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The distributional effects of fiscal austerity

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Abstract

This paper examines the distributional effects of fiscal austerity. Using episodes of fiscal consolidation measures for a sample of 17 OECD countries over the period 1978-2009, we find that fiscal consolidation episodes have typically led to a significant and long-lasting increase in inequality. Tax-based consolidation episodes tend to have a larger and more persistent effect on inequality than spending-based consolidations. The evidence also shows that while fiscal consolidations have typically led to a fall in wage income, they have not had a significant effect on profit and rent income.

JEL: E62, E64, D63.

Keywords: Fiscal consolidation, distributional effects, income inequality

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The Distributional Effects of Fiscal Austerity

Laurence Ball, Davide Furceri, Daniel Leigh, and Prakash Loungani

I. Introduction

Financial crises are not only typically associated with sharp economic downturns but also with a substantial deterioration of fiscal positions (Reinhart and Rogoff, 2009). Declining revenues due to weaker economic conditions, higher expenditures associated with bailout costs and demand stimuli have historically led to a rapid deterioration of fiscal balances and a significant and long-lasting increase of public debt. In particular, looking at past historical episodes of severe financial crises, Furceri and Zdzienicka (2012) find that the debt-to-GDP ratio has typically increased by about 35 percentage points compared to pre-crisis trends, with the effect lasting for about 10 years.

Similarly, the Great Recession of 2007-2009 has led to a significant increase in public debt, in large part because of the collapse in tax revenues as incomes fell. Other contributors to the debt build-up were the costs of financial bailouts of banks and companies and the fiscal stimulus provided by many countries to stave off a Great Depression. All in all, in advanced economies public debt has increased from 70 per cent of GDP in 2007 to over 100 per cent of GDP in 2012—its highest level in 50 years (International Monetary Fund, 2013).

In the absence of significant consolidation measures, debt-to-GDP ratios in many advanced economies are likely to remain high over the medium term. In particular, based on the assumption that consolidation measures are only gradual but sufficient to stabilize the government debt-to-GDP over the medium term (Organization for Economic Cooperation and Development, 2011), debt-to-GDP ratios may still increase by about 30 percentage points by 2025 compared to pre-crisis levels. Moreover, looking ahead, population aging could create even more serious problems for public finances.

Against this backdrop, many governments are already undertaking or planning policies to reduce government debt and deficits, through a combination of spending and tax-based consolidation measures.

When British Prime Minister David Cameron announced his government's deficit reduction plans last in 2011 at Davos he said "Those who argue that dealing with our deficit and promoting growth are somehow alternatives are wrong. You cannot put off the first in order to promote the second" (Cameron, 2011). The challenge facing the United Kingdom and many advanced economies is how to bring debt down to safer levels in the face of a weak recovery. Will deficit reduction lead to stronger growth and job creation in the short run? What will be the distributional consequences?

While the effects of fiscal consolidation on output and unemployment have been extensively investigated in the literature[1], up to now, only a few studies have looked at their distributional effects. The empirical evidence reported in these studies suggests that fiscal consolidation measures: (i) are typically associated with an increase in poverty and a rise in the income gap (Smeeding, 2000); (ii) affect the trade-off between economic growth and income inequality (Mulas-Granados, 2005); and (iii) increase income inequality (Agnello and Sousa, 2012; International Monetary Fund, 2012).

The aim of this paper is contribute to the literature on this topic and assess the short and medium term distributional effects of fiscal austerity. For this purpose, the paper considers past historical episodes of fiscal consolidation to estimate impulse response functions (IRFs) of fiscal consolidation episodes on income inequality (proxied by the Gini coefficient) and on different types of income.

Using past episodes of fiscal consolidation measures for a sample of 17 OECD countries over the period 1978-2009, the results of the paper suggest that fiscal consolidation episodes have typically led to a significant and long-lasting increase in inequality. Differentiating between spending versus taxes-based consolidation episodes, the results suggest that the latter tend to have a more persistent effect. The empirical evidence presented in the paper also show that while fiscal consolidation measures have typically led to a fall in wage income, they have not had a significant effect on profit and rent income.

The rest of the paper is organized as follows. The next section describes the data and presents some descriptive statistics. Section three presents the empirical methodology used to examine the effects of fiscal consolidation episodes on income inequality and on different types of income. Section four describes the results. Finally, section five concludes with the main findings and policy implications.

Data

Inequality

The dependent variable in our regression is the Gini coefficient for disposable income. Our main source of the data is the Standardized World Income Inequality Database (SWIID) (Solt, 2009 and Solt, 2011).

Focusing on the sub-sample of advanced economies covered in the empirical analysis, it can be noted that the Gini coefficient varies considerably across countries ranging from more than 35 in Italy, Portugal and the United States to less than 25 in Denmark and Sweden (see figure 1). Inequality has increased almost everywhere, with Italy, Japan, Portugal and the United States recording the largest increase.

