and entitlement and therefore is funded (at least partially) by social security contributions.

The welfare state concept itself has a conservative (Bismarckian) origin with no equalitarian aims, but "because it taxes and spends" (Esping-Andersen and Myles, 2009), it assumes a redistributive character with two main components. It is a "piggy bank", insuring against social risks and across the life cycle through pensions, unemployment, sickness, and maternity benefits, a role more associated with Bismarckian systems; but it also plays "Robin Hood", taking from the wealthy to give to the poor, through progressive tax systems and means-tested benefits, more associated with Beveridgean systems. The difference between the two roles is not clear-cut and they co-exist. For example, the Portuguese Bismarckian pension, a function of contributions paid and number of years worked, is complemented first by a non-contributory means-tested social pension to which those aged 65+ with no other source of income are entitled, and then by the "Solidarity Supplement for the Elderly" (CSI) if the social pension is still not enough to take the household income above the poverty line. Furthermore, as discussed in Attia and Bérenger (2009), pragmatism and welfare reform have led to a greater reliance on the market and the attenuation of this dichotomy. However, Josifidis *et al.* (2011) find that short-term changes in social spending levels are (still) preferred to long-term welfare reform by quick-fix politicians.

Finally, the redistribution effect cannot be reduced to taxes and benefits, as Immervoll and Richardson (2011) argue, but should also include the provision/usage of public services (non-cash benefits), and recognise their direct influence on households' work and savings decisions. Marical *et al.* (2006) estimate their redistributive effect, and conclude that Portuguese public spending in health reduces the Gini by 14.3%, in education by 11.4%, both well above the *Continental-European group* countries average, and in other public services (social housing and social care for the elderly and the very young) by 2.9%.

3. Income inequality and redistribution in Portugal, 2006-10

Ideally the redistributive effects of the welfare state would be evaluated against a 'pure' pre-welfare state benchmark, or counterfactual, as discussed in Esping-Andersen and Myles (2009). As that is manifestly impracticable, a version of the OECD (2008) "income accounting framework" is adopted and described in Figure 1. The main difference is the definition of a new intermediate aggregate, Market income + Pensions, justified by the importance of pensions in a country with an ageing population. All incomes are equivalised incomes using the OECD (modified) equivalence scale and the data is from the Portuguese component of EU-SILC (all households).

Figure 2: Modified Income Accounting Framework

| Income Components |
| --- |
| Wage and salaries |
| + Self-employment income |
| + Property Income |
| + Other private incomes |
| **1. Market Income** |
| + Pensions |
| **2. Market Income + Pensions** |
| + Other Social Security Benefits |
| **3. Gross Income** |
| - Employee Social Security Contributions |
| **4. Gross Income - SSC** |
| - Income Taxes |
| **5. Household Disposable Income** |

Source: Adapted from OECD (2008).

Market income includes wages and salaries, plus self-employment, property, and other private incomes. It is the closest approximation to an economy with no explicit state intervention, but excluding all other incomes leads to a large number of individuals and households having zero (market) income. MarketP (Market + Pensions) income adds (gross) old-age pensions and survivors related benefits. It also includes the non-contributory social pension and "regular inter-household cash transfers" (mostly alimony payments). Gross income is defined as MarketP income plus social security cash benefits: unemployment, housing, sickness, disability, maternity, and child benefits, plus the "Social Integration Income" (RSI) and CSI. Means-tested and universal benefits are combined, as not enough detail is available in the EU-SILC database to discriminate between them. Further details are given in Rodrigues and Junqueira (2012), and Rodrigues (2009) discusses the RSI and CSI.

Disposable income is obtained from Gross income by deducting Social Security Contributions (SSC) and (direct) taxes in two stages due to their different characteristics. SSC are flat rate and compulsory to all employees and self-employed; their deduction gives Gross-SSC income.

