

# De-leveraging through fiscal consolidation, the case of Portugal

September 17, 2013

And many a man whom fraud or law had sold  
Far from his god-built land, an outcast slave,  
I brought again to Athens; yea, and some,  
Exiles from home through debt's oppressive load,  
Speaking no more the dear Athenian tongue,  
But wandering far and wide, I brought again;  
And those that here in vilest slavery (*doubleia*)  
Crouched 'neath a master's (*despōtes*) frown, I set them free.  
Solon (638BC -558BC), Athenian statesman, lawmaker, and poet.

## 1 The debt problem and Portugal

This short introduction is centered on organizing thoughts at an abstract but simple level on the difficulties of reducing debt and on presenting data on debt in Portugal. Models where debt is contracted to leverage acquisition of assets have a long tradition in the history of economic thought<sup>1</sup>. J.S Mill, Alfred Marshall, Knut Wicksell, Irving Fischer, Hyman Minski, all have developed models where excessive leverage ultimately creates troubles to the real economy. Knowledge of this class of models should stimulate the adoption of ex-ante rules and policies aimed at taming the build-up of excessive leverage to avoid the subsequent possibility of troubles as for example in Farhi and Werning (2013). Historical and contemporaneous evidence however shows that measures aimed at reducing the level of debt need to be adopted after the troubles have spread to the real economy. A central point that makes an excessive level of debt a problem is the heterogeneity between creditors and debtors. In a closed system such as the World or a closed economy, the liabilities of the debtors equal the asset of the creditors. In such a simple system a mandatory reduction of the debt can occur only through an arrangement between the debtors and the creditors. The creditors must concede time to the debtors to produce the resources to repay them or must be willing to renounce at least partially to their credits. When a government who controls monetary and fiscal policy is also present in such a system, he can engineer the reduction of debt. Using monetary policy the government can reduce the value of debt and assets using inflation, namely changing the value of the unit of account. The government can also engineer a redistribution through taxation. Ultimately both measures shift resources from the creditors to the debtors. In practice governments also engage in the accumulation of assets and liabilities both for productive and intra and inter-temporal redistribution motives. A fourth class of agents, the financial sector, intermediates the debt and credit transactions between the private creditors, debtors and the government. As long as the system is closed and the authority of the government is not questioned the resolution of a de-leveraging (through a reduction of debt) is ultimately a credible outcome. When the system is open and starts to borrow and lend outside of its monetary and fiscal boundaries the redistribution solution, coercive or not, by his government ceases to be possible and the resolution of the de-leveraging becomes a more uncertain outcome. Let me leave the simple conceptual model just described and present the recent reality of Portugal. Consider three classes of agents, called sectors: the Households, the Business sector (non financial corporate) and the Government<sup>2</sup>. Figure 1 shows the evolution for these three sectors of their assets and liabilities measured as a share of GNP from 1995 to 2012. The normalization by GNP is questionable as the relevant income concept for each of the three sectors

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<sup>1</sup>Kindleberger in his famous "Anatomy of a Typical Crisis" describes the distinguished genealogy of a general model of financial crisis.

<sup>2</sup>Certainly within the class of Households and Non financial corporations there is a large heterogeneity in terms of leverage or net assets.

is different and could have increased at a different pace. Figure 1 also shows the Households gross debt to income which is published in the annual accounts. Notice that the government liabilities have started to rapidly increase starting in 2010, when households and the business sector started their deleveraging. In any case the debt and credit transactions between these three agents are intermediated by the fourth sector, the financial sector. Therefore to have a sense of the overall leverage of the economy, Figure 2 shows the ratio of assets and liabilities of the financial sector to GNP, which is now the appropriate measure of Portugal income. Figure 2 shows that assets went from 220 percent to just 510 percent of GNP from 1995 to 2012. In a closed system the sum of all the assets of the four sectors would equal the sum of all the liabilities of the four sector. However Portugal being an open system was able to increase its liabilities beyond the level of its assets by borrowing from the Rest of the World (RoW). Figure 3 shows the RoW assets and liabilities vis-a-vis Portugal as a share of GNP. Portugal also belongs to the eurozone area which means that it does not control anymore monetary policy. Furthermore the RoW lies beyond Portugal fiscal boundaries. How can Portugal decrease its liabilities vis-a-vis the RoW? Given that summing Portugal and the RoW, which is mostly Europe, we obtain a closed system, the resolutions mechanisms listed above apply to this supra national closed system. Namely the creditors can grant an arrangement to allow Portugal to have the time to produce the resources to decrease its debt or they ultimately need to transfer resources to Portugal. The RoW has actually provided Portugal with a combination of the two by granting him loans through the Troika and by partially restructuring the liabilities through a lengthening of the debt maturities and a decrease in the interest rates on the debt. The issue regards the possibilities for Portugal to produce quickly enough the resources to de-leverage its external position. Another issue regards the increase in government debt. Admittedly fiscal sustainability appears to be a necessary condition for the functioning of an economy. Therefore the possibility that the government debt is on a sustainable trajectory seriously reduces the chances for Portugal to produce enough resources to succeed in the reduction of its external debt. This second issue is the focus of this essay. But before turning to the issue of stabilizing the government debt I briefly review the recent events that brought Portugal in this uncomfortable position.

## 2 The buildup of the Portuguese external position

Figure 4 shows the recent history of Portugal external imbalances (see Blanchard 2007 for a more exhaustive discussion). The narrative of the imbalances is as follow: from 1995 to 2001 the large decrease in nominal interest rate<sup>3</sup> (panel 1) fueled an expansion in private expenditure (panel 2) financed with debt (panel 3). The increase in demand pushed nominal labor compensation to ran a rate of 6 percent per annum, a rate well above labor productivity, and GDP inflation to increase to 4 percent per annum. The result was a large and rapid loss in competitiveness vis-a-vis the eurozone partners (panel 4). During and after the recession of 2002, labor compensation and final prices inflation decelerated, but not sufficiently, and Portugal competitiveness continued to, this time slowly, deteriorate against the other eurozone members (panel 4). The fourth panel of Figure 4 shows that a measure of REER based on ULC vis-a-vis the rest of the eurozone, normalized to 100 in 1995, was equal to 83.4 in the the fourth quarter 2011 implying a cumulative loss of 16.6 percentage points. A similar measure based on GDP deflators was at 88.3 implying a cumulative loss of 11.8 percentage points. At the onset of the global financial crisis Portugal external imbalances were the largest of the eurozone members (-110 percent of GDP in the net international investment position) and most of the current account deficit was financed and intermediated by the other eurozone members banks. When the crisis hit the eurozone, financial markets questioned the sustainability of the external position, interest rates soared and the eurozone central banks had to substitute commercial banks in financing the current account. While the fragility of the eurozone financial system has to be solved at the currency area level, the rebalancing of the current account, in particular through an improvement in competitiveness to shift to a positive trade balance, needs to be addressed at the national level. The external rebalancing is difficult as the degrees of freedom of the Portuguese authorities are limited in number: they have no autonomous monetary policy, no currency to devalue, and after having accepted the conditionality to access external credit lines by the Trojka, no discretion on fiscal policy. Without economic policies the adjustment must logically come through the self-equilibrating forces of the market<sup>4</sup>. The market based mechanism that takes place within a currency area or

<sup>3</sup>The decrease in interest rates can be considered exogenous as it was driven by convergence towards German rates. The same convergence happened across all the peripheral countries of the euro-area. In my undergraduate thesis I had raised the question on the fundamentals of the convergence towards German rates as opposed to an average of the rates of the future euro participants.

<sup>4</sup>In a previous work, I had taken for given that internal devaluation was a slow process, most probably because of substantial downward nominal rigidities in wages and market power in the non-tradable sector, and suggested a fiscal devaluation as a policy to accelerate the adjustment. Political constraints and uncertainty on the quantitative efficacy of the fiscal devaluation have pushed Portugal to follow a path, for what regards the short to medium run competitiveness, mostly determined by the self-healing forces of the market.

a fixed exchange rate system to adjust to external imbalances (in the absence of fiscal transfers and with limited labor mobility/migration) is called competitive disinflation or internal devaluation and can be described piece-wise as follows: First, the loss of competitiveness and the deterioration of the trade balance leads to an increase in unemployment. Second, the increase in unemployment pushes the growth rate of nominal wages down. Third, the decrease in wage inflation is transmitted to final prices inflation. Fourth, the decrease in final prices inflation lead to an improvement in competitiveness. Fifth, the improvement in competitiveness rebalance the trade balance and the current account. Sixth, the increase in exports decreases the unemployment rate. Finally the shift to a positive trade balance allows to have the resources to repay the external debt. How strong and fast is the competitive disinflation mechanism in Portugal? Evidence (Franco 2013) shows that it is slow at best.