Up to now, the evolution of inequality does not seem to be affected by the global crisis (Jenkins and others, 2011). In particular, changes in inequality have varied among both those worst hit by the crisis—with point estimates of the Gini increasing in Latvia and Lithuania but falling in Estonia, Greece, and Iceland from 2007 to 2010—and among those economies that experienced smaller contraction in economic activity (the

1 See, for example, Alesina and Perotti (1995, 1997), Alesina and Ardagna (2010), Broadbent and Daly (2010), and Guajardo, Leigh and Pescatori (2011).

Gini increased in France and Spain but fell in the Netherlands and Portugal)[2]. However, previous empirical evidence show that distributional effects of crises can take many years before they materialize (Atkinson and Morelli, 2011), suggesting that it may be still too early to predict what will be the distributional consequences of the recent global recession.

Fiscal consolidation episodes

Fiscal consolidation episodes are taken from the Devries and others (2011) database. The database contains information on 173 episodes of fiscal consolidation for 17 OECD economies (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Spain, Sweden, the United Kingdom, and the United States) during 1978-2009. The magnitude of the fiscal consolidation episode ranges between 0.1 and about 5 per cent of GDP, with an average of about 1 per cent of GDP.

The measure of fiscal consolidation constructed by the authors is based on a narrative approach and focuses on *policy* actions—tax hikes and/or spending cuts—taken by Governments with the intent of reducing the budget deficit. This approach differs from previous studies in the literature in which fiscal consolidation is measured by successful budget *outcomes* (e.g., Giavazzi and Pagano, 1990, and Alesina and Ardagna, 2010). Specifically, the cyclically-adjusted primary balance (CAPB)—the primary balance adjusted for the estimated effects of business cycle fluctuations—is used as a measure of fiscal consolidation. The cyclical adjustment is needed because tax revenue and government spending move automatically with the business cycle. The hope is that, after this cyclical adjustment, changes in fiscal variables reflect policymakers' decisions to change tax rates and spending levels. An increase in CAPB would therefore, in principle, reflect a deliberate policy decision to cut the deficit.

In practice, however, budget outcomes turn out to be an imperfect measure of policy intent. One problem is that the cyclical adjustment suffers from measurement errors. In particular, it fails to remove swings in government tax revenue associated with asset price or commodity price movements from the fiscal data, resulting in changes in CAPB that are not necessarily linked to actual policy changes. For example, in the case of Ireland in 2009, the collapse in stock and housing prices induced a sharp reduction in CAPB despite the implementation of tax hikes and spending cuts exceeding 4.5 per cent of GDP.

Another problem is that the standard approach ignores the motivation behind fiscal actions. Thus, it includes years in which governments deliberately tightened policy to restrain excessive domestic demand. For example, in Finland in 2000, there was an asset price boom and rapid growth, and the government decided to cut spending to reduce the risk of economic overheating. If a fiscal tightening is a *response to* domestic demand pressures, it is not valid for estimating the short-term effects of fiscal policy on economic activity, even if it is associated with a sharp rise in the CAPB.

It turns out that these problems with the CAPB bias the analysis toward downplaying contractionary effects and overstating expansionary ones. It tends to select periods associated with favourable growth outcomes but during which no austerity measures were actually taken. It also tends to omit cases of fiscal austerity associated with unfavourable growth outcomes.

2 These results have to be treated with caution given the large standard errors associated with the Gini point estimates.

Inequality and fiscal consolidation

While the impact of fiscal adjustments on income disparities varies substantially across countries (Agnello and Sousa, 2012), there is a reasonably large number of countries in which fiscal consolidation has triggered an increase in inequality (for example, Finland, Italy and Spain in the 1990s, or Germany, Japan and Portugal in the 1980s). On average, however, past episodes of fiscal adjustment seem to be associated with a sizeable increase in income inequality. In particular, looking at cumulative changes in the Gini coefficient before and after the beginning of a consolidation episode (figure 2), it emerges that fiscal consolidation episodes, on average, have been typically associated with an increase of the Gini of about 0.3 percentage point in the short term (two years after the occurrence of a consolidation episode) and of about 1.7 percentage points in the medium term (10 years after the occurrence of a consolidation episode). Inferential analysis on the dynamic effect of fiscal consolidation on income inequality will be presented in the following sections.