Direct taxes are income tax (IRS) and a municipal tax on the market value of the household's home (IMI). The EU-SILC database has no information on indirect taxes paid by the households, such as VAT.

Pensions and benefits affect different age cohorts, and reveal different aspects of the welfare state and its redistributive role. Pensions fulfil a major part of its piggy bank role, representing 45% of the social security budget in 2010. Cash benefits include both piggy bank benefits, such as unemployment, sickness, and maternity benefits, and Robin Hood benefits, such as the means-tested child, CSI, and RSI benefits.

The structure of Disposable income, the benchmark income as discussed below, is given in Figure 3 and shows no substantial variation over the period. The average tax rate was about 14% throughout, corresponding to about 17% of the equivalised disposable income. Adding SSC raises these values to 21% and 26%, respectively.

Figure 3: Structure of equivalised Disposable income, 2006-10
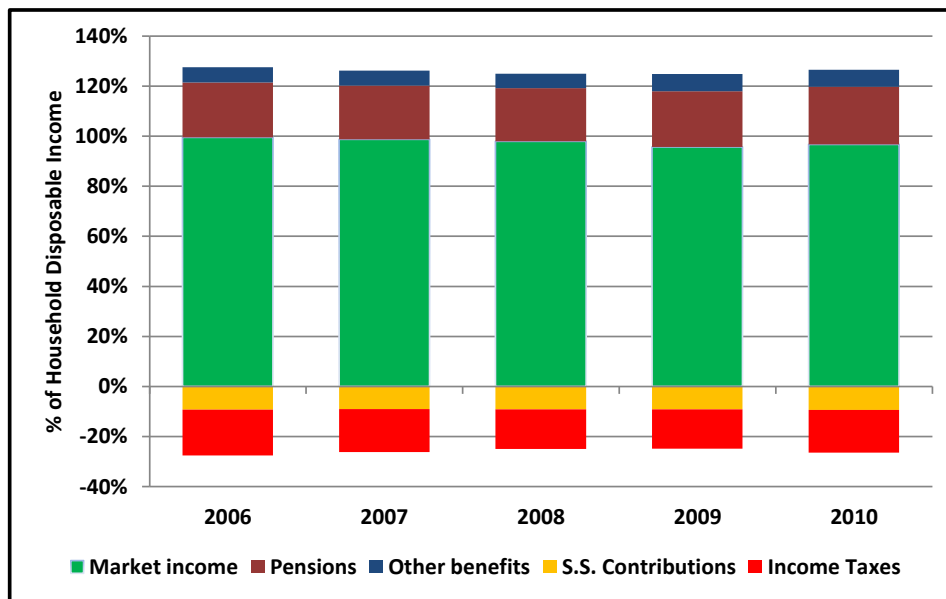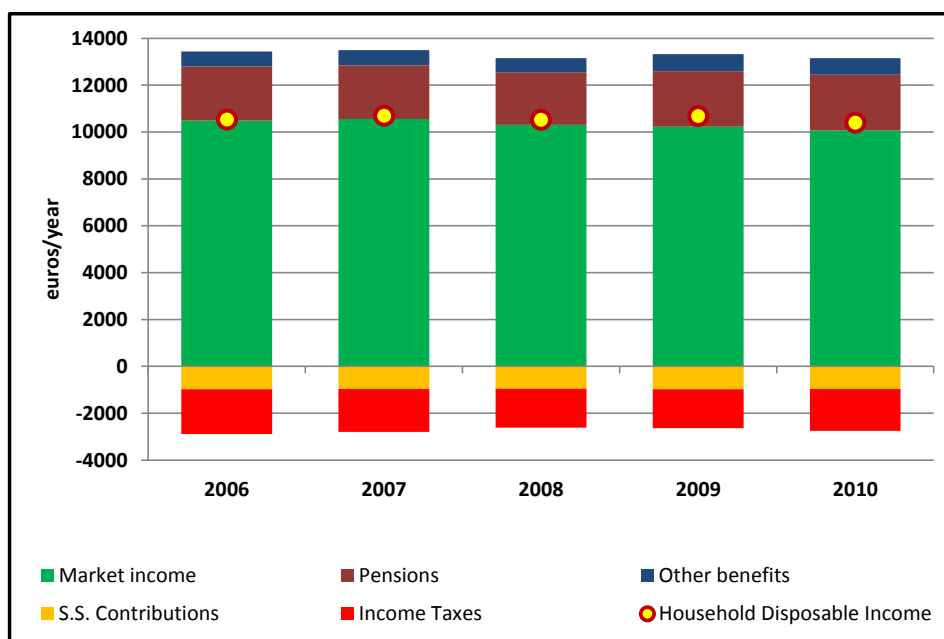

