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On the behaviour of the functional components of government expenditures during fiscal consolidations^{*}

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Abstract

This paper analyses how the functional components and sub-components of government expenditures are affected by fiscal consolidations. A fixed-effects estimator is employed over a panel of 15 European Union countries during the period 1990-2012. The results show that spending on public services increases during fiscal consolidations, while spending on defence, public order, health, education and social protection is significantly cut. A more disaggregated analysis proves that fiscal consolidations are harmful for important social public expenditures, undermining citizens' safety, health assistance, investment in human capital and social protection. Public services are likely to be increased due to a rise in public debt transactions observed during periods of fiscal consolidation. All this evidence has proved to be stronger in a particular group of countries, known in the literature as PIIGS.

Keywords: Government expenditures; Functional components; Fiscal consolidations; European Union.

JEL classification: E62, H50.

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1. Introduction

The consolidation efforts observed in many countries have motivated several academics to analyse the characteristics and the empirical determinants of fiscal consolidation programmes. The rising of public deficits and debts in the aftermath of the recent Great Recession have revived the interest on this issue.

The funds transferred by fiscal authorities to rescue the banking sector and the discretionary measures adopted by several European Union (EU) governments, in particular, to boost the economic activity led to considerable fiscal deficits and pushed government debts to historically high levels. This forced EU countries to abandon those expansionary fiscal policies and to implement austerity programmes. The Greek crisis boosted this process, as countries want to convince the markets that they were in a better and solid position. Hence, several consolidation and austerity packages started to be implemented.

While EU institutions emphasize the importance of fiscal consolidations as a requirement for sustainable growth, the US consider that they may hurt short-term growth and longer adjustment periods should be allowed. Assessing the trade-off between consolidation of public finances and economic growth is fundamental for the formulation of effective policies. Several studies look at this relation and try to identify the determinants, impact, timing and the length of fiscal consolidations (Guichard et al., 2007; Alesina et al., 2008; Alesina and Ardagna, 2010; Barrios et al., 2010; Cimadomo et al., 2010; Afonso and Jalles, 2011; Sanz, 2011; Cimadomo, 2012; Agnello et al., 2013; Ball et al., 2013; Bi et al., 2013; Anderson et al. 2014; Agnello and Sousa, 2014; Cafiso and Cellini, 2014; Agnello et al., 2015; Cugnasca and Rother, 2015; Agnello et al., 2016). Others take into account the kind of consolidation to show that successful consolidations are primarily based on spending cuts rather than increasing taxes (Alesina and Perotti, 1995, 1997, 1998;

McDermott and Wescott, 1996; Buti and Sapir, 1998; Forni et al., 2010; Afonso and Jalles 2012; Erceg and Linde, 2013; Heylen et al., 2013, among others).

However, as far as we are concerned, no study on fiscal consolidations looks at their impact on the functional components of public expenditure. Sanz (2011) explores the relationship between components of government expenditure and government size, but he does not account for fiscal consolidation spells. A few other papers have also looked at those components but from a political perspective (see, for instance, Potrafke, 2010; Katsimi and Sarantides, 2012; Enkelman and Leibrecht, 2013; Morozoumi et al., 2014; Castro and Martins, 2016a, b). They analyse whether and how electoral motives, government ideology and political support affect the components of public expenditures, but they are silent regarding the role of fiscal consolidations.

The knowledge of how fiscal consolidations affect spending on education, health, social protection, public services, among others, is of the most importance for an adequate design of fiscal consolidation programmes. Knowing their impact on those components allows fiscal authorities to take action to mitigate the well known negative economic and social effects of fiscal consolidations and to avoid the deterioration of the well-being of the most vulnerable citizens. This analysis represents an important step forward relatively to the previous literature, as it allows us to identify and understand which (and how) items inside the main components of public expenditure are being more significantly affected by the processes of fiscal consolidations.

A fixed-effects estimator is used in the empirical analysis and the results show that spending on public services increases during fiscal consolidations, while spending on defence, public order, health, education and social protection is significantly cut. A more disaggregated analysis proves that fiscal consolidations are harmful for important social public expenditures, undermining citizens' safety, health assistance, investment in human

capital and social protection. Public services are likely to be increased due to a rise in public debt transactions observed during periods of fiscal consolidation. All this evidence has proved to be stronger in a particular group of countries, here called PIIGS.

This article is organized as follows. Section 2 presents a brief review of the relevant literature. Section 3 describes the data and presents the econometric model. The main results are presented and discussed in section 4 and section 5 concludes.

2. Literature review

The studies on fiscal consolidations have concentrated the attention on the factors that influence their implementation. The state of public finances and the economic conditions have been regarded in the literature as the most important conditionings of fiscal consolidations (Perotti, 1999; Giavazzi et al., 2000; Blanchard and Perotti, 2002; Guichard et al., 2007; Alesina et al., 2008; Barrios et al., 2010; Afonso and Jalles, 2011; Agnello, Caporale and Sousa, 2013; Agnello et al., 2014; Anderson et al., 2014). Fiscal consolidations are usually implemented when the stance of governments is weak, frequently related to large public debts; the domestic economy is not always thriving as expected and ends up being negatively affected by the austerity measures in the short-term. In the long-run, the economy tends to recover, but in some cases/countries and under certain conditions it may take quite a long time (Anderson et al., 2014).

Blanchard and Perotti (2002) show that positive government spending shocks increase output and private consumption and have a crowding-out effect over private investment, while positive tax shocks have a negative effect on output and private spending. Nevertheless, the problem is far from being resolved, as some recent studies have shown that several countries are now facing uncertainty about the effects of fiscal measures

on the economic activity (Cimadomo, 2012; Cimadomo et al., 2012; Anderson et al., 2014), as well as regarding the duration of such adjustment programs (Agnello et al., 2013).

Other studies focus on the impact of fiscal consolidations on income distribution. Concerning income distribution, Furceri et al. (2015) show that fiscal consolidations increase income inequality and lower wage income shares in the short and medium-term. Agnello and Sousa (2014) also uncover a significant widening of the income gap during episodes of fiscal consolidation. Moreover, Mulas-Granados (2005) finds that successful fiscal consolidations are associated with higher income inequality while Afonso and Jalles (2012) show that the cyclically adjusted primary balance and the duration of the consolidations contribute to their success.

The timing, size, and composition of the austerity measures are other important factors that can affect a fiscal consolidation, its likelihood of success and duration (von Hagen and Strauch, 2001; von Hagen et al., 2002; Agnello et al., 2013; Agnello et al., 2015; Agnello et al., 2016). In terms of timing, gradual consolidations are considered to be more successful than quick adjustments. However, Barrios et al. (2010) show that when public debt is very high and the economy is not growing, quick measures might be the best option. In the same line, von Hagen et al. (2002) also notice that when a fiscal consolidation lasts for a long period of time it can be affected by fatigue and the consolidation process might be reversed. Giavazzi and Pagano (1996) and von Hagen and Strauch (2001) put the emphasis on the size of the fiscal consolidations, which can indicate the extent of the governments' commitment to achieve long-term sustainability in public debt. In addition, Molnár (2012) notices that large consolidations need multiple instruments for the consolidation to succeed.