Empirical methodology

In order to assess the distributional impact of fiscal consolidation episodes over the short and medium term, the paper follows the method proposed by Jorda (2005) which consists of estimating the dynamic change in inequality in the aftermath of fiscal adjustment episodes. In detail, for each future year *k* the following equation has been estimated on annual data:

$$G_{i,t+k} - G_{i,t} = \alpha_i^k + Time_t^k + \sum_{j=1}^{l} \gamma_j^k \Delta G_{i,t-j} + \beta_k D_{i,t} + \varepsilon_{i,t}^k \quad (1)$$

with *k*=1,..8. Where *G* represents our measure of inequality (proxied by the Gini coefficient for disposable income); $D_{i,t}$ $D_{i,t}$ is a dummy variable that takes the value equal to 1 for the starting date of a consolidation episode in country *i* at time *t* and 0 otherwise; α_i^k α_i^k are country fixed effects; $Time_t^k$ $Time_t^k$ is a time trend; and $\hat{\beta}_k$ $\hat{\beta}_k$ measures the impact of fiscal consolidation episodes on the change of the Gini coefficient for each future period *k*. Since fixed effects are included in the regression the dynamic impact of consolidation episodes should be interpreted as changes in the Gini coefficient compared to a baseline country-specific trend. The number of lags (*l*) has been chosen to be equal two, as this produces the best specification, but the results are extremely robust to different numbers of lags included in the specification (see robustness checks presented in the next section). Equation (1) is estimated using the panel-corrected standard error (PCSE) estimator (Beck and Katz, 1995).[3]

The dynamic response of inequality to fiscal adjustments are then obtained by plotting the estimated $\hat{\beta}_k$ $\hat{\beta}_k$ for k= 0,1,..8, with confidence bands for the estimated effects being computed using the standard deviations associated with the estimated coefficients $\hat{\beta}_k$ $\hat{\beta}_k$. While the presence of a lagged dependent variable and country fixed effects may in principle bias the estimation of γ_1^k γ_1^k and $\hat{\beta}_k$ $\hat{\beta}_k$ in small samples (Nickel, 1981), the length of the time dimension mitigates this concern.[4]

Reverse causality is addressed by estimating changes in the Gini coefficient in the years that *follow* a fiscal consolidation episode. In addition, robustness checks for endogeneity confirm the validity of our results.

3 This procedure is better placed to deal with the nature of our data (such as a small number of countries compared to the number of years) and to correct for panel-specific heteroscedasticity and serial correlation.

4 The finite sample bias is in the order of 1/T, where T in our sample is 32.

Results

The results from estimating the impact of fiscal consolidation on inequality using Equation 1 are presented in figure 3. The figure presents the estimated effect of fiscal adjustments on the Gini coefficient and the associated lower and upper confidence bands (dotted lines). Looking at the figure it can be noted that fiscal consolidation episodes have long-lasting effects on income inequality. In particular, the estimates suggest that consolidation episodes (on average of about 1 per cent of GDP) have typically increased the Gini index by about 0.1 percentage point (equivalent to about 0.4 per cent) in the very short term[5]—1 year after the occurrence of the consolidation episode—and by about 0.6 percentage point (equivalent to 2.5 per cent) in the medium term—12 years after the occurrence of the consolidation episode.[6] In addition, the Gini coefficient has typically reached the peak around 8 years following the occurrence of a consolidation episode, after which it has gradually declined.

To check the robustness of the results, Equation (1) is re-estimated by including time fixed effects to control for specific time shocks, such as those affecting world interest rates. The results for this specification remain statistically significant and broadly unchanged (figure 4, panel B).

As shown by Teulings and Zubanov (2010), a possible bias from estimating Equation (1) using country-fixed effects is that the error term of the equation may have a non-zero expected value, due to the interaction of fixed effects and country-specific arrival rates of consolidation episodes. This would lead to a bias of the estimates that is function of *k*. To address this issue and check the robustness of our results, Equation (1) has been re-estimated by excluding country fixed effects from the analysis. The results reported in panel C of figure 4, however, suggest that this bias is negligible (the difference in the point estimate is small and not statistically significant).

Estimates of the impact of consolidation on inequality could be biased because of endogeneity. In particular, while potential reverse causality is addressed by estimating changes in the Gini coefficient in the years that follow the occurrence of a consolidation episode, it could be still the case that unobserved factors influencing the dynamics of the Gini coefficient may affect the probability of the occurrence of a consolidation episode. In particular, a significant deterioration in economic activity, which would affect unemployment and inequality, may determine an increase in the debt-to-GDP ratio via automatic stabilizers, and therefore increase the probability of consolidation. To address this issue, Equation 1 is augmented to control for: (i) contemporaneous and past crises episodes (banking and currency crises); (ii) change in economic activity (proxied by real GDP growth); and (iii) change in unemployment. The results of this exercise are reported in panel D of figure 4 and confirm the robustness of our results.

Finally, as an additional robustness check, Equation (1) has been re-estimated for different lags (*l*) of changes in the Gini coefficient. The results presented in figure 5 confirm that the results are not sensitive to the choice of the number of lags. In particular, the peak effect ranges from 0.8 percentage point in the case of five lags to about 1 percentage point in the case of zero lags.

5 This result is in line with Agnello and Sousa (2012), who find that fiscal consolidation lead to a short-term increase in the Gini of about 0.3 percent.

6 This result, however, has to be treated with caution given the large uncertainty surrounding the estimates over the long term.