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

The drop in Market income in 2009-10 and in Disposable income (denoted by the yellow ball) in 2010 becomes clearer in Figure 4. The real

increase in transfers in 2009 due to the action of the automatic stabilisers at the start of the economic crisis (but before the deep cuts in welfare) was enough to prevent a drop in Disposable income then, but in 2010, it was at its lowest level since 2006.

**Figure 4: Equivalised Disposable income, 2006-10 (in €/year, 2010 prices)**

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

A more detailed analysis of Disposable income and its structure by income quintiles is undertaken for 2010, the latest EU-SILC data available, but also the year when the effects of the austerity policies become apparent. Figure 5 shows the different income structure across the quintiles, reflecting both strong household inequality levels and the redistributive character of taxes and benefits. Pensions and benefits represent almost half of the Disposable income of the 1st quintile and just above 40% of that of the 2nd, whereas they represent between 30% and 25% of the highest three. Conversely, SSC and taxes represent less than 20% of the income of the three lowest quintiles, but 37% of the 5th. Hence, Market income is lower than Disposable income in the first three quintiles, virtually equals that of the 4th and exceeds it by just over 10% in the 5th.

Nonetheless, the 1st quintile is not dominated by pensioners, as might be expected: it is the 2nd quintile that has the highest proportion of pensions in Disposable income, 29.74%, and proportion of the total number of pensioners, 25.2%. It is followed closely by the 1st and 5th with 27.7% and 23.0% of total pensions, respectively, and each about 19% of pensioners. The Bismarckian pension system plus an explicit policy aim to decrease old age poverty explains this structure built on an elderly poverty rate below the national rate in 2010 (Rodrigues and Andrade, 2013).

Figure 5: Structure of Equivalised Disposable income by quintiles 2010
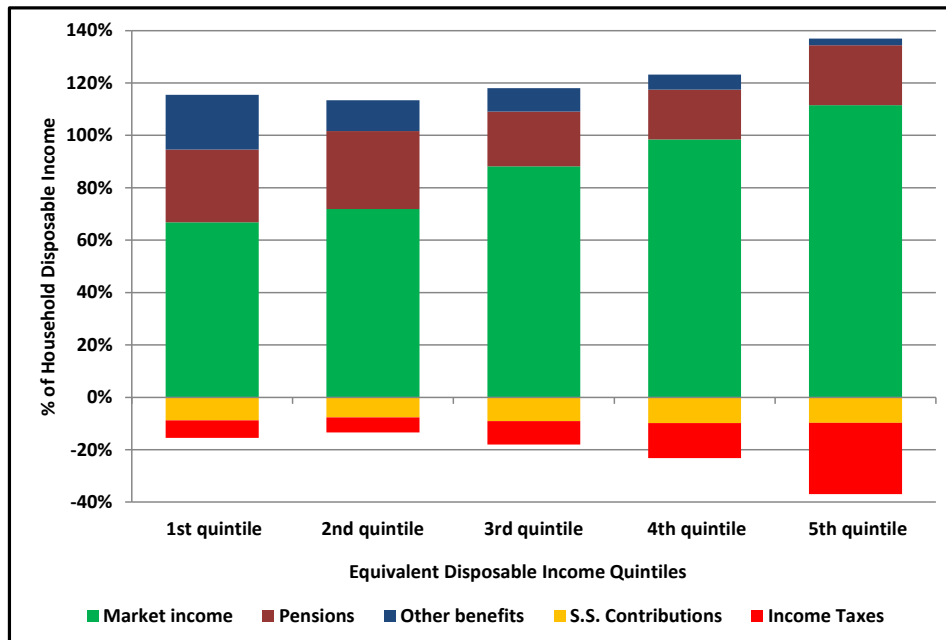
Source: INE-Statistics Portugal, EU-SILC 2011. Authors' calculations.