Regarding the composition, Alesina and Perotti (1995, 1997, 1998), McDermott and Wescott (1996), Buti and Sapir (1998), Forni et al. (2010), Erceg and Linde (2013) and

Heylen et al. (2013) show that spending-driven fiscal consolidation programs have better conditions to be successful than fiscal adjustments that rely essentially on tax increases and cuts in investment. Agnello et al. (2013) provide additional evidence that spending-driven consolidations are shorter than tax-driven consolidations and that the size of the consolidation program does not significantly affect the duration of fiscal consolidations. Molnár (2012) confirm that spending-driven adjustments are more likely to stabilise public debt than revenue-driven ones.

However, as far as we are concerned, no study on fiscal consolidations looks at their impact on the functional components of public expenditure. Sanz (2011) explores the relationship between components of government expenditure and government size in 25 developed countries and shows that fiscal discipline affects public spending composition. However, he does not identify fiscal consolidation spells; he only accounts for changes in the size of the government. That is not a suitable approach to understand how the components of public expenditure behave during fiscal consolidations. As the size of the government is measured by dividing total government spending by GDP, it accounts for effects from the level of total government spending and the economic cycle. Hence, we cannot learn much on the actual effect of fiscal consolidations.

Other few papers that look at the behaviour of the functional components of public expenditure take a political perspective. Potrafke (2010) finds that incumbents increase the growth of public health expenditures in election years, while Enkelman and Leibrecht (2013) conclude that election cycles are mainly found in the new democracies of Eastern Europe and in categories such as social welfare, general public services, environmental protection and infrastructures. More recently, Castro and Martins (2016a, b) found political

opportunism mainly in health, education, social welfare and general public services.¹ In this paper, we take a step forward and analyse how fiscal consolidations affect the components of public expenditure in a panel of 15 EU countries. We look not only at the first level of the functional components but also at their sub-components. The exploration of effects in the sub-levels of government expenditures is expected to provide a finer understanding of the impact of fiscal consolidations.

We also provide a comparative analysis between a particular group of countries, known in the literature as PIIGS (Portugal, Ireland, Italy, Greece and Spain) and the other ten EU countries considered in this study. The PIIGS are known for being more “relaxed” with their public accounts. They were also recently affected by unfavourable economic and financial conditions and increasing public deficits and debts. The unfavourable conditions that they have faced (recession and unemployment), the high levels of public deficits and debts that they present and the difficulties that they have felt in borrowing money to finance their economies were critical to account for this distinction. Moreover, due to those problems, they were forced to implement severe fiscal packages and some needed external financial assistance to overcome their financial and/or fiscal unbalances. This means that this study must pay a special attention to this group of countries.

3. Data and model specification

To analyse the impact of fiscal consolidations on the functional components of government expenditures, we collected annual data for the 15 countries that were members of the European Union in the end of the 1990s. The main reason to consider only those EU countries is that the disaggregated data for other EU countries is of poor quality. Even for

¹ Considering an economic decomposition of public expenditures, Katsimi and Sarantides (2012) and Morozoumi et al. (2014) show that elections tend to shift public spending towards current expenditures at the cost of public investment.

the selected countries, the available data provided by the Eurostat database for the functional components of public expenditure covers only the period 1990-2012.² Hence, we are forced to restrict our analysis to that time period.

The analysis developed in this study is based on a break-down of government expenditures as defined by the OECD in its Classification of the Functions of the Government (COFOG).³ It classifies government expenditure data from the System of National Accounts by the purpose for which the funds are used, also called functional decomposition. The first-level of this classification splits public expenditures into ten components: (i) general public services; (ii) defence; (iii) public order and safety; (iv) economic affairs; (v) environmental protection; (vi) housing and community amenities; (vii) health; (viii) recreation, culture and religion; (ix) education; (x) social protection. The second-level disaggregates each first-level group into up to nine sub-components. The total general government expenditures (*TotExpd*) and each of the ten components (and respective sub-components) are used as dependent variables in this analysis.⁴

Fiscal consolidation episodes were identified using the work of Devries et al. (2011) for the period 1990-2009 and updated from Kataryniuk and Vallés (2015) for the years 2010-2012. Both authors use a narrative approach to identify those consolidations. For the missing data for Greece and Luxembourg, we are consistent with the narrative approach and combine the information provided by Kataryniuk and Vallés (2015), Dellepiane and Hardiman (2012) and OECD (2011) country notes on *Restoring Public Finances* to obtain the respective consolidation periods, kind and size. Hence, our fiscal consolidation variable

² The countries (data availability) considered in this study are: Austria (1995-2012), Belgium (1990-2012), Denmark (1990-2012), Finland (1990-2012), France (1995-2012), Germany (1991-2012), Greece (1990-2012), Ireland (1990-2012), Italy (1990-2012), Luxembourg (1990-2012), Netherlands (1995-2012), Portugal (1990-2012), Spain (1995-2012), Sweden (1995-2012), United Kingdom (1990-2012).

³ See OECD (2009, 2011, 2013, 2015), *Government at a Glance*.

⁴ See Table A.1 in Annex for the definition of each component and sub-component.

(*Consolidation*) is a dummy variable that takes the value of 1 in the years in which a fiscal consolidation is being implemented (0, otherwise).

As argued by Devries et al. (2011), the standard statistical approach which focuses on variation in the cyclically adjusted primary budget balance (CAPB) may lead to biased results for two important reasons. First, the CAPB may suffer from measurement error that is potentially correlated with economic developments. Second, it omits periods during which fiscal consolidation programs are followed by adverse shocks and offsetting discretionary measures. For these reasons, we follow the narrative approach, which is based on the examination of accounts and records of what countries were intending to do at the time of publication of different institutional reports, to uncover policy actions that are motivated by deficit reduction.

The kind and size of fiscal consolidations are two related variables that can also influence the behaviour of the components of government spending. In particular, spending-driven consolidations (*SpendConsol*) might have a stronger impact on them than tax-driven consolidations (*TaxConsol*).⁵ These dummies will be used separately in the specifications to collect the respective effects. Regarding the size, we consider that the higher the fiscal consolidation package is, as percentage of GDP (*SizeConsol*), the more intense the impact on the components will be.⁶ A similar analysis will be provided for the size of spending-driven (*SizeSpendConsol*) and tax driven (*SizeTaxConsol*) consolidations. As longer consolidations might affect the fiscal components differently, we also estimate the effect of the duration of fiscal consolidations (*DurConsol*).

Moreover, in some additional specifications we account for the evolution of public debt (*Debt*), government budget surplus (*GBS*) and the cyclically adjusted budget surplus

⁵ See, among others, Molnár (2012), Heylen et al. (2013), Agnello et al. (2013) and the references therein.

⁶ In line with the works of Giavazzi and Pagano (1996), von Hagen and Strauch (2001), Molnár (2012) and Agnello et al. (2013), among others.

(*AdjGBS*), as unbalances in those fiscal variables are the ultimate reason for the implementation of fiscal consolidation packages. The data for these fiscal variables come from the Comparative Political Data Set I.

The data for the other economic and political variables also comes from the Comparative Political Data Set I. To control for the role of economic environment – well documented in the literature review – we use the growth rate of real GDP (*RealGDPgr*); the long-term interest rate on government bonds (*InterestRate*) accounts for the pressure on the spending components due to an increase in the burden of the public debt.