Spending versus taxes-based consolidation episodes

Does the composition of fiscal consolidation (spending versus taxes-based) matter for inequality? There is a broad consensus in the literature that taxes-based consolidations are typically more distortionary than spending-based consolidations and therefore more contractionary over the medium term.[7] In particular, Guajardo and others (2011) find that in the case of taxes-based programs the effect of a fiscal consolidation of one per cent of GDP on output is -1.3 per cent after two years, while in the case of spending-based programs is -0.3 per cent after two years and not statistically significant. Similarly, their results also show that the effect of taxes-based consolidations on unemployment is about three times larger than spending-based consolidation and much more persistent. Based on this evidence, it is reasonable to expect that the composition of fiscal consolidation also matters for inequality, and that taxes-based programs are likely to have a larger and more persistent effect.

To test for this hypothesis, Equation (1) is separately estimated for taxes and spending-based consolidation episodes, by constructing starting date dummies of taxes and spending consolidation episodes.[8]

The results presented in figure 6 show that while spending and tax-based programs have a similar effect over the short and medium term, taxes-based consolidation measures typically lead to a more persistent increase in income inequality. This result corroborates the finding that austerity measures based on taxes programs are typically more contractionary than spending consolidation measures.

Wage vs. profit income

Another way to assess the distributional effects of fiscal consolidation measures is to look at the effect of fiscal consolidations on different types of income. A traditional way of splitting total income is into wages, profits, and rents. This harks back to times when the roles of workers, capitalists, and landlords were fairly distinct. While these distinctions have eroded somewhat over time, the split between wages and other forms of income represents a starting point for describing how income is divided between *Main Street* and *Wall Street*.

To assess the effects of fiscal consolidation on the distribution of income between wage-earners and others, Equation (1) is estimated for wage income:

$$W_{i,t+k} - W_{i,t} = \alpha_i^k + Time_t^k + \sum_{j=1}^{l} \gamma_j^k \Delta W_{i,t-j} + \beta_k D_{i,t} + \varepsilon_{i,t}^k \qquad (2)$$

where W represents the share of wage in GDP.

The results of this empirical exercise are reported in figure 7, and suggest that fiscal consolidation measures typically reduce the slice of the pie going to wage earners, while they don't have significant effects on profit and rent income. The reasons why wage income declines more than profits and rents have not yet been

7 See, for example, Alesina and Perotti (1995, 1997), Alesina and Ardagna (2010), Broadbent and Daly (2010), and Guajardo, Leigh and Pescatori (2011).

8 The average magnitude of both spending and taxes-based consolidation is about 1 per cent of GDP.

studied much in the literature. Some fiscal austerity plans call for public sector wage cuts, thus providing a direct channel for this effect. But there could be indirect channel as well, for instance because consolidations increase unemployment, and particularly the share of long-term unemployed in the total (Morsy, 2011).

Conclusions and policy implications

This paper examines the distributional effects of fiscal austerity. Using episodes of fiscal consolidation measures for a sample of 17 OECD countries over the period 1978-2009, it shows that fiscal consolidation episodes have typically led to a significant and long-lasting increase in inequality. Differentiating between spending versus tax-based consolidation episodes, the results suggest that the latter tend to have a more persistent effect. The empirical evidence presented in the paper also shows that while fiscal consolidation measures have typically led to a fall in wage income, they have not had a significant effect on profit and rent income.

The results described here show that it is important to have realistic expectations about the consequences of fiscal consolidation: in addition to lowering incomes—hitting wage-earners more than others—and raise unemployment, it is likely to lead to a long-lasting increase in inequality. These costs must be balanced against the potential longer-term benefits that consolidation can confer benefits as interest rates decline, and the lighter burden of interest payments permits cuts to distortionary taxes.

Fiscal measures that are approved now but only kick in to reduce deficits in the future—when the recovery is more robust—would be particularly helpful. Examples include linking statutory retirement ages to life expectancy and improving the efficiency of entitlement programs. In contrast, fiscal consolidations that are unduly hasty pose risks to the recovery. So countries with the scope to do so should opt for a slower pace of consolidation, combined with policies to support growth. In countries such as the United States, where unemployment remains at historical highs and long-term unemployment is at alarming levels, more active policies are needed to spur job creation and increased consumer confidence, including measures such as mortgage relief for distressed homeowners.

Fiscal consolidation plans should also spell out how policies would respond to shocks, such as slower growth than envisaged in the plan. For instance, plans could specify that unemployment benefits would be shielded from cuts in the event of slower growth than assumed in the plan. History shows that fiscal plans succeed when they permit "some flexibility while credibly preserving the medium-term consolidation objectives" (International Monetary Fund, 2011; see also Mauro, 2011).