As expected, benefits are clearly pro-poor: their proportion in Disposable income falls consistently from the 1st quintile (21.0%) to the 5th (2.5%), but almost halves between the 1st and 2nd (11.8%). Thus, households that depend on benefits are highly concentrated in the 1st quintile. The progressive character of the tax system is also clear: taxes represent 13.4% of the 4th quintile income, but 27.2% of the 5th. However, they are actually higher in the 1st than the 2nd (6.8% versus 5.7%) suggesting a certain regressive character at the lower end of the distribution when

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ranked by Disposable income. The compulsory fixed rate SSC stay rather even (8% to 10%) across the distribution.

Disposable income (denoted by the yellow ball) inequality is more evident in Figure 6: the 5th quintile average is more than 5.5 times that of the 1st, and still almost twice that of the 4th. It is also higher than MarketP income in the 1st (1.5 times), 2nd (1.4), and 3rd (1.1) quintiles, virtually equal in the 4th and clearly lower in the 5th (0.9).

Figure 6: Equivalised Disposable income by quintiles, 2010 (in €/year)
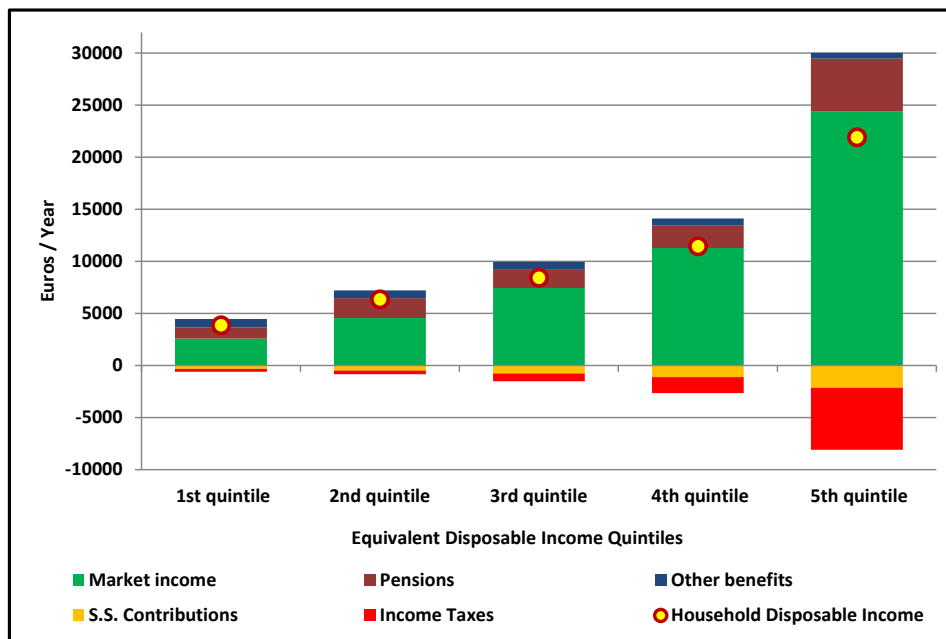
Source: INE-Statistics Portugal, EU-SILC 2011. Authors' calculations.