Following Alesina et al. (1997) and the recent works of Castro and Martins (2016a, b), two political variables were considered to control for the traditional opportunistic and partisan effects: a dummy variable that takes the value of 1 in the year of national legislative elections, and 0 otherwise (*Election*); and a dummy variable that takes de value of 1 when there is hegemony or dominance of left-wing parties in the cabinet, and 0 otherwise (*LeftGov*).⁷

Finally, to control for the impact of the structure of the population (demographic issues) on public spending, two additional variables are considered: the percentage of the population between 0 and 14 years of age (*Young*); and the percentage of the population with 65 or more years of age (*Elderly*). A complete description of the variables and some descriptive statistics can be found in Tables A.1 and A.2 in Annex.

We employ a fixed-effects estimator to test the following specification:

$$ExpdC_{it} = \beta_0 + \beta_1 Consolidation_{it} + \beta_2 RealGDPgr_{it-1} + \beta_3 \Delta InterestRate_{it} + \beta_4 Election_{it} + \beta_5 LeftGov_{it} + \beta_6 Young_{it} + \beta_7 Elderly_{it} + \delta Trend_{it} + v_i + e_{it} \quad (1)$$

⁷ *LeftGov* was computed from the *gov_party* variable in the CPDS database (it is equal to 1 when *gov_party* is equal to 4 and 5, i.e. when there is dominance or hegemony of left-wing parties).

where $i=1,\dots,15$, $t=1990,\dots,2012$. $ExpdC_{it}$ represents the real growth rate of the respective components (or sub-component) of government expenditures. The coefficient on *Consolidation* (β_1) captures the impact of a fiscal consolidation on each kind of government spending; β_2 to β_7 measure the effect of the economic, political and demographic controllers. A time-trend is also included in the specification to account for the evolution of spending over time and the technological progress. Regarding the last components, v_i is the individual effect of each country i , and e_{it} is the error term. Given the presence of individual effects v_i , the model can be estimated assuming those effects as fixed or random. Hausman tests support the fixed-effects estimator.

4. Empirical results

The results from the estimation of the impact of fiscal consolidations on the components of public expenditures are presented in Table 1. As the fiscal variables and some of the controllers are not stationary in levels, we use the respective growth rates.⁸ We start by looking at the impact of fiscal consolidations at the aggregated level of public spending, i.e. in the growth rate of total general government expenditures.

[Insert Table 1 around here]

As expected, the results presented in column (1) show that fiscal consolidations (*Consolidation*) have a significant negative impact on total public spending: during periods of fiscal consolidations the growth rate of total public expenditure is, on average, about two percentage points lower than in the other periods. In fact, fiscal consolidations are meant to

⁸ See Im, Pesaran and Shin panel unit root tests in Table A.3 in Annex. For the interest rate, we use its first differences.

reduce public spending, so this is not a surprising result. However, what we intend to analyse is what happens inside public spending, at the level of its components.

We consider the ten functional components of government expenditures (as defined by the OECD) to uncover the respective effects. The results are presented in columns (2)-(11) of Table 1 and clearly indicate that spending in most of the components is cut during fiscal consolidations. The ones in which the cuts are statistically more significant are defence, public order, environment, housing, health, education and social protection. Changes in spending on economic affairs and recreation have not proved to be as significant as the others.

However, the growth rate of spending in public services increases during fiscal consolidations. As this category includes public debt transactions, it is possible that increased spending in this sub-category may be happening during consolidations due to the likely rise in interest payments and outlays for underwriting and floating government loans (items inside public debt transactions). This is an issue that we will explore in greater depth below when we look at the items inside of the functional components of public spending.

When we look at the impact of the controllers, a better economic environment – i.e. an increase in real GDP growth rate (*RealGDP_gr*) – has a positive and significant impact on total spending and on most of its components. This means that their behaviour is pro-cyclical and in line with Alesina et al. (2008) findings for public spending. That behaviour is also observed in what concerns to the interest rate effect: when interest rates (*InterestRate*) rise, governments are forced to reduce spending (at aggregated and disaggregated levels) as the cost of financing public expenditures increases. This is more evident in components such defence, public order and social protection.

Regarding the political variables, we find that governments tend to increase total public expenditures during election years (*Election*). These results are in line with the

findings of other studies focusing on the EU (Mink and de Haan, 2006; and Efthyvoulou, 2012). The functional components in which expenditures are increased during elections are public services, public order, health, education and social protection. These are the items in which governments tend to spend more in proportion to the total expenditure and with which they can send a stronger sign of competence to the electorate. Moreover, these results confirm Castro and Martins (2016b) conclusions that the bigger and more ‘visible’ categories of public expenditure are the ones that are especially targeted by opportunistic governments during elections. Additionally, we also observe that despite government orientation (*LeftGov*) has no impact on total spending, left-wing governments are indeed more prone to increase spending on the following expenditure components: defence, public order and education.

The structure of the population (*Young, Elderly*) does not seem to matter much for the evolution of public spending or its components in this group of 15 EU countries. This might be the case because these countries share a common demographic structure and other political and economic reasons/motives play a more important role in the fluctuations of public spending components.

Finally, total government expenditures and most of its components exhibit a decreasing trend, which means that the respective growth rates have decreased over time. This tendency is considerable, in particular, for spending on environment, recreation and education.

The issue of endogeneity is also taken into account in our analysis. In Table A.4 in Annex are reported the results from an IV estimator, where fixed effects are controlled for. *Consolidation*, *RealGRPgr* and *InterestRate* are assumed to be endogenous and are instrumented with their first lags, a lag of inflation and a lag of the cyclically adjusted government budget surplus. The results are very similar, in particular in what concerns to

the effect of fiscal consolidations on the components of public spending: the ones in which we observe a significant impact are the same that we found in the regressions reported in Table 1. In fact, the Durbin-Wu-Hausman endogeneity test does not reject the null hypothesis that the differences in the coefficients are not systematic. We tried with other instruments, but the results was the same, so endogeneity does not seem to be an issue and we proceed using the fixed effects estimator.

Another aspect that worth to explore is whether and how the kind, size and duration of a fiscal consolidation affect each functional component of public expenditures. The respective results are reported in Table 2, but only for the consolidation variables. The controllers are the same that were used in the regressions shown in Table 1 but they are not reported here for the sack of parsimoniousness of the analysis and to save space. The results reported for *Consolidation* are replicated from Table 1.

[Insert Table 2 around here]

Spending-driven consolidations (*SpendConsol*) have a negative and significant impact on total expenditures and on most of its components. As these consolidations aim at reducing spending, this result is in line with our expectations and the empirical studies on the composition of fiscal consolidations (Molnár, 2012; Heylen et al., 2013; Agnello et al., 2013, among others). For the same reasons, we expected that tax-driven consolidation (*TaxConsol*) will not affect the spending components significantly. In fact, only housing expenditures are significantly decreased during tax-driven consolidations. However, when we look at the effect of the fiscal consolidation size, things change substantially. The size matters not only for total spending and spending-driven consolidations, but also for tax-driven consolidations. The higher the size of the fiscal consolidation package (total,

spending- or tax-driven) in percentage of GDP is, the more intense the respective impact on both total spending and on the respective components will be. Only the growth rate of public services is not significantly affected. This might, once again, have to do with the public debt transactions mentioned above. But we should stress that while a tax-driven consolidation might not have a significant impact on government expenditure components, its size ends up affecting spending in the same direction as spending-driven fiscal consolidations.

The results with the duration of consolidations (*DurConsol*) are slightly weaker, but they are in line with the previous ones as they show that longer consolidations end up being detrimental to spending on public order, housing health, education and social protection (besides total spending).