## 2.1 The sustainability of the net international investment position

Assessing Portugal solvency requires checking the intertemporal budget constraint (IBC) of Portugal. In words Portugal becomes bankrupt if unable to pay off foreign obligations at their face values, and if this happen the Portuguese IBC would not hold with foreign debts valued at par. The IBC expresses the dynamics of the net assets position. Again in words, Portugal net assets position is equal to the value of domestic assets held by foreigners minus the value of foreign assets held by residents, plus the trade deficit. The value of resident assets help by foreigners depends on the gross rate of return on domestic assets and the value of foreign assets helped by residents depends on the gross rate of return on foreign assets. The classes of assets involved in the gross asset position that form the IBC are many: equity, debt and financial derivatives of all types and in different currency denomination each one with a different gross return. Practically the analysis of the IBC can only be performed at an aggregate level. In a given period  $t$ , the change in the net international investment position (NIIP) can be written as

$$\Delta NIIP_t = CA_t + Valuation_t + Residuals_t,$$

where  $CA_t$  is the current account, namely the trade balance plus the interest payments on the  $NIIP_{t-1}$ ,  $Valuation$  captures the net impact of shifts in the market value of foreign assets relative to the market value of foreign liabilities and the net impact of shifts in exchange rates on the relative domestic-currency value of foreign-currency foreign assets compared to foreign-currency foreign liabilities. Figure 5 shows that the cumulated current account explains the NIIP until 2010 when a large  $Valuation$  effect occurred. Figure 5 also shows the implicit interest rate on the NIIP and the Trade Balance. Both show a favorable evolution as the implicit interest rate has considerably decreased and the the Trade Balance has remarkably improved. Further improvements on the interest rate are difficult has there is a natural zero lower bound. Improving the Trade Balance on a sustained basis is the primary objective of Portugal. Finally Figure 5 shows the ratio of NIIP to both GDP and GNP. This reason is that the relevant concept of external debt to be reduced and stabilized at an “acceptable” level is the ratio of the net asset position to income. In the case of the national debt the relevant concept of income is national income, therefore GNP. The small difference between GNP and GDP for Portugal could come as a surprise given the very large negative NIIP, which implies a large income payment to the rest of the World. However Portugal benefits from large positive workers remittances (a transfer from Portuguese residents abroad) which add to national income. Figure 6 shows the projected path up to 2016 of the NIIP using the projections of the IMF on exports, imports, income growth and interest rates. The recent improvement in the trade balance coupled with a substantial decrease in the interest rates show that the dynamics of the NIIP will invert in 2014. Some concern comes from the policy choice to achieve the adjustment solely through the market-based internal devaluation mechanism. Figure 7 shows that the encouraging improvement in the trade balance came together with very large increase in the unemployment rate. Admittedly there are very few macroeconomic policies that Portugal could follow to accelerate the adjustment without relying on unemployment. A fiscal devaluation, namely a decrease in employer’s social security contribution matched by an increase in VAT, has been suggested as a possibility. A difficulty I sidestepped in assessing Portugal’s IBC is the uncertainty on the forecasts for the trade balance, the interest rate payments and income growth. The description of the internal devaluation mechanism implicitly implied that most of the quantities involved in the IBC are simultaneously determined. For example how much improvement in the trade balance improve the growth rate of the economy is uncertain and makes the forecasts on which the sustainability analysis is performed uncertain. The last few years have shown that forecasts from current mainstream macroeconomic models perform somehow poorly. I now turn to fiscal sustainability.

### 3 The buildup of Government debt in Portugal

One consequence of the 2009 Great Recession has been the fast deterioration of public finances. Very rapidly, following the private sector questioning on the sustainability of the external position, fiscal consolidation has become a crucial policy objective. To achieve the stated objective, Portugal tried to improve their budgets deficits by increasing taxes and decreasing expenditures, with a mix biased towards the former. In the mean time, broadly defined "structural reforms" would sustain the economy through increases in productivity. The consolidation attempt was not successful, as a larger than expected "fiscal multiplier" implied a strong contractionary effect of the fiscal consolidation on income, reducing the tax base and increasing the automatic stabilizers spending. What was not foreseen is that demand/income/activity would decrease so much as to reduce revenues and possibly worsen the medium run fiscal sustainability. Figure 8 illustrates the point. The fiscal consolidation effort appeared to work at first: in 2011 expenditure decreased and revenues increased massively improving the budget deficit from -10% to -4% of GDP. The following year, 2012, nominal GDP plunged to a lower level than in 2009 (the year of the Great Recession), revenues decreased (although tax rates had been increased both on income and value added) and even a further noticeable decrease in public expenditure was insufficient to stabilize let alone diminish the budget deficit that increased to -6.62% of GDP. Therefore deficits in 2011 and 2012 increased Government debt by 10.6% of GDP. Structural reforms implementations/outcomes proved to be too slow to provide effective improvement in productivity and competitiveness.

#### 3.1 The sustainability of Government debt

Assessing the sustainability of government debt also requires checking that the inter-temporal budget constraint, this time of the government, holds. Therefore using projections on deficits, growth rates and interest rates we can in theory assess sustainability. In a given period  $t$ , the change in the Government debt position ( $B$ ) can be written as

$$\Delta B_t = D_t + Residuals_t,$$

where  $D_t$  is the deficit, namely the difference between tax revenues and government expenditure, called the primary balance, plus the interest payments on the  $B_{t-1}$ . Residuals is a voice that includes change in deposits, support to financial sector, recognition of implicit contingent liabilities, reclassifications, unidentified financial transactions, and cash-accrual adjustments<sup>5</sup>. As before the conditions for sustainability have an objective dimension. These conditions are objective but linked and linked in an uncertain way. They are linked because a change in the path of deficits or surpluses affects both the growth rate of income and the interest rate on sovereign. They are linked in an uncertain way because the size of the effects appears to depend on the state of the economy. To complicate things, the conditions for sustainability are also subjective. Conditional on the uncertainty, the path of deficits and surpluses must be credible. The capacity of a government to control tax revenues and expenditure is key. Figure 9 shows the General Government debt and the cumulated deficits. The large departures after 2010 are explained in footnote1. Figure 9 also shows the primary balance and the implicit interest rate on government debt. Finally Figure 9 also shows Debt to both GDP and Taxable income. The reason is that the relevant concept to be reduced and stabilized at an "acceptable" level is the ratio of the government debt to income that can be taxed. Taxable income is constructed subtracting income payments to foreigners from GDP. It is closely related to GNP except that it does not include worker remittances as those are likely to be taxed in the country of residence of the emigrant. Figure 10 shows the projected path up to 2016 of the debt to GDP using the projections of the IMF on exports, imports, income growth and interest rates. According to the forecasts the debt to GDP ratio should stabilize in 2014-2015. Notice the large impacts of the residuals on the projection is positive has the IMF expects a negative (dressing the debt) residual for 2013 of about 4.7% of GDP. Figure 10 also shows what would have been the dynamics of the debt to GDP from 2009 without the residuals occurred so far that were all positive (increasing debt), respectively 2.8% of GDP in 2010, 9.7% of GDP in 2011 and 6.8% of GDP in 2012.

### 4 Consolidation policies

A suggested policy to improve the possibility of success of the fiscal consolidation is to shift more strongly the consolidation effort from tax increases towards expenditure decreases. The motivation is that, If done properly,

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<sup>5</sup>For 2011, residuals includes accumulation of deposits (6 percent of GDP) and BSSF funds (0.6 percent of GDP). For 2012, includes accumulation of BSSF funds (4.2 percent of GDP) and non-BSSF bank recapitalization (1.6 percent of GDP) For 2013, includes use of deposits (-5.9 percent of GDP) and acquisition of financial assets (0.3 percent of GDP). For projections, this line includes exchange rate changes.

fiscal consolidation through expenditure reductions gives the opportunity to increase efficiency of the public sector. Increased efficiency in the public sector translates into higher productivity, a force that should counterbalance the decrease in demand. This reminds the role of structural reforms in the first version of fiscal consolidation followed in 2011 and 2012. However the frequency mismatch is still present. Improving efficiency takes time, say it delivers improvements in productivity in the medium run while the decrease in demand occurs in the short run. Furthermore, the discussion on public expenditure reduction inevitably initiate debates on more fundamental questions such as the size and the role of modern governments in the economy which also belong to a different frequency. The importance of having a more efficient government of the right size cannot be downplayed as it is certainly a medium run objective. However if fiscal consolidation prove to be not only contractionary but also self defeating the policies followed are ultimately not coherent with the medium run strategy.

## 4.1 Sources of strength of the multiplier

Logically to maximize chances of success, fiscal consolidation policies should minimize their impact on demand. To find the appropriate policies we then need to identify what are the causes of a larger than expected multiplier. To organize thoughts we can separate between euro area, namely external, and Portuguese, namely domestic, causes of large fiscal multiplier. The first external identified cause is the malfunctioning of a policy instrument or the absence of accommodative monetary policy. In the euro-core interest rates are close to the zero lower bound while in Portugal, interest rates are trapped at high levels far from zero eurozone level. The Portuguese premium can be explained partially through worst fundamentals that imply a larger probability of default, but is mostly the perverse outcome of the financial fragmentation that impairs the monetary policy transmission. The ECB has adopted appropriate countermeasures: the Omt mechanism and the banking union plan. The second identified cause is the absence of a policy instrument or the impossibility of a nominal devaluation. Although policies that could mimic a devaluation through budget neutral manipulation of taxes have been suggested, the efficacy of a devaluation (fiscal or nominal) is impaired by the lack of coordination between trading partners. Devaluations (fiscal or nominal) can help cost realignments across the euro zone, help employment, but if internal demand decreases simultaneously in all major trading partners the stimulative effect will be small. This second cause is therefore simultaneously an internal (lack of devaluation) and an external (lack of policy coordination across the eurozone). At a more granular level, a third cause of large multipliers is the presence of credit constraint households or more simply households that need to spend most, if not all, their disposable income. The appropriate countermeasure is to target expenditure decreases away from the credit constraint households that have larger marginal propensity to consume.

## 4.2 Fiscal multipliers and inequality

There exists a literature (see a review Bastagli, Coady and Gupta 2012 or Agnello and Sousa 2012 for new evidence) that studies the consequences of fiscal consolidation on inequality. First a fiscal consolidation usually increases unemployment which is usually associated with a decrease in the wage share. The lower wage share increases inequality given the higher wage share in the total income of lower income groups. Second fiscal adjustments biased towards more regressive taxes (such as consumption taxes) or on cut-backs in progressive spending tend to increase inequality. Finally there is new evidence that fiscal consolidations success stories are related to taming inequality (Kaplanoglu, Rapanos and Bardakas 2013). Now there is a second issue which has not gained much attention in the empirical literature: is inequality related to the size of the multiplier. This second question is natural if there is a mapping between credit constraint households and relatively low income households. If the link between inequality and the multiplier exists, fiscal consolidation policies that increase inequality are likely to have lower probability of success in their consolidation effort.