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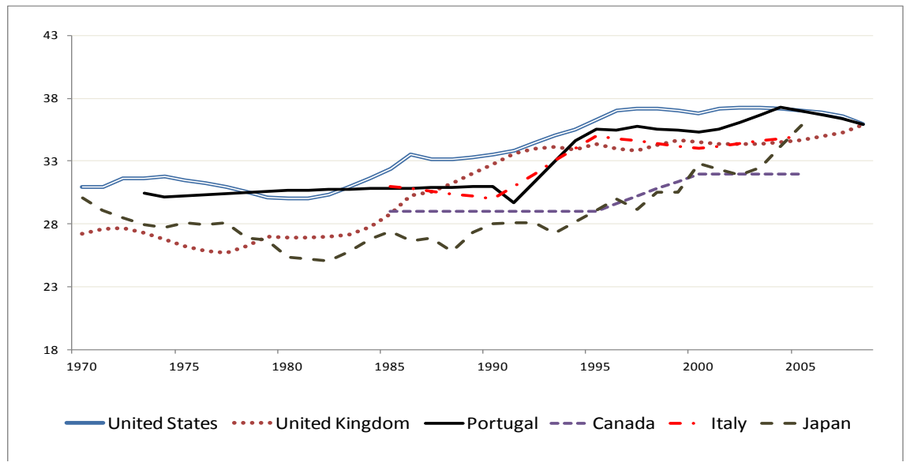
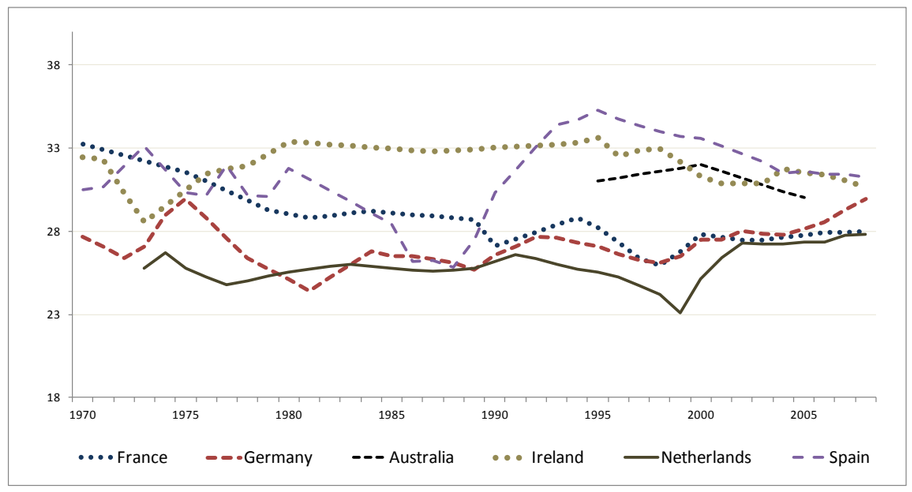
Figure 1.Gini coefficient in advanced economies

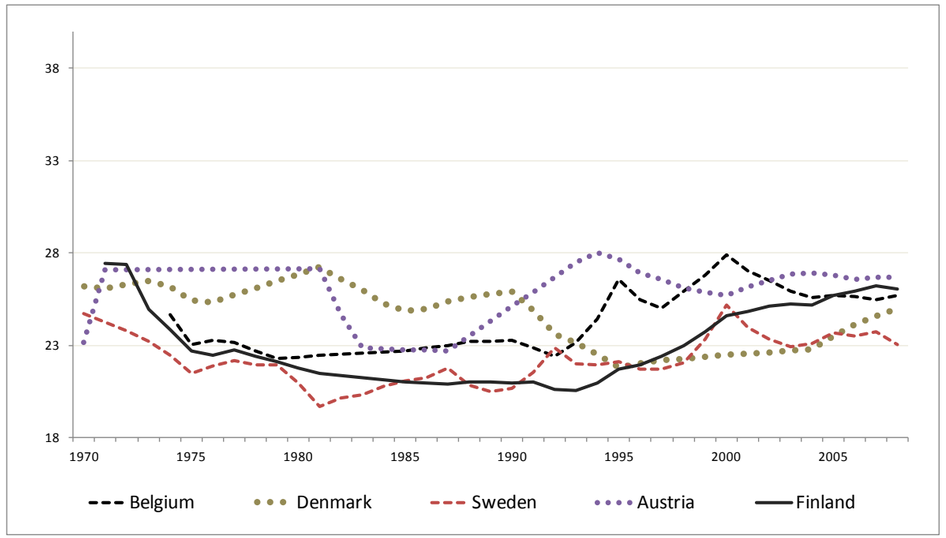
High inequality country



Medium inequality countries



Low inequality countries



Source: Solt, Frederick, *Standardized World Income Inequality Database*, Version 3.1, released December 2011. Available at: http://myweb.uiowa.edu/fsolt/swiid/swiid.html.. See also Solt (2009).

Note: High is defined as countries with Gini coefficient above 32 in latest period available, Medium as countries Gini above 27 but less than 32, and low for countries with Gini coefficient of less than 27.