As the main reason for countries to implement austerity measures is related to increasing debts and deficits, we also replace the consolidation variables by these fiscal variables to show the consistency and robustness of our results. We start by considering the lag of the change in public debt ($\Delta Debt$) as percentage of GDP (it is its first-difference that is stationary; see Table A.3 in Annex), then the fiscal variable is replaced in the model by lag of the government budget surplus (*GBS*) as percentage of GDP. To account for the business cycle, we also use the lag of the cyclically adjusted budget surplus (*AdjGBS*). The results are consistent with the ones obtained with the consolidation variables, confirming our conclusions: total spending and spending in most of its components are significantly cut when public debt and deficit increase; the exception is, once again, public services.⁹

⁹ We also estimated some specifications where we replaced some controllers by other proxies like output gap, growth rate of real GDP per capita, and population growth. In other case, time dummies were used instead of the time trend. However, the conclusions of this study remain unaffected. Additionally, interaction effects between *Consolidation*, *Election* and *LeftGov* were also analysed, but no significant effects were found. These sensitivity analyses are not reported here to save space, but they are available upon request.

To understand the increase in the growth rate of spending in public services during fiscal consolidations and to check how those consolidations affect each particular item inside the ten components of public expenditures, we collect data on the sub-components of each component of public expenditures. Those data are available from the Eurostat database. Even though they present a shorter time span (1995-2012) than the previous data and also some missing data for a few countries/components, we ended up with reasonably good sets of panel data for each sub-component. This allows us to proceed with a more fine-tuned empirical analysis.

The results are presented in Tables 3 and 4. The structure of the model used in these estimations remains identical to the analysis for the first-level components, in the sense that each equation is related to the respective sub-component and estimated using the fixed-effects estimator over the same set of independent variables. We report the coefficients for all variables, except the time-trend. For the sake of parsimoniousness of the analysis we will only focus on the results for *Consolidation*.

[Insert Table 3 around here]

[Insert Table 4 around here]

A primary interest regarding these results is to check the origin of the increase in public services spending during fiscal consolidations. The results show that the source of that increase might be the public debt transactions. This is the only item for which the coefficient on *Consolidation* is positive and statistically significant. When we look at the expenditures lodged inside this sub-item (see Eurostat, 2011), we conjecture that the increased spending in this sub-category may be due to the likely rise in interest payments and outlays for underwriting and floating government loans. As countries also intend to

reduce public debt during fiscal consolidations, they can be using the reduction in the other components to finance the reduction of public debt (via the increase in public debt transactions), which ends up increasing spending in the public services component. Regarding the other items, we found only a significant decrease in executive affairs and general services research and development (R&D) expenditures, which ends up being unable to mitigate the strong positive effect of public debt transactions.

Military defence and foreign military aid are the items inside defence targeted more intensively during fiscal consolidations. We also observe significant cuts in public order items like police, fire and courts, but the spending with prisons is not significantly affected. Despite the expenditure on economic affairs does not change significantly, when we dig deeper inside this component, some of its items are indeed significantly negatively affected during fiscal consolidations: public spending on agriculture, transports and R&D. A different picture is obtained when we look inside spending in environmental protection: the statistical significance regarding their items is weak (see Table 3), in comparison with the overall effect of fiscal consolidations on this component identified in Table 1.

Changes in spending on housing amenities due to fiscal consolidations are mainly driven by housing developments, while health expenditures tend to be lower due to decreases of spending in hospital services, public health services, and R&D. Spending cuts in recreation seem to be driven by cuts in one item: sport activities. A different scenario is found when we look at what happens inside education and social protection expenditures: almost all items are negatively affected during processes of fiscal consolidations. One important outcome of these disaggregated results is that they reinforce the idea that fiscal consolidations end up being very harmful for important social public expenditures.

However, none of the previous analyses tells anything about how consolidations change the share of each component relatively to total expenditure or relatively to the other

components. Thus, next we test the cross-effects between the expenditure components. We replaced the dependent variable in the previous components-equations by the ratio of each component relatively to the others (and to total expenditures). This means that now we are measuring the relative effects between the components when the covariates change. The results are presented in Table 5, but only for the coefficient on *Consolidation*.¹⁰

[Insert Table 5 around here]

Each line presents the consolidation effect for the ratio of each component to each of the other components that are indicated in each column. The results clearly show that expenditures in public services increase significantly during periods of fiscal consolidations relatively to almost all the other components of public expenditures, and inclusive relatively to total expenditures.¹¹ Once again, the increase in public debt transactions during those periods might be driving these results.

As already mentioned, countries intending to reduce public debt during fiscal consolidations can be using the spending cuts in the other components to finance the reduction of public debt via the increase in public debt transactions, which ends up increasing spending in the public services relatively to the other components.

Spending in economic affairs is another component that rises significantly relatively to environment, health, recreation and education; in the other cases, the coefficient on consolidation remains positive, but insignificant. This increase during fiscal consolidations

¹⁰ Each regression was estimated using a fixed-effects estimator and the same covariates considered in our baseline model, but the estimates on their coefficients are not reported here to save space; however, they are available upon request.

¹¹ The exceptions are housing, recreation and social protection; the respective coefficients are positive but not statistically significant.

might be due to the intensification of general affairs related to the efforts needed to control public deficit and debt.

Defence and public order are significantly cut relatively to total expenditures during fiscal consolidation processes, but when compared with the other components, besides public services, spending on defence only decreases significantly relatively to social protection; public order also decreases relatively to social protection, education and health. In fact, public order seems to be one of the components that suffers the most during fiscal consolidations, as health and education also decrease relatively to total expenditures and social protection. Finally, spending on environmental issues and housing amenities do not change significantly relatively to either total expenditures or the other components.

In sum, public services is the component that increases more significantly during fiscal consolidations, relatively to the other components and to total spending. The other components behave differently between them, but relatively to total spending we find that spending in defence, public order, health, and education is significantly cut during periods of fiscal consolidations. Thus, contrary to what is argued by Sanz (2011) – that fiscal adjustments protect functions that have both a social and productive character, such as education and health spending – our findings show that citizens' safety, health assistance, and investment in human capital are harmed when governments decide to stabilize public accounts, which can undermine the living standards and human development of a country.¹²

¹² Similar conclusions are obtained when regressions with per capita values for total public expenditure and respective functional components are considered. In Table A.5 in Annex, we report the respective results with per capita values. These results are obtained from a dynamic model, as in this case we have to control for the observed persistency in the dependent variables (not always stationary). The results show that public services expenditure per capita also increases during fiscal consolidations while spending per capita on citizens' safety, health assistance, investment in human capital decrease significantly. Moreover, we also corroborate the results for the growth rates as we observe additional decreases in environment, housing, recreation and social protection spending per capita.

As a final and complementary exercise, we account for the heterogeneity. Since in the sample of countries used in this analysis we have a group known for being more “relaxed” with their public accounts (Portugal, Ireland, Italy, Greece and Spain, also known as PIIGS), we will split the analysis in two groups: PIIGS versus the others. The PIIGS have faced economic difficulties, high levels of public deficits and debts that forced them to implement severe fiscal packages. Thus the aim of this analysis is to find whether they have behaved differently from the others or not. The results from this separate analysis are presented in Table 6. We use the same specifications as in Table 1, however, in this case, in the top of the table are reported the results for the PIIGS and in the bottom we have the results for the other ten countries.