### 4.2.1 Prima facie evidence

A recent influential paper by Blanchard and Leigh 2013 investigates the relation between growth forecast errors and planned fiscal consolidation during the recent financial crisis. They find that fiscal multipliers were substantially higher than those implicit in the models used by forecasters. Blanchard and Leigh also check if their results are robust to controlling of additional variables that could have possibly triggered both planned fiscal consolidation and lower-than-expected growth. The list of control variables is comprehensive and includes the initial debt ratio, the initial fiscal balance, the initial structural fiscal balance, the initial sovereign CDS, the initial bank CDS, a banking crisis dummy, the initial growth forecast, the initial potential growth forecast, the trading partner fiscal consolidation, the pre crisis current account balance, the pre crisis net foreign liabilities and the pre crisis household debt. Table 1 reproduce their baseline results for a sample of 26 european countries in 2011. The baseline coefficient

is closed to -1 and is barely influenced by the inclusion of any of the controls. Remarkably none of the controls appears to be statistically significant. Table 2 presents the same baseline regression augmented with a new set of controls that measure inequality. More precisely the controls are the income quartile, quintile, decile, fifth and first percentile share ratios. They are calculated as the ratio of total income received by respectively the 25%,20%,10%,5%,1% of the population with the highest income to that received by the 25%,20%,10%,5%,2% of the population with the lowest income. All income measures are initial (end-2009) equalized disposable income<sup>6</sup> and are shown in Figure 11. The coefficient on the consolidation forecast does not change, so that the results of Blanchard and Leigh still hold. However the coefficients on the controls are statistically significant and fairly large. Take for example the income quartile share ratio. The average income quartile ratio across the 26 countries in the sample is approximately equal to 4 implying that the 25% percent with higher income has on average 4 times the income of the 25% with lower income. The estimated coefficient on the income quartile share ratio implies that an increase from 4, Switzerland, to 5, Portugal, would lead to a domestic output loss of -0.93% larger relative to forecast in Portugal relative to Switzerland which is of the same order of magnitude of the underestimation of the multiplier. Figure 12 collects the coefficients together with the 95% confidence intervals. Recall that the controls are initial period value (end-2009) so that the causality is likely to go from distribution to growth forecast errors. Given that most of the countries in the sample have experienced a recession, the negative and significant coefficient on the income distribution measures is suggestive of standard Keynesian channel where the income distribution proxies for share of households that are credit constraints and/or have higher marginal propensity to consume. In any case further analysis must be performed to better interpret the results.

#### 4.2.2 Reducing public expenditure progressively

Portugal has committed to reduce public expenditure by 4.7 billion euro by end 2014. In the light of the previous discussion the government needs to target reductions according to income share distribution. The "details" of the Portuguese plan are that the wage bill is expected to decrease by 2.2 billion, pensions to decrease by 1.4 billion and intermediate consumption by 850 million. The logic is that the government's spending reduction target can only be achieved by focusing on major budget items, and these three are the largest. Figure 13 shows both the amount of public pensions received by each income quintile and the cuts for each quintile implied by the income share distribution not to change the income quintile ratio share. Another policy could target a decrease in the quintile income ratio share so as to improve the growth outcome. Of course the fact that the better off do receive a larger share of spending usually reflects their contribution history which create both a political economy and a fairness problem. For what regards the wage bill reduction, the specified measures contemplate 50% of savings through reductions of employment (summing attrition, termination and voluntary separation) and 50% through a remodulation of the wage schedule. The latter should also follow a mapping with the income share distribution to achieve progressivity of the compensation reduction (as opposed to the proportionality of canceling extra months wages that was used so far). Again let me stress that this recommendation is inspired by the sole consideration of minimizing the number of households with larger propensity to consume from the fiscal consolidation.

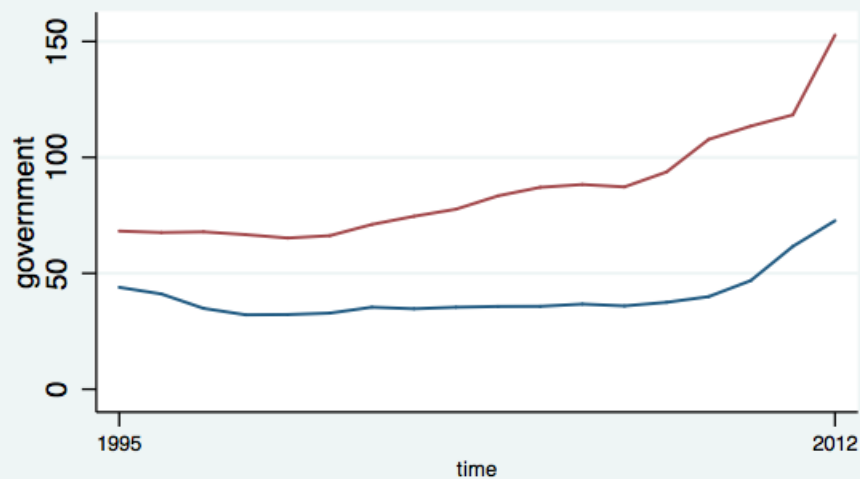
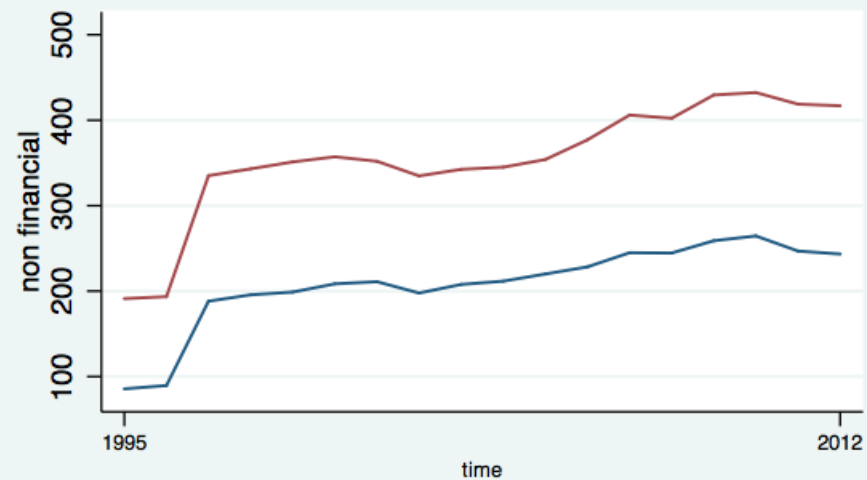
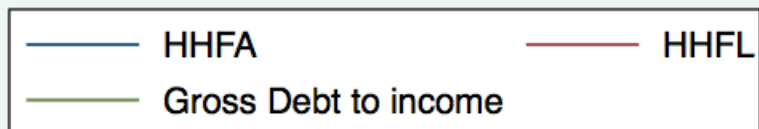
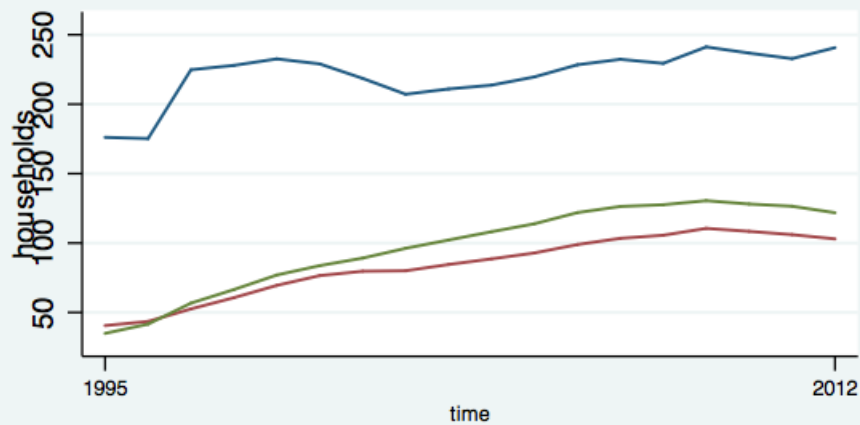
## 5 Concluding remarks

To be successful in the long term consolidation effort Portugal has ahead, the Portuguese authorities must address two key issues. The first is to explain how Portugal will succeed in producing enough resources to stabilize its external position to an acceptable level. The explanation must be sufficiently credible and consistent so as to anchor creditors expectations. The credibility and the consistency are central for the vision of a Portugal's future do not turn into an illusion. The second is to address the fiscal consolidation in reasoned way. Coherence between policies and ethical values can ensure the type of broad consensus that is needed to support the adjustment process. The suggestion of reducing spending according to income distribution might have a better chance to reduce its contractionary effects and achieve greater consensus. Especially where inequality is larger. Certainly the issues of efficiency, size and modernization of the state have to be addressed. But the latter are a continuously evolving process as opposed to a sustained but temporary macroeconomic policy. It is not impossible to project the reduction in expenditure by income share distribution into a bridge towards a state that charge fees for services according to income or even moves away from being the main service provider towards a guardian of standards. The later choices will be determined by voter's preferences.

<sup>6</sup>The equalised disposable income is the total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults; household members are equalised or made equivalent by weighting each according to their age, using the so-called modified OECD equivalence scale.