4. The redistributive effect of pensions, benefits, and taxes; efficiency and efficacy

The analysis of the redistributive effect (RE) of the three types of instruments follows the widely used methodology based on Kakwani's decomposition and discussed in Verbist (2004) and Urban (2009). It compares measures of inequality calculated at the different stages of the income accounting framework using the different incomes analysed in the previous section.

A crucial part of the discussion of the RE of social policy measures has to be that of its efficacy and cost-efficiency. It is not enough that the welfare state lessens inequality, as already demonstrated. It has to be seen to be doing it in an efficient way, particularly in times of crisis and budget cuts. Yet, as Förster and Whiteford (2009) discuss, the actual design of the welfare state policies influences the results: "for a given amount of spending, benefits paid to those with fewer economic resources will be greater under a means-tested system than under a universal benefit system, which in turn will provide more generous payments than an earnings-related system." (page 35). As referred above, the Portuguese system relies on all three: most pensions are contributions-related (therefore earnings-related), some benefits are means-tested and others are universal.

The RE of a social policy instrument is defined as the difference in a measure of inequality (the Gini in Table 1) calculated pre and post-instrument income.

Table 1: Gini coefficients, 2006-10

	2006	2007	2008	2009	2010
Gini of Market Income	.5374	.5275	.5303	.5234	.5279
Gini of Market P Income	.4443	.4279	.4266	.4184	.4221
Gini of Gross Income	.4142	.4005	.3953	.3791	.3858
Gini of Gross Income – SSC	.4125	.3991	.3946	.3767	.3845
Gini of Disposable Income	.3691	.3591	.3552	.3364	.3424

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

During the 2006-09 period practically all Gini decreased, but this trend was reversed in 2010. The instrument that has the highest impact on the reduction of the Gini is 'pensions': its RE (defined as the difference between the Gini of Market and MarketP incomes) rose from 0.0931 to 0.1058. However, the RE analysis based on the Gini leads to the issue of vertical or re-ranking effect, first discussed in Atkinson (1980). In countries where many individuals have zero Market income, like Portugal, Marx *et al.* (2013)'s re-ranking sensitivity analysis found that this effect is particularly important. An alternative is ranking all equivalised incomes by a single income concept ranking throughout, thus

making the analysis benchmarked on that concept. Like in Försters and Whiteford (2009) and OECD (2012), the benchmark income concept chosen here is Disposable income. Compared to the other accounting framework income concepts, it is the more sensible option, as it is the income households have to spend. Therefore, in Table 2 it is the Concentration coefficient (CC) of all incomes ranked by Disposable income that is reported. The CC is calculated like the Gini except that all equivalised incomes are ranked by Disposable income instead of each specific one. Conversely, the only Gini is that of the benchmark Disposable income.

Comparing Table 2 with Table 1, it is immediately apparent that using Disposable income ranking leads to a reduction in each CC value compared to its Gini counterpart. For example, in 2006 the Market income Gini is 0.5374 and its CC is 0.4537. This apparent substantial drop in inequality is solely due to the different rankings used, not to any change in inequality itself.

Table 2: Income Concentration Coefficients and Gini, 2006-10

	2006	2007	2008	2009	2010
Concentration of Market Income	.4537	.4427	.4449	.4344	.4315
Concentration of MarketP Income	.4336	.4168	.4158	.4058	.4080
Concentration of Gross Income	.4114	.3977	.3923	.3760	.3820
Concentration of Gross Inc. - SSC	.4111	.3977	.3931	.3753	.3828
Gini of Disposable Income	.3691	.3591	.3552	.3364	.3424

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

Table 2 and Figure 7 show that all CCs, just like their Gini counterparts, generally fell during the 2006-09 period and rose in 2010.