[Insert Table 6 around here]

The evidence is clear in showing that fiscal consolidations have a more intense and significant impact in the PIIGS than in the other countries. Consolidations measures reduce spending in total expenditures and in almost all its components (except public services and defence). The economic environment also seems to play a more important role in that specific group of countries. In general, the other results do not change much relatively to the ones we obtained with the whole sample.

These findings might mean that to offset the fiscal unbalances in the PIIGS, fiscal consolidations end up being even more harmful than in the others. This can have an important negative impact on the well-being of their most vulnerable citizens and undermine not only their economic growth, but also jeopardize their economic, social and human development.

5. Conclusions

This paper analyses the impact of fiscal consolidations on the functional components and sub-components of public expenditures using data for 15 EU countries over the period 1990-2012. The empirical analysis confirms that the growth rate of government spending decreases during periods of fiscal consolidations. But, more importantly, our results show that the components in which those decreases are more significant are defence, public order, environment, housing, health, education and social protection, especially if they are spending-driven and the higher their size is. All this evidence has proved to be stronger in a particular group of countries, known in the literature as PIIGS.

Nevertheless, spending in public services has consistently proven to increase during fiscal consolidations. Digging deeper in the data we find that the cause for that increase is the public debt transactions: when we look at the expenditures lodged inside this item, we realise that the boost in this item can be due to the likely rise in interest payments and outlays for underwriting and floating government loans. As countries also intend to reduce public debt during fiscal consolidations, they can use the cuts in the other components to finance the reduction of public debt (via the increase in public debt transactions), which ends up increasing spending in the public services component.

We also look at the behaviour of the items inside each of the other components and conclude that one important outcome of that very disaggregated analysis is that they reinforce the idea that fiscal consolidations end up being very harmful for important social public expenditures like health, education, social protection.

Additionally, we test the cross-effects between the expenditure components and relatively to total expenditure. The results show that expenditures in public services increase significantly during periods of fiscal consolidations relatively to almost all the

other components of public expenditures, and inclusive relatively to total expenditures. We believe that the increase in public debt transactions during those periods might be driving these results.

The other components behave differently between them, but relatively to total spending we find that spending in defence, public order, health, and education is significantly cut during periods of fiscal consolidations. This means that citizens' safety, health assistance, and investment in human capital are being harmed when governments decide to stabilize public accounts, which can undermine the living standards and human development of a country.

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Tables

Table 1. The impact of fiscal consolidations on the components of government expenditure

Dep. Vars:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Growth rate of</i>	<i>TotExpd</i>	<i>PubServ</i>	<i>Defence</i>	<i>PubOrder</i>	<i>EconAff</i>	<i>Environm</i>	<i>Housing</i>	<i>Health</i>	<i>Recreat</i>	<i>Educ</i>	<i>SocProtect</i>
<i>Consolidation</i>	-1.946** (0.687)	2.092* (1.040)	-2.221** (1.112)	-2.914** (1.146)	-0.083 (5.352)	-3.932** (1.786)	-9.776** (3.940)	-3.438*** (0.906)	-2.618* (1.388)	-2.602*** (0.865)	-1.831*** (0.500)
<i>RealGDPgr</i>	0.199** (0.101)	0.065 (0.179)	0.009 (0.483)	0.590*** (0.133)	-0.924 (1.053)	0.987*** (0.216)	1.043** (0.428)	0.686*** (0.134)	0.757*** (0.211)	0.420*** (0.125)	-0.034 (0.076)
<i>InterestRate</i>	-0.458* (0.269)	0.413 (0.399)	-1.671** (0.757)	-0.919* (0.456)	-0.652 (1.249)	-0.039 (0.608)	-1.688 (1.031)	-0.674 (0.504)	-0.606 (0.485)	-0.739 (0.434)	-0.438** (0.217)
<i>Election</i>	1.782** (0.679)	3.016*** (0.748)	1.354 (1.437)	1.637** (0.711)	-10.605 (9.979)	1.691 (1.531)	1.806 (1.772)	2.616*** (0.635)	1.910 (1.166)	1.579* (0.845)	1.629*** (0.428)
<i>LeftGov</i>	0.428 (0.778)	-1.181 (1.065)	3.972** (1.527)	2.216* (1.252)	-8.025 (8.027)	1.954 (1.898)	1.481 (1.973)	0.658 (0.559)	0.283 (1.483)	2.049** (0.956)	-0.419 (0.723)
<i>Young</i>	-0.515 (0.535)	-0.586 (0.446)	0.191 (0.556)	0.049 (0.524)	-2.193 (1.494)	-2.375** (1.178)	-1.773 (1.088)	0.462 (0.572)	-1.218* (0.740)	0.053 (0.487)	-0.554 (0.479)
<i>Elderly</i>	-0.143 (0.454)	0.058 (0.482)	-0.260 (0.902)	0.262 (0.517)	-4.036** (1.655)	0.361 (1.053)	0.891 (2.309)	0.044 (0.585)	-0.045 (0.423)	0.305 (0.481)	-0.139 (0.560)
<i>Trend</i>	-0.046 (0.077)	0.013 (0.094)	0.153 (0.122)	-0.075 (0.090)	0.297 (0.274)	-0.664** (0.272)	-0.282 (0.296)	0.001 (0.064)	-0.299** (0.129)	-0.114** (0.053)	-0.105 (0.085)
#Observations	295	295	295	295	295	295	295	295	295	295	295
#Countries	15	15	15	15	15	15	15	15	15	15	15
R-squared	0.085	0.098	0.065	0.156	0.021	0.150	0.050	0.251	0.142	0.179	0.092
Hausman test	37.04 [0.000]	23.21 [0.003]	28.78 [0.000]	15.82 [0.045]	23.15 [0.003]	82.24 [0.000]	38.72 [0.000]	16.36 [0.038]	99.58 [0.000]	33.43 [0.000]	56.95 [0.000]

Notes: See Tables A.1 and A2 in Annex. Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. The growth rate of the real values of each expenditure component is used as the respective dependent variable in each equation. *RealGDPgr* is lagged one period to avoid simultaneity problems and to account for the usual delay in the release of data for output. The *InterestRate* is in first differences as it is not stationary in levels (see Table A.3 in Annex). The results from the Hausman test-statistic (random versus fixed effects) are reported at the bottom of the table (the respective p-values in square brackets).