## References

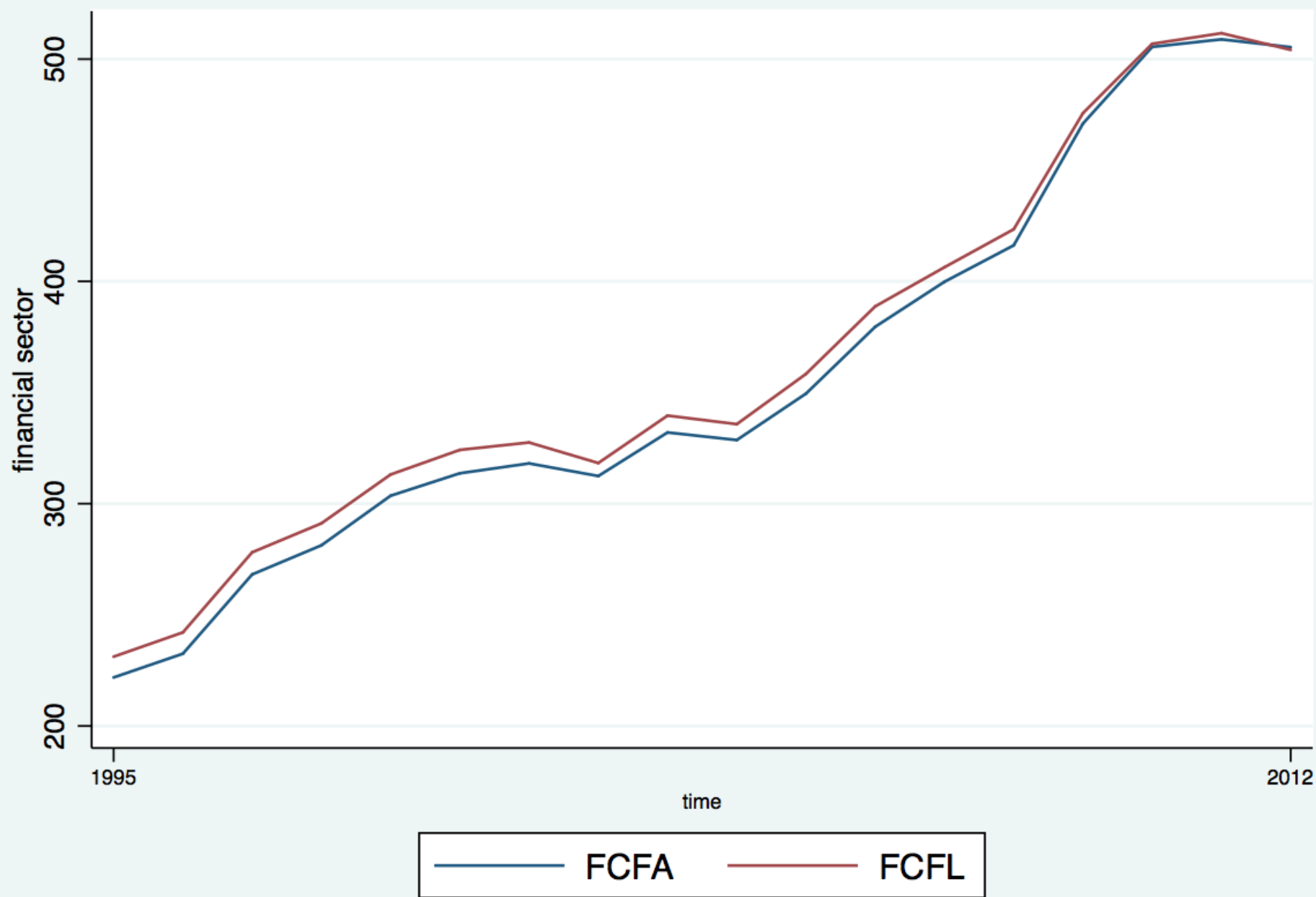
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Source Eurostat 2013, data in share of GNP

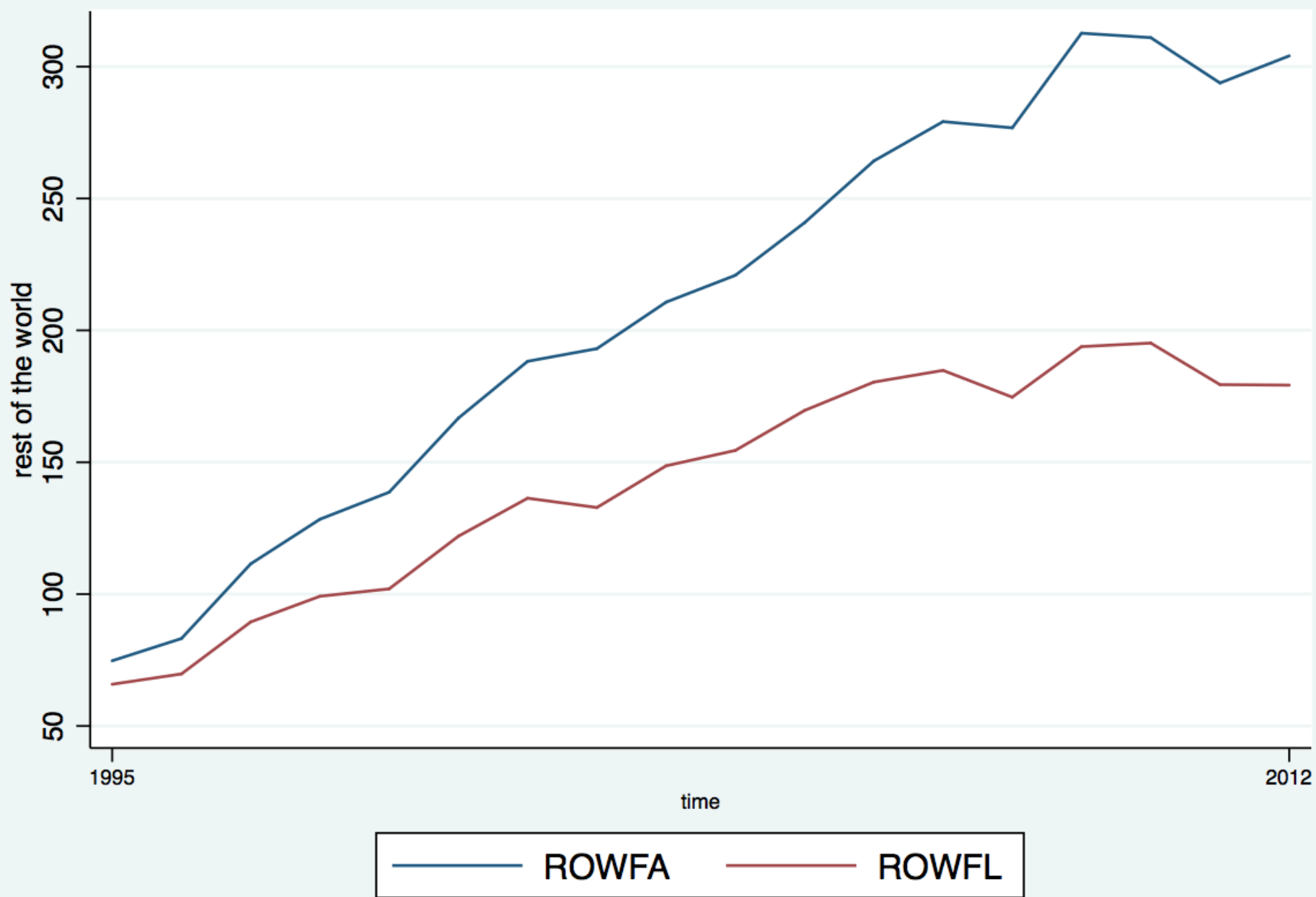
Figure 1: Portuguese sectors balance sheet





Source Eurostat 2013, data in share of GNP

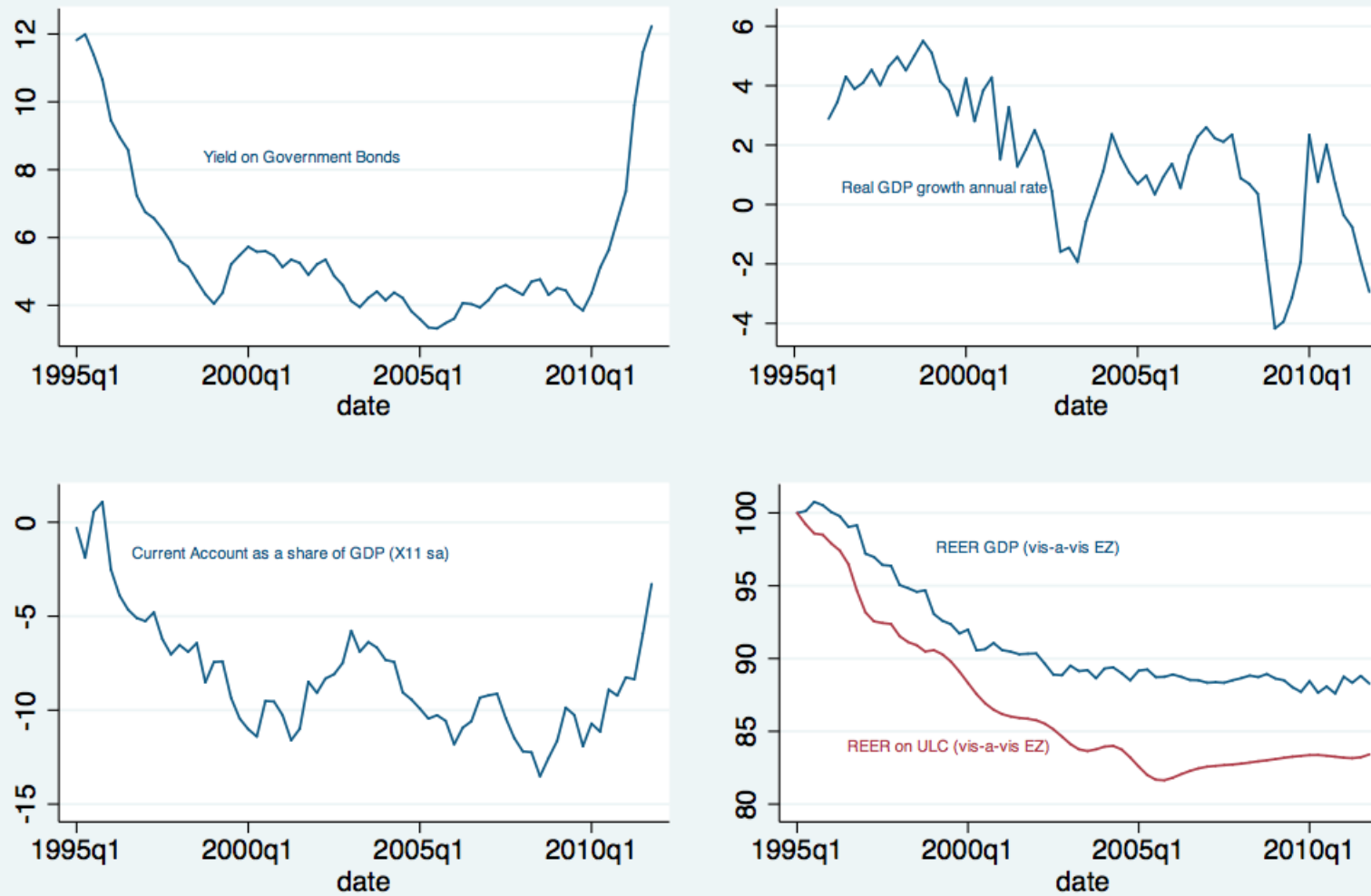
Figure 2: Financial sector balance sheet