Figure 2. Cumulative change in the Gini coefficient before and after consolidation measures

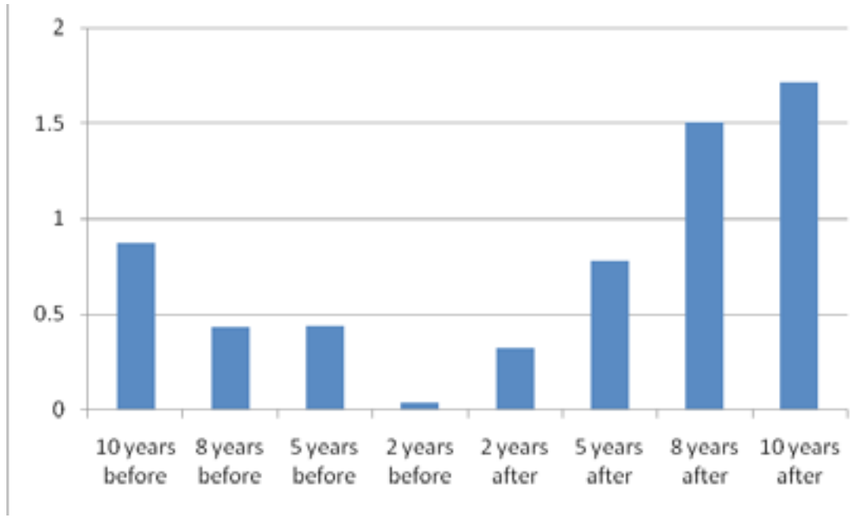
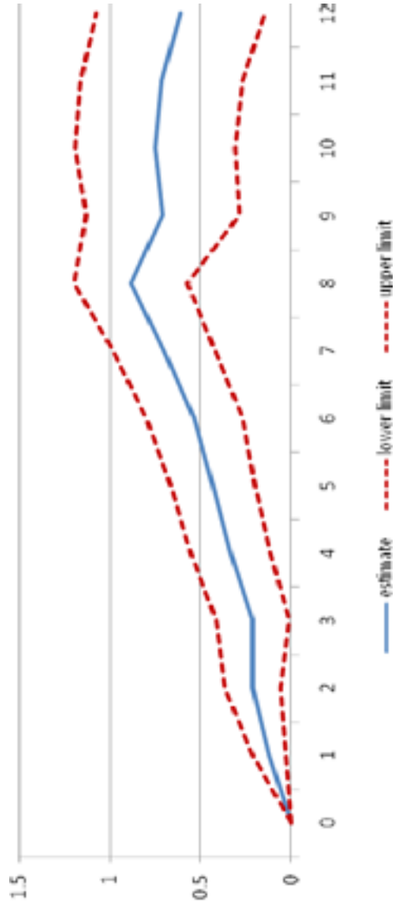


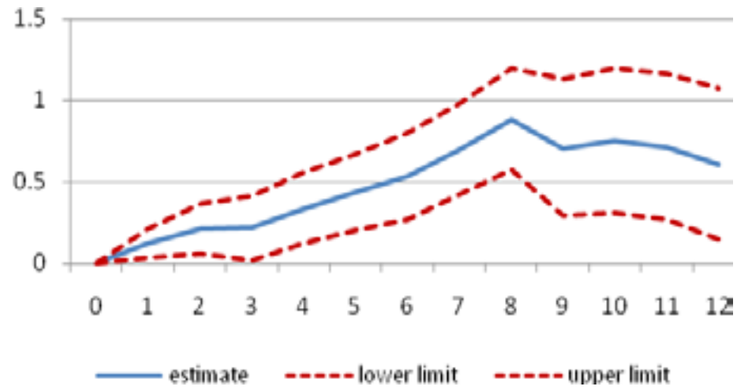
Figure 3. The effects of fiscal consolidation on inequality



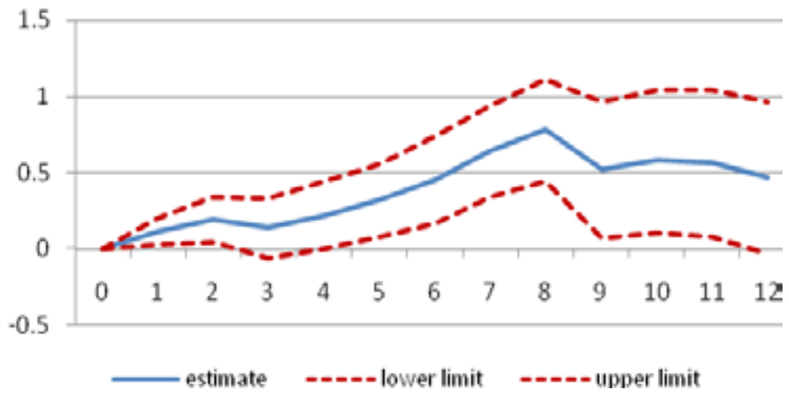
Note: dotted lines equal one standard error bands. Gini coefficient in the y-axis, years in the x-axis.