Table 2. Kind and size of the fiscal consolidations

Dep. Vars.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Growth rate of</i>	<i>TotExpd</i>	<i>PubServ</i>	<i>Defence</i>	<i>PubOrder</i>	<i>EconAff</i>	<i>Environm</i>	<i>Housing</i>	<i>Health</i>	<i>Recreat</i>	<i>Educ</i>	<i>SocProtect</i>
<i>Consolidation</i>	-1.946** (0.687)	2.092* (1.040)	-2.221** (1.112)	-2.914** (1.146)	-0.083 (5.352)	-3.932** (1.786)	-9.776** (3.940)	-3.438*** (0.906)	-2.618* (1.388)	-2.602*** (0.865)	-1.831*** (0.500)
<i>SpendConsol</i>	-2.687*** (0.484)	1.112 (1.057)	-1.507 (1.841)	-3.380*** (1.080)	-8.031* (4.153)	-4.768** (2.094)	-9.373** (3.526)	-3.626*** (0.642)	-3.277** (1.135)	-2.922*** (0.606)	-2.303*** (0.450)
<i>TaxConsol</i>	0.389 (1.108)	2.324 (1.665)	-1.720 (1.234)	-2.800 (1.147)	13.015 (9.382)	0.350 (1.775)	-7.271** (3.062)	-1.191 (1.176)	0.089 (1.718)	-0.524 (0.825)	0.030 (0.764)
<i>SizeConsol</i>	-1.962*** (0.413)	0.062 (0.584)	-3.014*** (0.559)	-2.209*** (0.358)	-4.461** (2.115)	-3.081*** (0.632)	-6.015*** (1.652)	-2.371*** (0.408)	-2.760*** (0.563)	-2.380*** (0.337)	-1.365*** (0.206)
<i>SizeSpendConsol</i>	-2.971*** (0.937)	0.341 (0.934)	-3.500*** (1.119)	-3.222*** (0.841)	-7.790** (3.706)	-4.341*** (1.401)	-7.918** (3.207)	-3.434*** (0.692)	-3.945*** (1.145)	-3.347*** (0.738)	-2.252*** (0.378)
<i>DurConsol</i>	-0.369** (0.188)	0.422 (0.328)	-0.131 (0.122)	-0.725** (0.321)	0.853 (1.918)	-0.496* (0.302)	-2.039** (0.980)	-0.733** (0.352)	-0.083 (0.124)	-0.473** (0.199)	-0.352*** (0.122)
Δ <i>Debt</i>	-0.208** (0.087)	0.212* (0.103)	-0.753** (0.317)	0.041 (0.186)	-0.280 (0.481)	-0.224 (0.152)	-0.899** (0.407)	-0.253** (0.125)	-0.147** (0.072)	-0.245*** (0.050)	-0.182** (0.066)
<i>GBS</i>	0.535** (0.203)	-0.513** (0.248)	0.467* (0.248)	0.383*** (0.122)	-1.079 (2.589)	0.351** (0.171)	1.688*** (0.510)	0.390*** (0.101)	0.509*** (0.166)	0.301*** (0.102)	0.258*** (0.086)
<i>AdjGBS</i>	0.505** (0.233)	-0.508** (0.247)	0.523** (0.229)	0.394*** (0.132)	-1.615 (3.257)	0.423** (0.180)	1.729*** (0.533)	0.344*** (0.123)	0.596*** (0.116)	0.275** (0.118)	0.229** (0.106)
#Observations	295	295	295	295	295	295	295	295	295	295	295
#Countries	15	15	15	15	15	15	15	15	15	15	15

Notes: See Table 1 and Tables A.1 and A.2 in Annex. Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. The results reported for *Consolidation* are replicated from Table 1. The variables Δ *Debt*, *GBS* and *AdjGBS* are lagged one period. The controllers are the same that were used in the regressions shown in Table 1 but they are not reported here for the sack of parsimoniousness of the analysis and to save space.

Table 3. Sub-components analysis (part I)

Dep.Vars.:	1. Public Services							2. Defence					3. Public Order				
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)	(1.6)	(1.7)	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(3.1)	(3.2)	(3.3)	(3.4)	(3.5)
Growth rate	ExecAff	ForAid	GServ	BasicRD	GServRD	OthServ	DebtTrs	MilDef	CivDef	FMAid	DefRD	OthDef	Police	Fire	Courts	Prisons	OthPO
Consolidation	-2.955** (1.304)	-5.505 (8.500)	-1.037 (2.194)	25.428 (33.824)	-17.414** (7.466)	2.314 (6.463)	5.706** (1.976)	-4.437*** (1.401)	-12.026 (9.860)	-13.574** (5.999)	11.420 (11.617)	-29.785** (13.059)	-4.604*** (1.061)	-4.893** (1.650)	-3.666** (1.530)	-3.331 (1.947)	-6.517 (6.399)
RealGDPgr	-0.198 (0.421)	1.046 (0.881)	0.159 (0.630)	-50.771 (52.738)	-0.769 (1.280)	2.681** (1.174)	-0.041 (0.594)	-0.399 (0.801)	-2.542 (2.706)	0.814 (1.551)	-2.102 (2.792)	7.777 (5.247)	0.137 (0.156)	0.155 (0.213)	0.507** (0.236)	0.339 (0.473)	0.361 (1.188)
InterestRate	-2.492** (0.851)	-0.066 (1.660)	0.409 (2.765)	107.072 (70.034)	-3.622 (2.893)	-2.197 (3.503)	2.091 (1.931)	-2.013* (0.949)	-1.762 (9.261)	1.747 (2.128)	3.174 (5.336)	-14.119 (10.799)	0.033 (0.344)	-2.581 (1.541)	-1.254 (0.794)	-0.933 (0.884)	7.031 (5.026)
Election	4.723** (1.682)	3.112 (4.473)	3.707 (2.390)	-106.442 (107.640)	-3.761 (5.417)	11.837 (9.988)	1.902 (1.571)	0.524 (1.991)	-6.883 (22.103)	-0.227 (6.962)	0.103 (9.592)	33.283 (33.805)	2.764 (1.714)	1.072 (1.373)	0.433 (1.037)	-0.529 (2.102)	-6.600 (7.353)
LeftGov	-0.764 (2.274)	6.056 (5.608)	1.036 (3.326)	232.043 (250.204)	6.602 (7.677)	10.548 (7.658)	-1.287 (2.250)	0.539 (2.820)	-2.534 (11.978)	-11.614 (7.101)	-15.581 (13.023)	5.162 (12.534)	0.060 (1.222)	1.768 (2.933)	-1.015 (1.532)	-0.006 (2.313)	-2.680 (4.528)
Young	0.402 (0.830)	-0.826 (5.957)	4.520 (3.797)	11.090 (44.590)	-3.071 (5.868)	6.325 (8.427)	-0.702 (2.184)	0.916 (1.192)	14.627 (10.687)	7.509 (4.615)	-21.974 (12.894)	8.419 (10.639)	1.622 (1.497)	2.247 (1.719)	1.525 (1.430)	1.622 (1.777)	7.028 (5.824)
Elderly	2.543 (1.623)	-1.836 (4.873)	0.416 (1.809)	247.726 (199.939)	1.693 (5.347)	4.439 (10.504)	-4.893*** (1.628)	-0.339 (1.518)	-9.600 (10.838)	-9.371 (7.358)	-22.796 (15.525)	-25.818 (21.285)	2.392 (1.550)	-1.259 (1.378)	-0.316 (1.458)	0.326 (1.173)	14.498* (7.091)
#Observations	212	206	212	187	182	204	212	212	140	184	168	169	212	212	212	212	207
#Countries	15	14	15	13	13	14	15	15	11	13	12	12	15	15	15	15	15
R-squared	0.122	0.041	0.028	0.056	0.081	0.022	0.210	0.062	0.016	0.073	0.042	0.046	0.159	0.122	0.116	0.074	0.047