Source Eurostat 2013, data in share of GNP

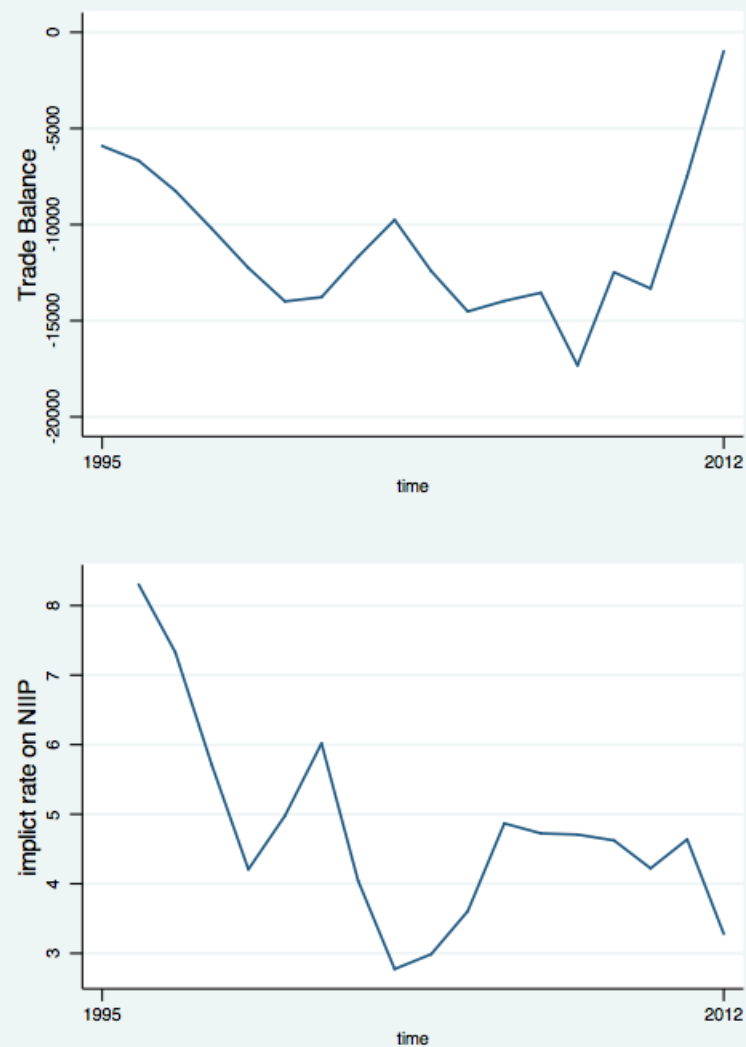
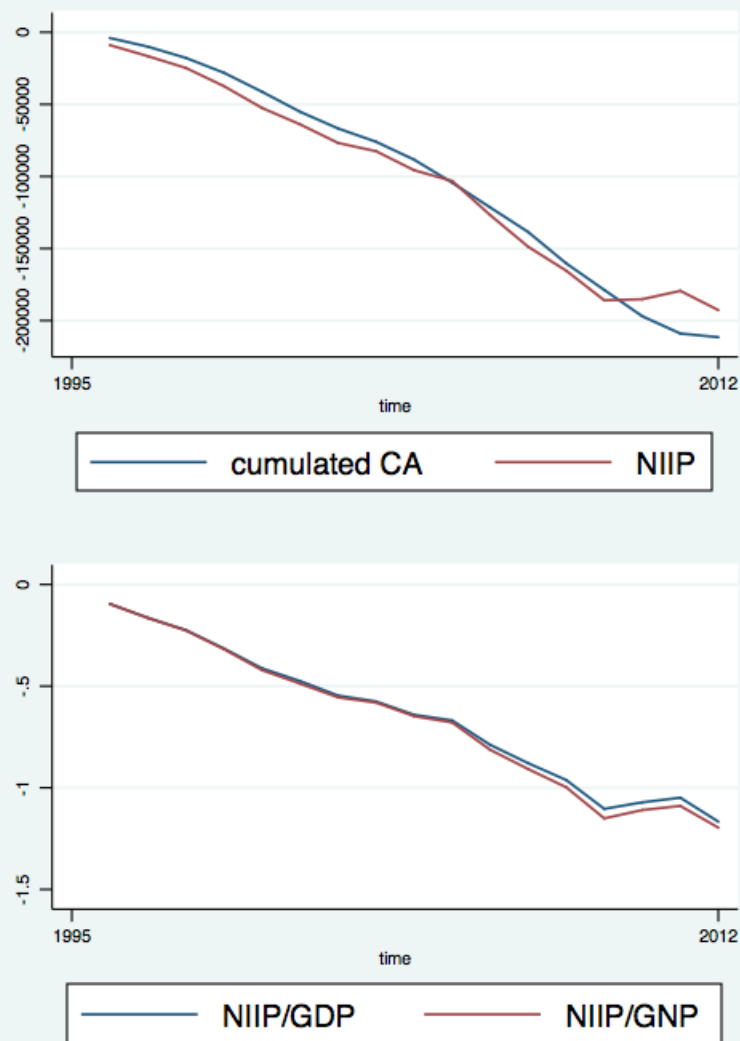
Figure 3: External sector balance sheet

### Portugal persistent misalignment 1995-2011



Source: Eurostat 2012, REER GDP constructed using Eurostat weights

Figure 4: Portugal in the Euro (1)