Figure 7: Income Concentration Coefficients and Disposable Income Gini, 2006-10
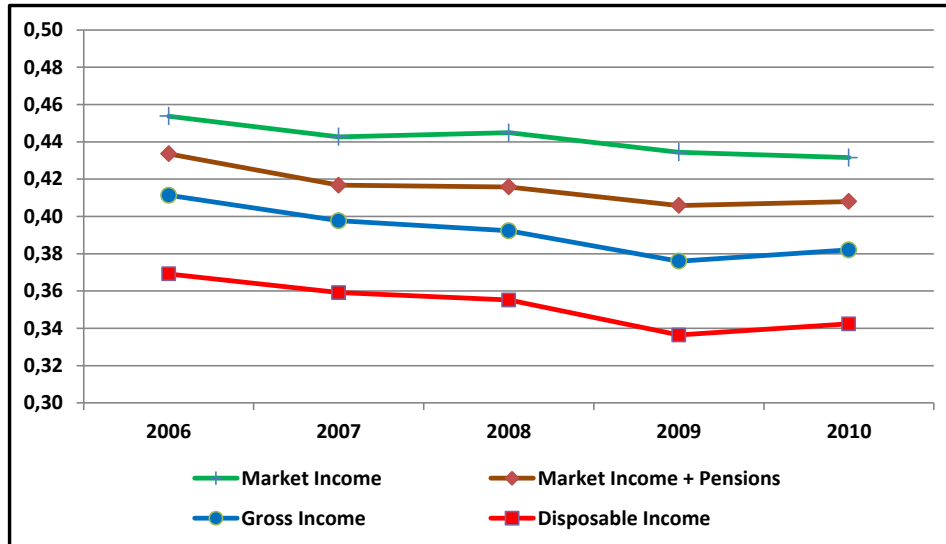
Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

The efficacy of an instrument is defined as the difference between the Gini (or CC counterpart) before and after the introduction of that instrument, *i.e.*, it is measured by its RE. Efficiency is defined as efficacy/size*100, where size is the average (instrument) amount received/paid by beneficiary/contributor. Thus, this concept of efficiency coincides with the absolute value of Kakwani's progressivity index, which is calculated as the difference between the CC of the instrument itself and the CC (or Gini) of the pre-instrument income.

While efficacy asks whether an instrument works or not in reducing inequality, its cost-efficiency measures how well it works, and therefore is inversely proportional to how much it costs. The higher its value the more pro-poor the system is, as the poorer receive a higher share of benefits than their share of pre-benefits income (both ranked by Disposable income).

Table 3: Efficacy and Efficiency of benefits and taxes, 2006-10

	2006	2007	2008	2009	2010
Efficacy of Pensions	0.020	0.026	0.029	0.029	0.024
Size of Pensions	0.181	0.179	0.179	0.188	0.192
Efficiency of Pensions	0.112	0.145	0.163	0.152	0.123
Efficacy of Other Social Benefits	0.022	0.019	0.024	0.030	0.026
Size of Other Social Benefits	0.048	0.048	0.046	0.055	0.054
Efficiency of Other S. Benefits	0.466	0.400	0.513	0.542	0.484
Efficacy of Taxes	0.042	0.039	0.038	0.039	0.040
Size of Taxes	0.182	0.172	0.158	0.156	0.171
Efficiency of Taxes	0.230	0.224	0.240	0.249	0.237

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

The efficacy of pensions and benefits is comparable in Table 3, rising between 2007 and 2009 and falling in 2010, but taxes have the highest (mostly unchanged) efficacy by far. Benefits are clearly the most cost-efficient instrument, with pensions the least one. The cost-efficiency of all instruments rose up to 2009 and fell noticeably in 2010. SSC are not included because their effect on inequality is close to zero.