Figure 4. The effects of fiscal consolidation on inequality - robustness check for different set of controls

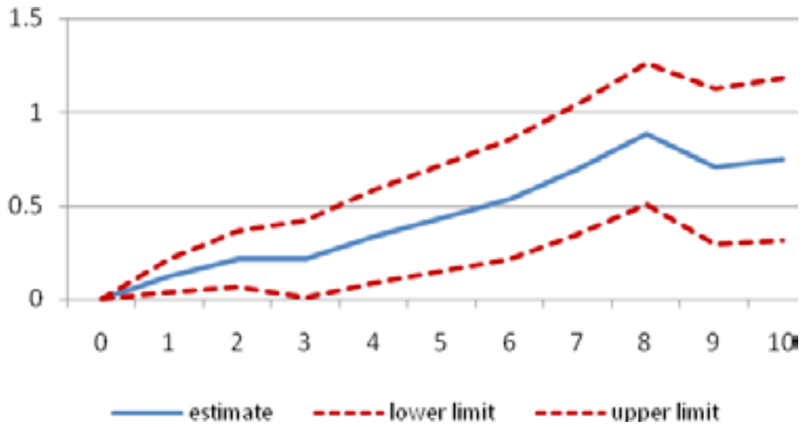
Panel A. Baseline



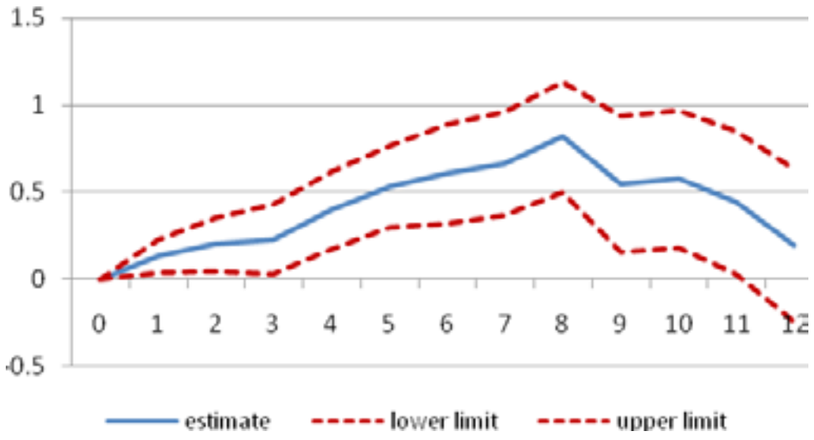
Panel B. Time fixed effects



Panel C. No country fixed effects



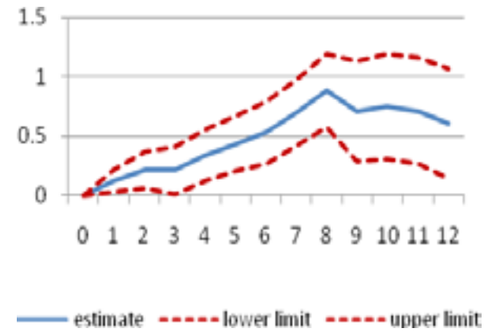
Panel D. Additional controls



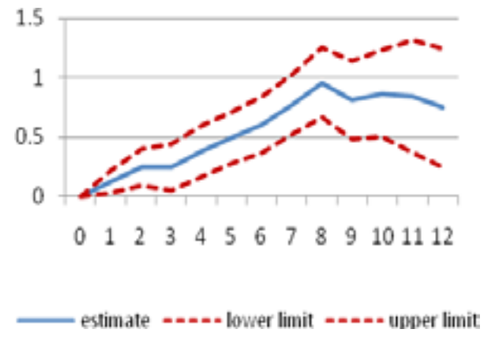
Note: dotted lines equal one standard error bands. Gini coefficient in the y-axis, years in the x-axis.

Figure 5: The effects of fiscal consolidation on inequality-robustness check for different lags

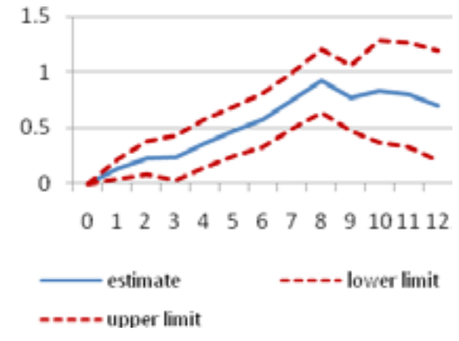
Panel A. Baseline (lags=2)