Source Eurostat 2013, data in million euro or share of GDP

Figure 5: Portugal Intertemporal budget constraint

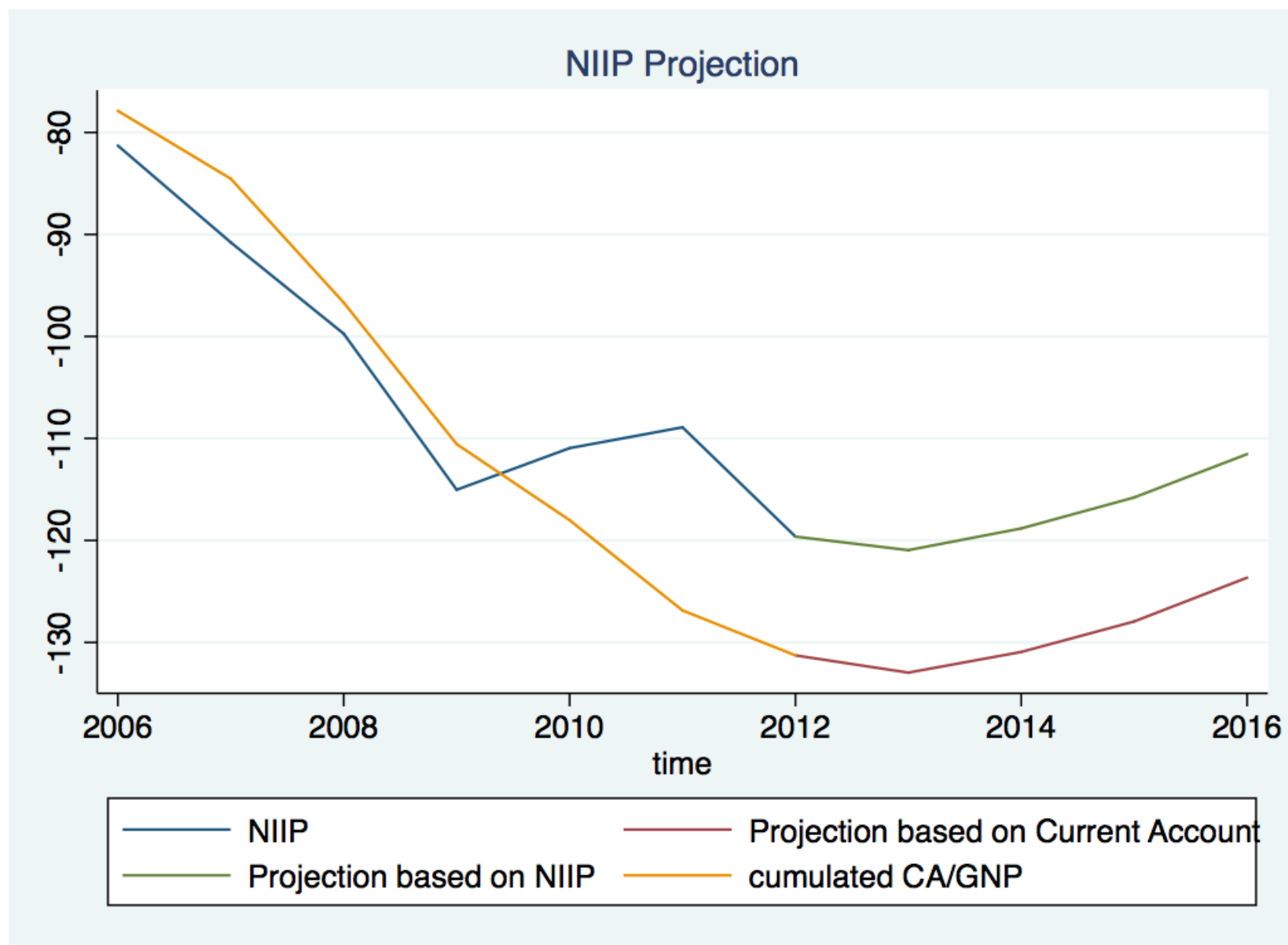


Figure 6: NIIP projections

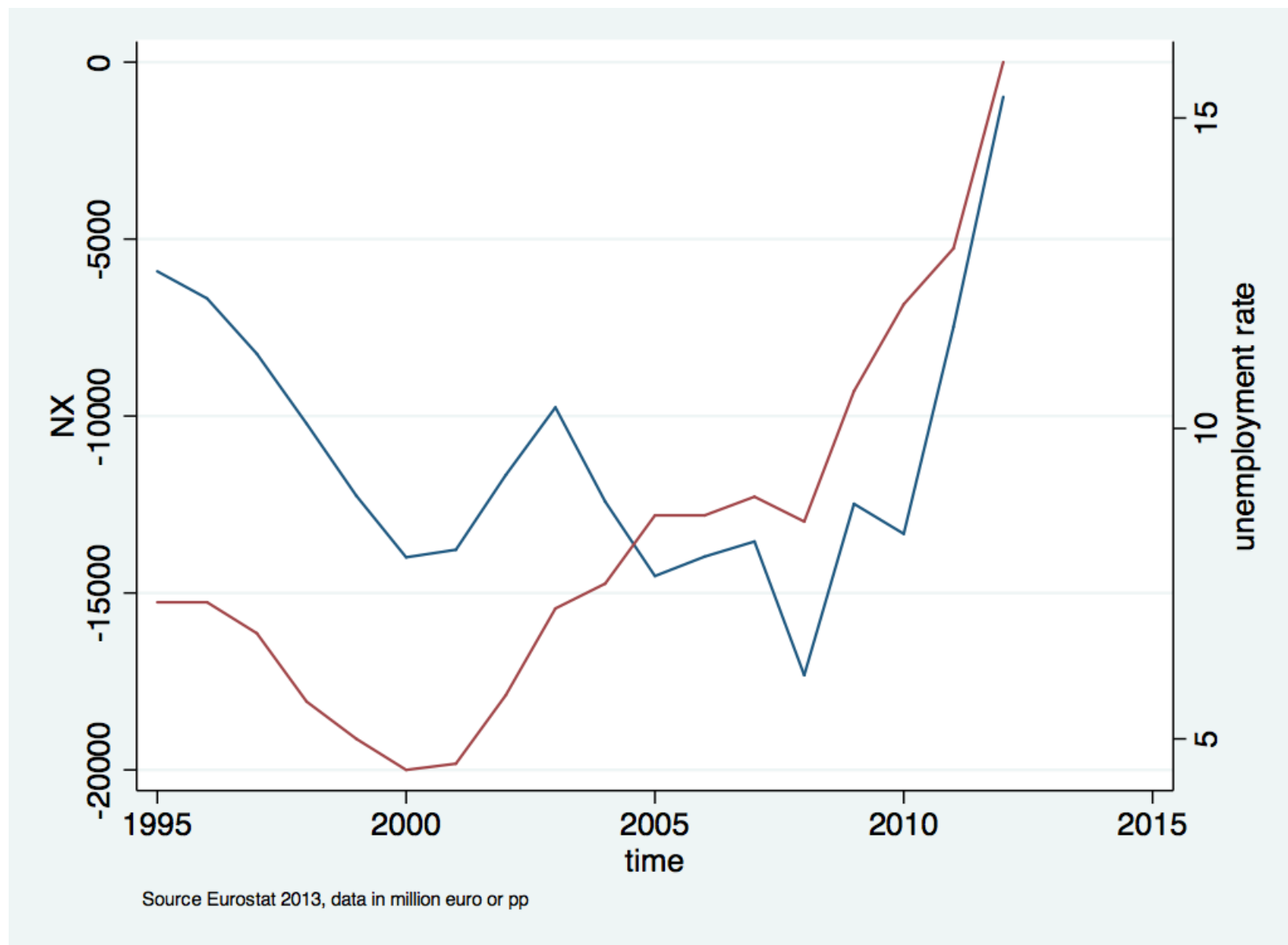
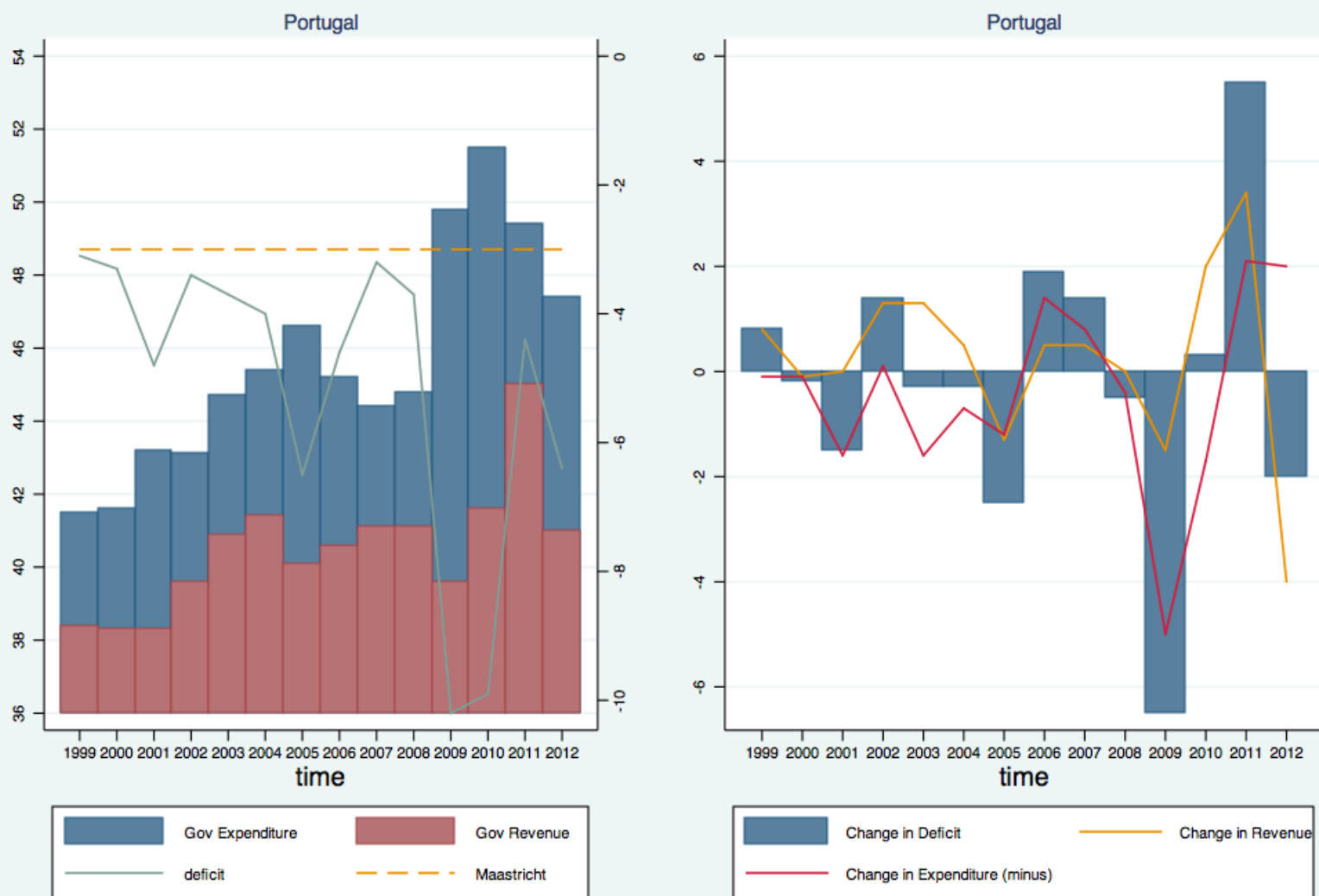
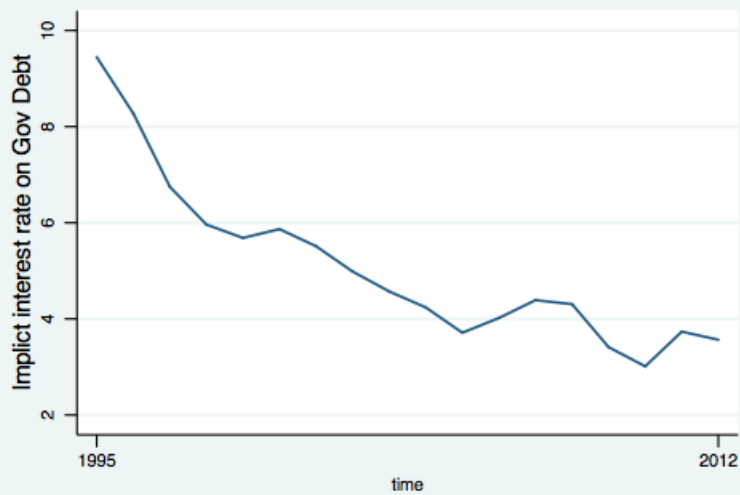
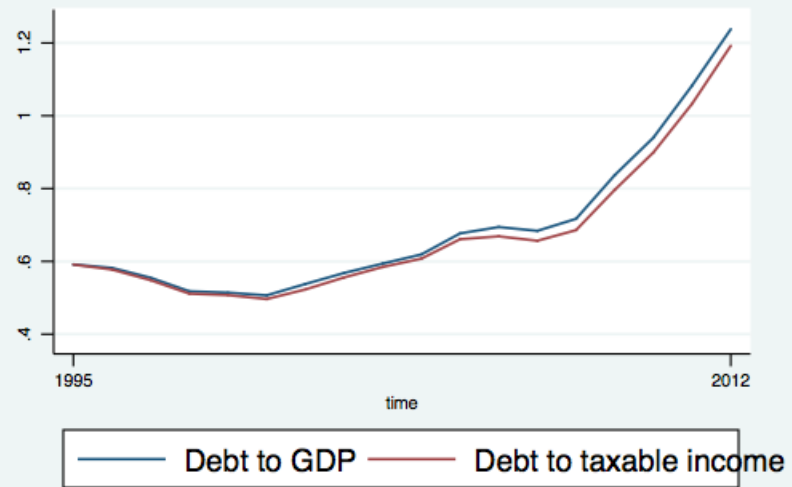
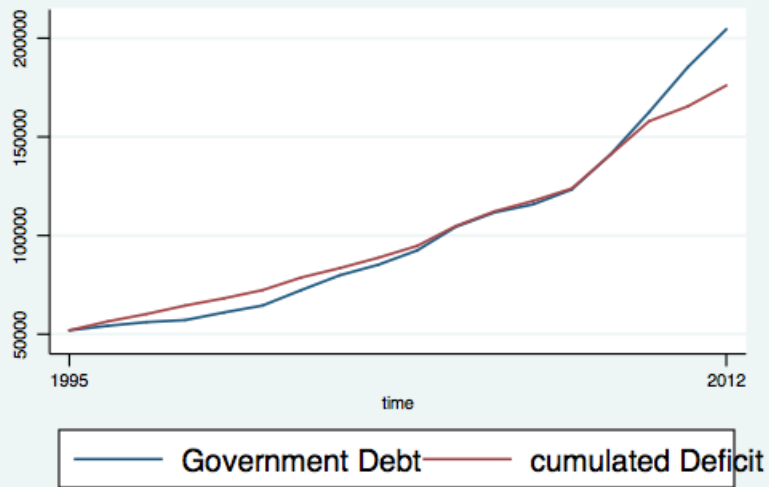