Dep.Vars.:	4. Economic Affairs							5. Environmental Protection							
	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)	(4.6)	(4.7)	(4.8)	(4.9)	(5.1)	(5.2)	(5.3)	(5.4)	(5.5)	(5.6)
Growth rate	GenAff	Agric	Energy	Constr	Transp	Communic	OthInd	EAffRD	OthEAff	Waste	WastWater	Pollut	Protect	EnvirRD	OthEnvir
Consolidation	6.595 (15.140)	-10.123** (4.078)	-2.235 (11.325)	-7.057 (6.063)	-9.589*** (2.764)	-46.467* (26.287)	-3.200 (3.589)	-9.030*** (2.143)	-39.572 (24.924)	-10.557* (5.672)	-9.732 (14.966)	180.620 (165.717)	-11.408* (6.039)	-8.710 (9.131)	-2.101 (2.341)
RealGDPgr	-9.091 (7.670)	1.089** (0.396)	3.932* (1.821)	4.567* (2.232)	0.343 (0.575)	14.797 (13.693)	2.361* (1.243)	-1.039 (0.638)	2.945* (1.604)	0.351 (0.890)	0.675 (2.965)	3.169 (12.464)	0.244 (1.482)	-0.573 (2.089)	-0.122 (0.675)
InterestRate	28.561 (18.328)	-6.201 (5.763)	-1.616 (9.488)	-8.177* (4.235)	-2.552** (0.932)	19.697 (22.480)	-5.243 (3.393)	1.754 (0.995)	13.303 (16.342)	-2.042* (0.960)	5.236 (3.909)	258.269 (195.082)	-0.657 (2.429)	6.156 (4.554)	-1.763 (1.575)
Election	-8.344 (17.175)	12.642 (9.091)	-15.495 (17.014)	10.092 (9.700)	5.004 (5.295)	85.610 (125.526)	-4.459 (3.817)	-5.674 (3.232)	-19.535 (11.724)	0.403 (3.660)	-20.659 (18.210)	26.995 (30.091)	-10.461 (7.203)	-14.848 (16.019)	-3.815 (2.272)
LeftGov	-23.002 (29.646)	-10.754 (6.361)	21.540 (14.590)	-2.314 (4.662)	3.850 (4.107)	-142.275 (90.365)	-2.545 (5.708)	0.958 (3.944)	-16.215 (16.422)	4.783 (3.624)	-26.051 (24.068)	-98.671 (81.210)	3.188 (5.190)	4.525 (7.117)	5.754** (2.487)
Young	9.310 (18.262)	-3.785 (2.171)	-10.269 (7.364)	-6.681 (5.267)	-0.096 (3.157)	-83.735 (120.543)	-2.642 (4.807)	-0.565 (3.138)	34.727 (23.209)	4.238** (1.786)	20.730 (13.666)	-31.945 (42.267)	7.437 (4.834)	-7.149* (3.972)	6.006 (3.846)
Elderly	4.217 (19.602)	-2.109 (2.833)	-1.874 (14.786)	-8.500 (5.249)	2.521 (3.319)	-10.752 (97.236)	0.265 (6.087)	7.395** (2.534)	16.742 (14.486)	5.297 (4.335)	-4.276 (7.798)	91.033* (44.357)	11.290 (7.609)	13.029 (7.879)	5.364 (3.910)
#Observations	212	212	206	212	212	212	206	206	212	212	197	203	205	200	206
#Countries	15	15	14	15	15	15	15	14	15	15	14	14	14	14	14
R-squared	0.091	0.137	0.025	0.111	0.062	0.028	0.108	0.069	0.040	0.049	0.058	0.133	0.085	0.043	0.108

Notes: See Table 1 and Table A.1 in Annex. Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. A time-trend is included in all regressions. Data for *TransfGen*, (in Public Services) and *PubOrdRD* (in Public Order) are missing for most of the countries; the lack of variability makes impossible to run the model for the respective equations. The growth rate of the real value of each expenditure sub-component is used as dependent variable in the respective equation. *RealGDPgr* is lagged one period and the *InterestRate* is in first differences.

Table 4. Sub-components analysis (part II)

Dep.Vars.:	6. Housing Amenities						7. Health						8. Recreation					
	(6.1)	(6.2)	(6.3)	(6.4)	(6.5)	(6.6)	(7.1)	(7.2)	(7.3)	(7.4)	(7.5)	(7.6)	(8.1)	(8.2)	(8.3)	(8.4)	(8.5)	(8.6)
<i>Growth rate</i>	<i>HousDev</i>	<i>ComDev</i>	<i>WatSup</i>	<i>StrLight</i>	<i>HousRD</i>	<i>OthHous</i>	<i>MedProd</i>	<i>OutPServ</i>	<i>HospServ</i>	<i>PubHlth</i>	<i>HlthRD</i>	<i>OthHlth</i>	<i>Sports</i>	<i>Culture</i>	<i>Broadcast</i>	<i>Religious</i>	<i>RecrRD</i>	<i>OthRecr</i>
<i>Consolidation</i>	-17.043** (6.067)	-11.739* (5.490)	2.945 (6.921)	-2.029 (1.986)	-89.126 (58.719)	-18.643** (8.549)	-26.232 (20.728)	-13.763 (10.617)	-2.042*** (0.593)	-7.197*** (2.274)	-7.687*** (1.898)	6.390 (7.955)	-5.164** (1.996)	-1.744 (1.936)	-28.648 (33.850)	-11.597 (7.222)	-23.752 (21.194)	-30.029 (21.003)
<i>RealGDPgr</i>	1.195 (1.844)	0.949 (1.006)	1.525** (0.541)	-0.323 (1.246)	-1.035 (3.846)	1.890 (1.976)	1.090 (1.493)	0.750 (0.699)	0.321*** (0.101)	-0.202 (0.545)	0.335 (0.362)	2.945 (1.857)	0.998 (0.595)	0.451 (0.292)	18.439 (22.567)	-1.520 (2.210)	-1.721 (1.956)	-0.099 (2.823)
<i>InterestRate</i>	3.676 (3.196)	-0.862 (2.923)	-3.790 (2.787)	0.997 (3.570)	-20.839 (15.960)	7.168 (5.396)	-1.128 (1.780)	-1.657* (0.937)	-1.293*** (0.406)	-0.355 (0.903)	0.766 (0.787)	-4.525 (4.000)	-1.316 (0.799)	-0.476 (1.058)	59.737 (38.461)	1.657 (2.945)	0.369 (2.365)	3.830 (7.471)
<i>Election</i>	-16.986 (13.644)	-1.753 (6.892)	9.443* (5.049)	1.527 (5.621)	-22.547 (22.645)	16.835 (16.911)	46.712 (47.705)	22.678 (22.658)	2.830** (1.278)	6.280 (3.685)	7.595* (3.651)	-4.242 (5.938)	1.417 (1.646)	1.115 (1.737)	89.183 (137.063)	4.498 (4.647)	6.378 (16.956)	-14.037 (14.239)
<i>LeftGov</i>	-11.545 (12.079)	-12.986 (10.038)	7.535 (4.313)	2.061 (3.135)	-74.249 (44.346)	7.014 (9.752)	20.240 (19.985)	11.756 (9.358)	-0.728 (0.987)	-7.152 (6.741)	6.026*** (1.513)	-5.452 (4.993)	2.763 (2.523)	2.356 (2.504)	-165.850 (107.399)	3.363 (5.127)	17.559 (17.602)	6.478 (9.016)
<i>Young</i>	-24.104 (23.770)	-2.576 (8.428)	-9.611** (3.581)	-12.601 (8.032)	72.584 (56.592)	5.045 (12.948)	20.441 (24.877)	7.437 (10.427)	0.944 (1.210)	-0.355 (2.696)	3.072 (2.520)	13.347 (10.478)	-0.046 (1.688)	0.573 (2.490)	97.763 (68.927)	5.521 (10.850)	27.430 (35.408)	20.682 (18.940)
<i>Elderly</i>	-10.010 (5.972)	5.061 (3.948)	1.487 (3.332)	-4.702 (6.833)	-25.869 (21.113)	11.691 (9.078)	31.071 (33.682)	13.138 (14.246)	0.009 (0.663)	0.788 (2.943)	7.921*** (2.069)	-2.349 (9.193)	2.693 (1.611)	1.304 (1.738)	-66.912 (64.960)	11.660 (15.807)	40.491 (36.583)	23.089 (21.782)
#Observations	211	189	195	148	138	168	212	212	195	206	212	212	212	212	212	208	169	183
#Countries	15	13	14	11	10	13	15	15	14	14	15	15	15	15	15	15	12	13
R-squared	0.032	0.046	0.032	0.027	0.044	0.040	0.038	0.038	0.225	0.074	0.154	0.038	0.258	0.089	0.036	0.026	0.066	0.037