The efficiency of pensions grew up to 2008 (with little change in size), but in 2010 a simultaneous drop in their efficacy and rise in size lead to a large cut in their efficiency and progressivity. The efficacy of benefits (comparable to pensions, but achieved at a much lower cost) is reflected in much higher efficiency and progressivity. As discussed above, one factor is that many benefits are means-tested, unlike pensions which are mostly Bismarckian. It is also consistent with Rodrigues (2009) result that the CSI and RSI jointly reduced the Gini by about 3% in 2003. Another factor is the 'automatic stabilisers' character of benefits at the start of the crisis: their size grew considerably in 2009 and carried into 2010, but there was a drop in their cost-efficiency. Finally, taxes kept their efficacy even as they fell in size until 2009, and thus increased their efficiency and progressivity. However, it is important to note that it was only in 2012/13 that the most substantial austerity led alterations to the tax system were implemented. Nevertheless, the redistributive ability of the fiscal system

is hampered by serious limitations: Rodrigues *et al.* (2012) estimate that only 75% of the Portuguese households pay taxes.

Figure 8 summarises the effects of all three instruments in reducing inequality measured by the Disposable income Gini. Taxes are consistently the highest contributor, while pensions and benefits alternate in 2nd place, but the impact of all three fell in 2010.

Figure 8: Summary of the effects of pensions, benefits, and taxes in reducing inequality
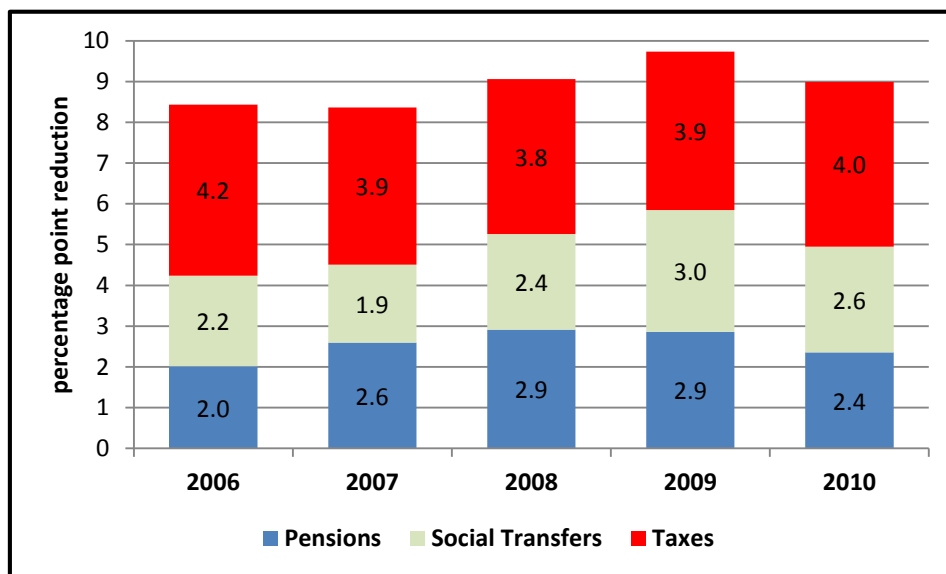
Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

5. Redistribution towards the lowest quintile

A distinct way of analysing redistribution, and particularly targeting, is through the monitoring of net public transfers to each quintile of the Disposable income distribution, as reported in Table 4 for 2010. As public transfers include pensions, the 5th quintile share is about twice that of the 4th and thrice that of the 1st, with the share of the 2nd also high. The share of taxes is much more unequal: the 5th quintile pays almost 60% of the total, nearly six times what the 1st and 2nd pay together. The column of net transfers reveals that all but the 5th quintile receive more than they pay, in close to decreasing order. The exception/reversal is between the 1st and

2nd quintiles due to already discussed concentration of pensioners in the latter.