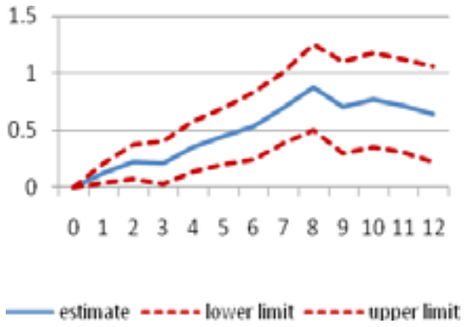
Panel B. lag=0



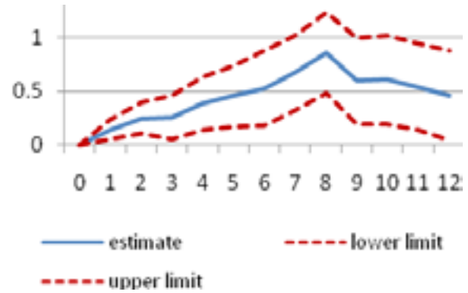
Panel C. lag=1



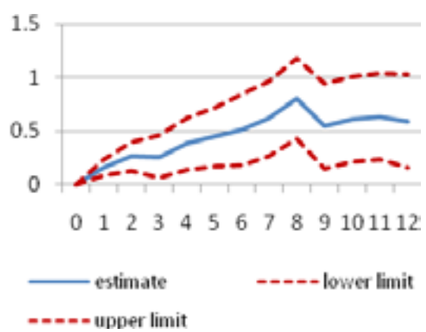
Panel D. lags=3



Panel E. lags=4



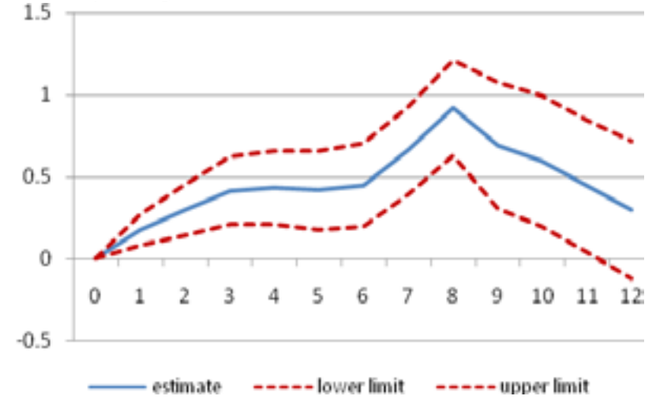
Panel F. lags=5



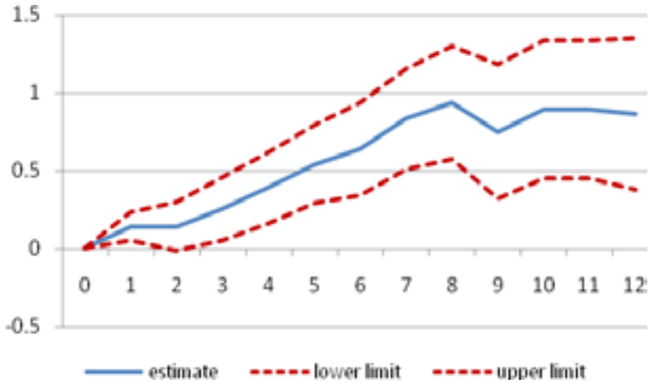
Note: dotted lines equal one standard error bands. Gini coefficient in the y-axis, years in the x-axis.

Figure 6. The effects of fiscal consolidation on inequality - spending vs. based measures

Panel A. Spending

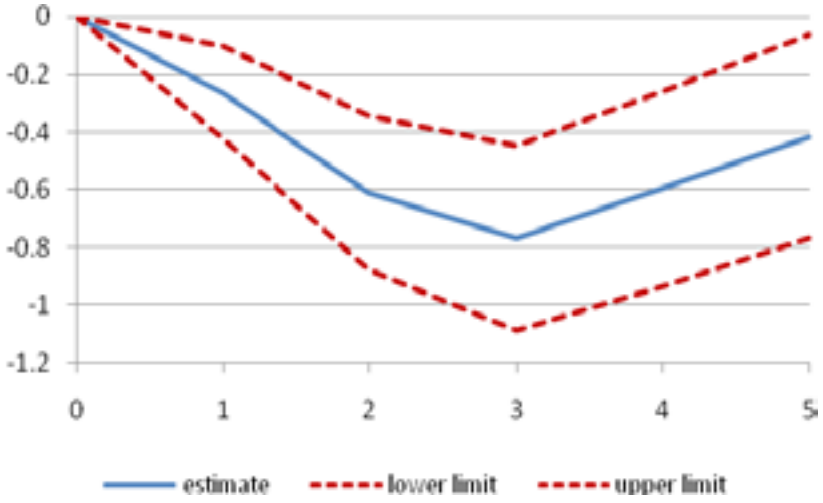


Panel B. Tax



Note: dotted lines equal one standard error bands. Gini coefficient in the y-axis, years in the x-axis.

Figure 7. The effects of fiscal consolidation on wage income (% of GDP)



Note: dotted lines equal one standard error bands. Wage income in the y-axis, years in the x-axis.