Figure 7: Internal devaluation



Source Eurostat 2013, data as a share of GDP

Figure 8: Fiscal policy in Portugal



Source Eurostat 2013, data in million euro or share of GDP

Figure 9: Government Intertemporal budget constraint



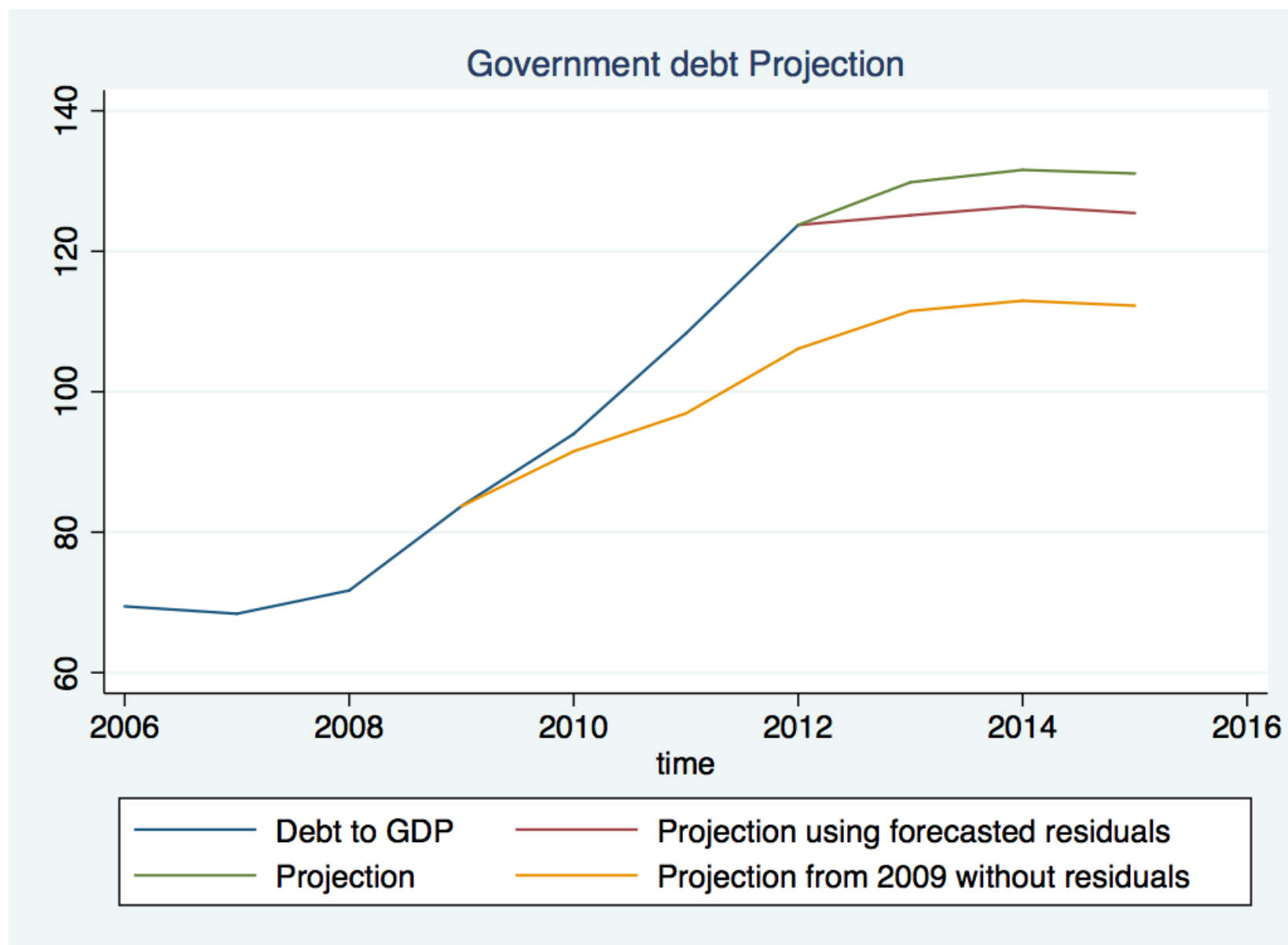


Figure 10: Government debt projections

## Income shares across Europe

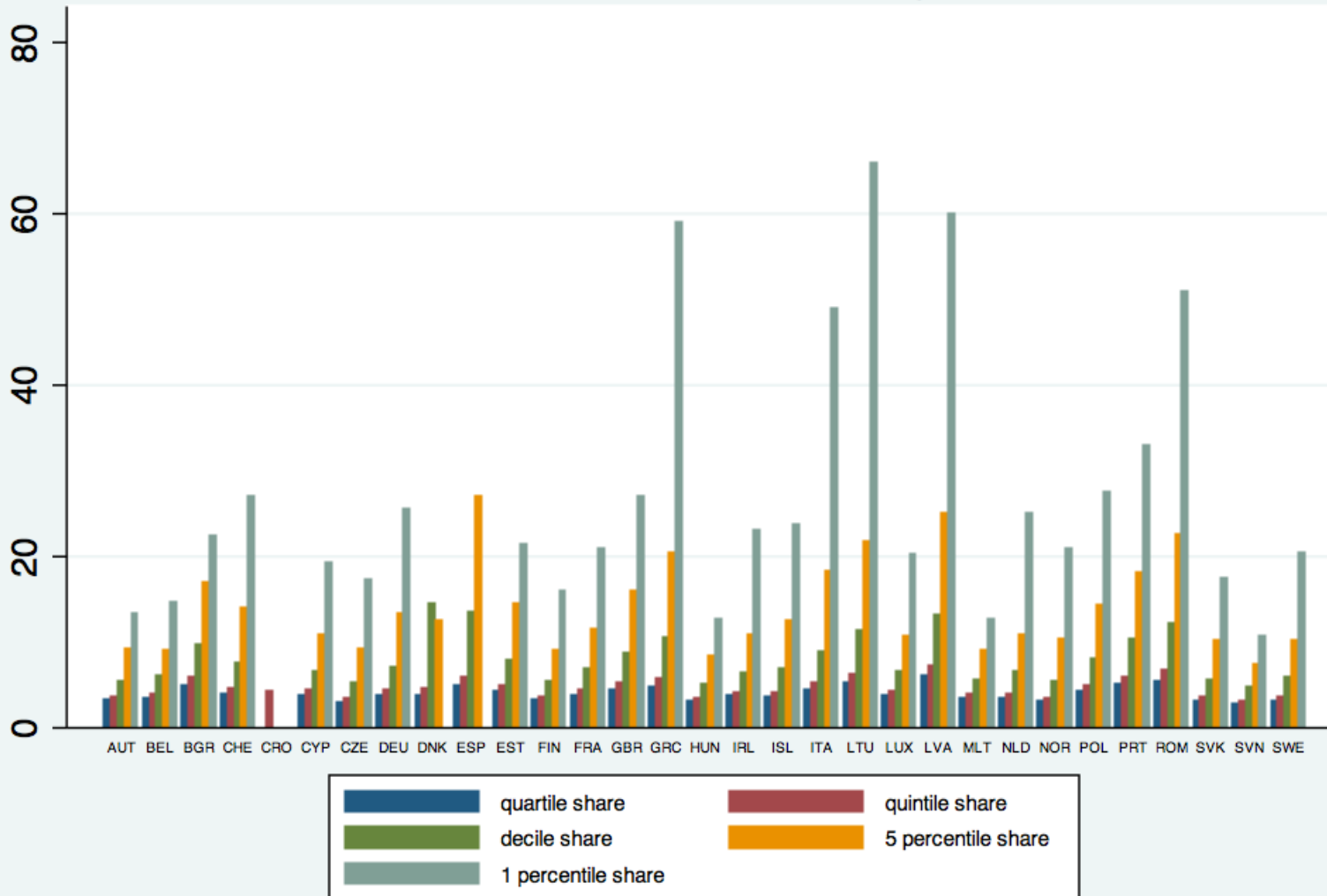


Figure 11: Income shares across Europe, end 2009

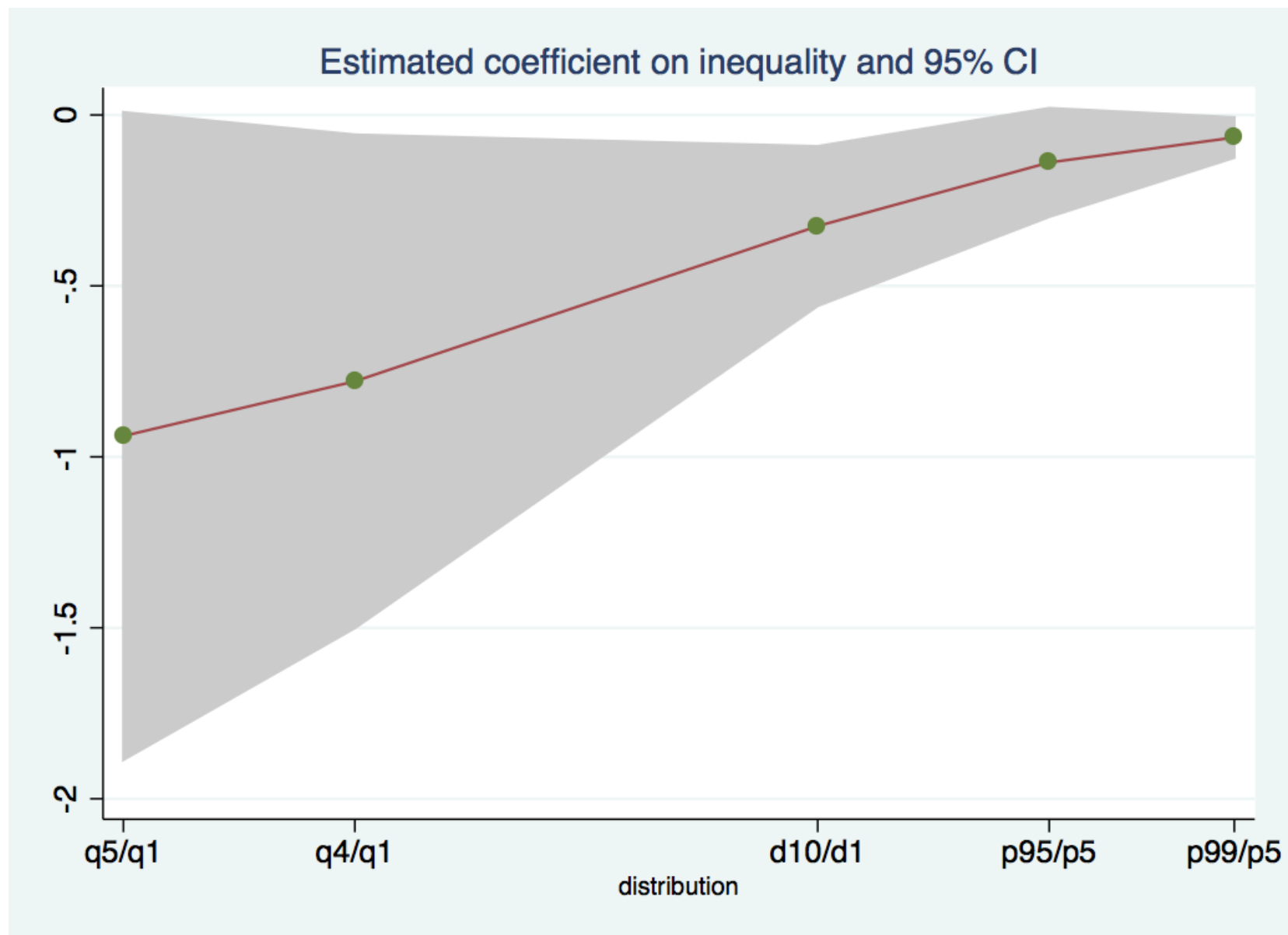


Figure 12: Estimated coefficients of the income share ratios. Shaded areas represent 95% confidence intervals.

VARIABLES	(1) Baseline	(2) Initial debt ratio	(3) Initial fiscal balance	(4) Initial structural fiscal balance	(5) Initial sovereign CDS	(6) Initial bank CDS	(7) Banking crisis	(8) Initial growth forecast	(9) Initial potential growth forecast	(10) Trading partner fiscal consolidation	(11) Precrisis current account balance	(12) Precrisis net foreign liabilities	(13) Precrisis household debt
x	-1.095*** (0.255)	-1.146*** (0.270)	-1.173*** (0.299)	-0.921** (0.360)	-0.990*** (0.296)	-1.007*** (0.281)	-1.105*** (0.262)	-1.099*** (0.275)	-1.126*** (0.251)	-1.105*** (0.270)	-0.935*** (0.274)	-1.056*** (0.306)	-1.086*** (0.262)
z		0.010 (0.013)	-0.045 (0.068)	0.115 (0.187)	-0.259 (0.458)	-0.208 (0.383)	0.162 (0.773)	-0.008 (0.178)	-0.242 (0.177)	-0.548 (1.343)	0.060 (0.049)	-0.002 (0.006)	-0.001 (0.006)