Table 4: Net transfers to quintiles, 2010

	1st quintile	2nd quintile	3rd quintile	4rd quintile	5th quintile
Share of public transfers paid to	12.2	17.1	16.3	18.3	36.2
(Share of pensions paid to)	(9.0)	(15.8)	(14.8)	(18.2)	(42.2)
Transfers to	3.6	5.1	4.8	5.4	10.8
Share of taxes paid by	4.4	6.2	11.1	19.3	59.1
Taxes from	1.2	1.6	2.9	5.1	15.6
Net transfers to	2.5	3.4	1.9	0.3	-4.8

Source: INE-Statistics Portugal, EU-SILC 2011. Authors' calculations.
Notes: The share of each quintile (rows 1, 2, and 4) is calculated as a % of total transfers/taxes (each row adds to 100). Rows 3, 4 and 5 are calculated as % of the total equivalised Disposable income.

Table 5 shows that net transfers to the 1st quintile have remained relatively unchanged throughout the period, with peaks in 2006 and 2009 and a drop in 2010. Most significant is the steady increase in taxes paid by the lowest quintile.

Table 5: Net transfers to 1st quintile, 2006-10

	2006	2007	2008	2009	2010
Share of public transfers paid to	13.0	12.3	13.3	13.4	12.2
Transfers to	3.6	3.4	3.6	3.9	3.6
Share of taxes paid by	3.1	3.7	3.9	4.1	4.4
Taxes from	0.8	1.0	1.0	1.0	1.2
Net transfers to	2.8	2.4	2.6	2.9	2.5

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.
Notes: As for Table 4.

Finally, the impact of social transfers to the lowest quintiles can be further judged through their contribution to the (reduction in) the poverty rate.

For the same poverty line (60% of the median of the equivalised Disposable income) it is possible to calculate what the poverty rate would be if pensions and benefits (net of taxes) did not exist. Table 6 reports the difference between this value and the 'official' poverty rate in this period.

Table 6: Poverty Rate Reduction through cash transfers (in p.p.)

	2006	2007	2008	2009	2010
Poverty Incidence Reduction					
through Pensions	16.2	17.2	17.6	17.9	17.8
through Other Social Benefits	6.2	6.3	6.5	8.5	6.7

Source: INE-Statistics Portugal, EU-SILC 2007-2011. Authors' calculations.

Pensions contribute much more than benefits, apt in a country with an old-age dependency ratio above 28% and their effect carried into 2010 unchanged. However, the crisis is evident: in 2009 the action of the benefits automatic stabilisers helped households that were experiencing financial difficulties, but as budget cuts were imposed and benefits cut in 2010, their action was curtailed and their role in reducing poverty was reduced itself.

7. Conclusion

This paper shows that the decrease in inequality in Portugal in 2006-09 was achieved by an increase in social transfers, but foremost by their improved RE. Furthermore, the piggy bank function of the welfare system dominated its Robin Hood role, although the RE of the latter had lower efficacy and cost-efficiency throughout the period.

Pensions correspond to about 20% of disposable income, but have a lower level of cost-efficiency since they are mostly Bismarckian. Yet, they have an important redistributive role, alter the deep market income inequality, cut the poverty rate by about 17 p.p., while a significant proportion (42%) goes to the highest quintile of the income distribution. Benefits correspond to only 5% of disposable income, but being largely means-tested they are the most cost-efficient and their RE and contribution to poverty reduction improved over this period. The average (direct) tax rate

fell slightly in 2006-09, which implied both a small drop in the efficacy of taxes and a small rise in their efficiency.

The results for 2010 reveal the 1st effects of the austerity policies: a fall in the efficiency of all redistributive instruments, less efficacy of social transfers, a reversal in the previous trends of inequality and poverty reduction, whilst the policy measures implemented in 2012-13 point to their accentuation. An effective reform of the redistributive role of the state that will enable a reduction in inequality, poverty and social exclusion even in a time of economic crisis has to incorporate an increase in the efficacy and cost-efficiency of its redistributive instruments. A widening of the fiscal base and progressivity of the fiscal system, and increasingly means-tested social benefits with more rigorous assessment and entitlement of recipients, *i.e.*, the intensification of the Robin Hood role of the welfare state, has to be an integral part of its successful reform.

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