Constant	0.775* (0.383)	0.200 (0.991)	0.567 (0.539)	1.201 (0.928)	1.020 (0.605)	1.055 (0.651)	0.718 (0.494)	0.800 (0.631)	1.384*** (0.538)	0.834* (0.406)	0.886** (0.422)	0.813* (0.425)	0.887 (0.699)
Observations	26	26	26	26	26	26	26	26	26	26	26	26	25
R-squared	0.496	0.504	0.500	0.506	0.504	0.502	0.497	0.496	0.524	0.499	0.531	0.498	0.489
Robust standard errors in parentheses													
*** p<0.01, ** p<0.05, * p<0.1													

Figure 13: Portugal and Leigh 2013

VARIABLES	(1) Baseline	(2) inequality 4/1 quartile	(3) inequality 5/1 quintiles	(4) inequality 10/1 deciles	(5) inequality 95/5 percentiles	(6) inequality 99/5 percentiles	(7) Gini initial
x	-1.095*** (0.255)	-0.957*** (0.237)	-0.947*** (0.231)	-0.998*** (0.194)	-0.946*** (0.236)	-0.953*** (0.229)	-0.992*** (0.242)
z		-0.939* (0.483)	-0.779** (0.368)	-0.325** (0.119)	-0.139* (0.081)	-0.066** (0.030)	-0.154 (0.105)
Constant	0.775* (0.383)	4.309** (1.980)	4.207** (1.770)	3.216*** (1.053)	2.530** (1.115)	2.438*** (0.787)	5.139 (3.167)
Observations	26	26	26	26	26	24	26
R-squared	0.496	0.556	0.568	0.604	0.554	0.624	0.535
Robust standard errors in parentheses							

Figure 14: Adding inequality measures as controls

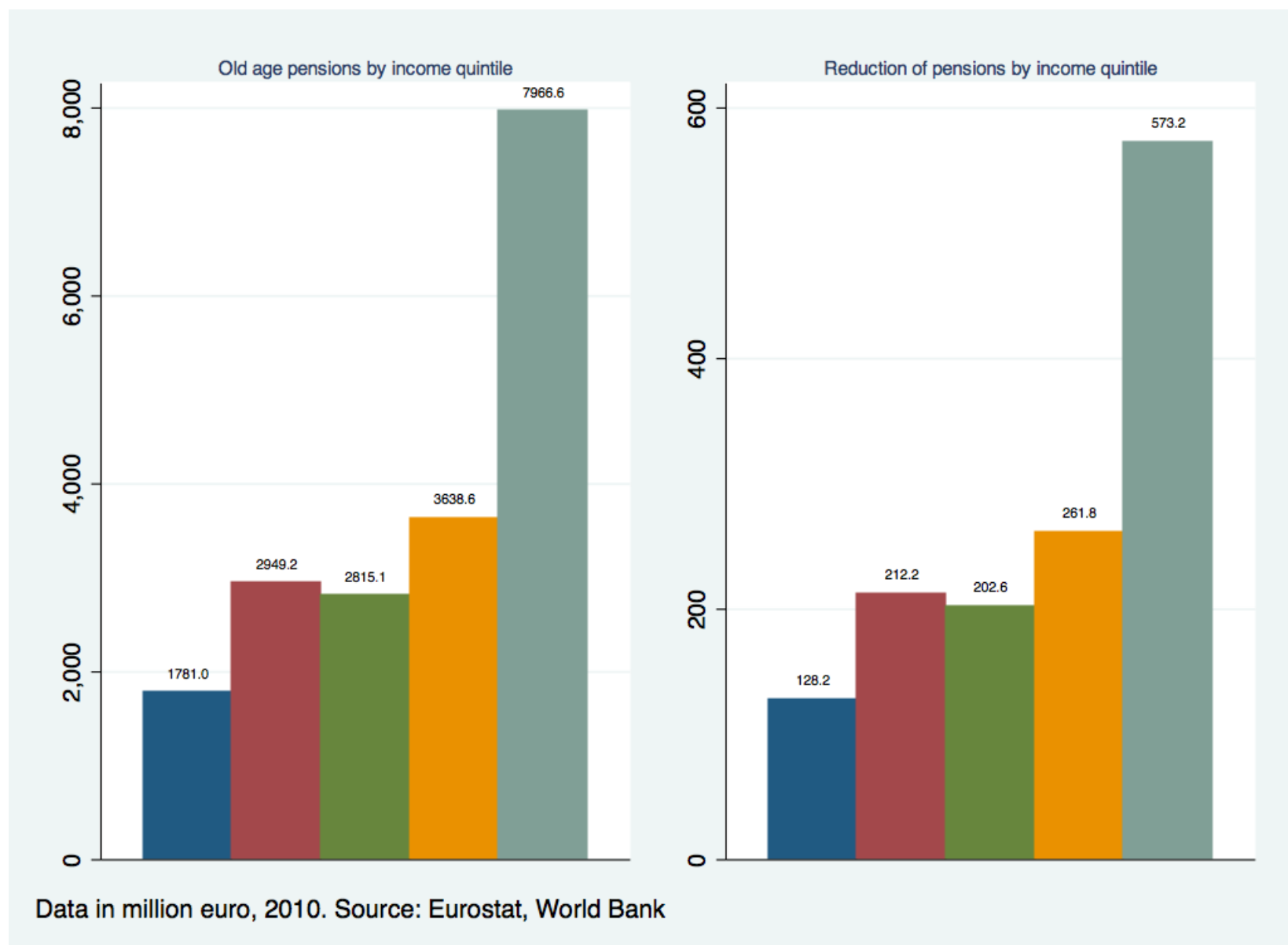


Figure 15: Decreasing pensions keeping the income share fixed