Dep.Vars.:	9. Education								10. Social Protection								
	(9.1)	(9.2)	(9.3)	(9.4)	(9.5)	(9.6)	(9.7)	(9.8)	(10.1)	(10.2)	(10.3)	(10.4)	(10.5)	(10.6)	(10.7)	(10.8)	(10.9)
<i>Growth rate</i>	<i>Prim</i>	<i>Second</i>	<i>PosSec</i>	<i>Tert</i>	<i>Genr</i>	<i>SubServ</i>	<i>EducRD</i>	<i>OthEduc</i>	<i>SickDis</i>	<i>Olders</i>	<i>Survivors</i>	<i>Family</i>	<i>UnemPrt</i>	<i>HousPrt</i>	<i>SocExcl</i>	<i>SocPrtRD</i>	<i>OthSocP</i>
<i>Consolidation</i>	-2.818*** (0.729)	-2.377** (0.937)	-57.689 (41.062)	-4.435* (2.090)	-5.432* (2.727)	-7.674* (4.104)	-24.999* (12.401)	-8.256** (3.544)	-4.407*** (0.944)	-1.371** (0.543)	-4.233** (1.804)	-5.099*** (1.271)	-6.500** (2.239)	-23.995 (45.942)	-5.980* (2.983)	-1.953 (17.534)	-3.173 (2.498)
<i>RealGDPgr</i>	0.027 (0.114)	0.084 (0.157)	1.392 (1.978)	0.250 (0.220)	-1.088 (1.017)	-0.253 (0.585)	0.403 (2.637)	-0.208 (0.653)	0.000 (0.159)	-0.039 (0.122)	-0.444 (0.280)	0.760*** (0.319)	-1.870*** (0.319)	3.015 (14.813)	0.427 (0.434)	5.666** (2.448)	-0.149 (0.567)
<i>InterestRate</i>	-0.591* (0.316)	-1.488*** (0.413)	52.984 (62.364)	-0.024 (1.222)	1.238 (1.576)	-0.522 (1.089)	-12.660 (7.299)	0.813 (2.218)	-0.599** (0.258)	-0.915*** (0.263)	-0.145 (0.588)	-1.784* (0.948)	-2.698** (0.953)	102.750 (80.611)	-7.269* (3.837)	-3.828 (2.827)	-1.682 (1.591)
<i>Election</i>	1.944** (0.729)	1.257 (0.728)	82.280 (105.392)	1.290 (1.541)	-5.704 (6.966)	1.423 (3.511)	3.012 (10.776)	-3.016 (2.644)	2.722* (1.425)	0.874** (0.327)	1.302 (1.462)	1.797 (1.561)	0.709 (1.542)	9.100 (54.857)	-6.520 (4.858)	20.906 (22.234)	3.605 (4.479)
<i>LeftGov</i>	0.935 (0.823)	2.352 (1.486)	-96.775 (100.164)	0.767 (1.400)	1.383 (10.240)	3.252 (3.656)	-8.273 (6.745)	0.239 (2.341)	1.004 (2.134)	-0.840 (0.804)	1.926 (2.552)	-0.958 (0.944)	4.421 (2.959)	-115.185 (86.918)	2.246 (3.413)	16.921 (21.079)	0.079 (3.169)
<i>Young</i>	-0.412 (1.497)	0.444 (1.068)	-75.596 (50.833)	2.408 (2.017)	-12.985 (14.245)	-3.272 (1.946)	12.328 (8.197)	-4.393 (2.829)	-0.228 (2.163)	1.327** (0.604)	1.654 (1.323)	-2.715 (2.120)	-0.250 (2.126)	-12.477 (23.463)	0.227 (2.160)	-35.452 (25.226)	-0.945 (1.691)
<i>Elderly</i>	0.625 (1.036)	0.643 (0.515)	35.982 (42.722)	-0.074 (1.871)	1.670 (4.208)	1.610 (2.863)	8.742* (4.697)	1.131 (2.027)	0.959 (1.032)	0.376 (0.510)	1.435 (1.137)	-1.233 (1.850)	-1.004 (2.040)	104.983 (69.116)	-2.109 (2.367)	-44.776* (22.825)	0.135 (1.863)
#Observations	212	212	147	212	206	206	205	212	212	212	212	212	212	195	212	170	212
#Countries	15	15	10	15	14	14	15	15	15	15	15	15	15	14	15	13	15
R-squared	0.255	0.223	0.062	0.044	0.042	0.065	0.066	0.067	0.126	0.038	0.053	0.272	0.197	0.085	0.036	0.055	0.065

Notes: See Table 1, Table 3 and Table A.1 in Annex. Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. A time-trend is included in all regressions. The growth rate of the real value of each expenditure sub-component is used as dependent variable in the respective equation. *RealGDPgr* is lagged one period and the *InterestRate* is in first differences.

Table 5. Fiscal consolidation effects in the ratios between the public expenditure components

	<i>PubServ</i>	<i>Defence</i>	<i>PubOrder</i>	<i>EconAff</i>	<i>Environm</i>	<i>Housing</i>	<i>Health</i>	<i>Recreat</i>	<i>Educ</i>	<i>SocProtect</i>	<i>TotExpd</i>
<i>PubServ</i>	--	48.270*	87.332*	22.715*	260.84**	81.108	12.379**	153.73	15.440**	0.734	0.661*
	--	(25.874)	(45.816)	(16.102)	(114.32)	(98.111)	(5.611)	(97.817)	(7.007)	(1.323)	(0.354)
<i>Defence</i>		--	10.444	5.108	35.334	-6.906	0.239	11.827	0.191	-0.727**	-0.168**
		--	(7.163)	(6.444)	(25.998)	(13.699)	(0.572)	(10.967)	(0.484)	(0.308)	(0.080)
<i>PubOrder</i>			--	3.547	8.527	-11.704	-1.405**	-7.653	-1.373*	-1.005**	-0.261**
			--	(5.408)	(15.228)	(13.893)	(0.674)	7.017	(0.750)	(0.386)	(0.091)
<i>EconAff</i>				--	118.02*	35.720	5.442*	74.677*	8.172**	0.196	0.281
				--	(64.403)	(42.781)	(3.013)	(39.815)	(3.795)	(1.142)	(0.263)
<i>Environm</i>					--	-0.424	-0.307	3.064	-0.123	-0.223*	-0.062
					--	(7.164)	(0.294)	(2.935)	(0.366)	(0.118)	(0.042)
<i>Housing</i>						--	-0.171	1.369	-0.242	-0.412	-0.094
						--	(1.241)	(3.889)	(1.165)	(0.362)	(0.125)
<i>Health</i>							--	15.526	0.046	-1.631**	-0.374**
							--	(20.929)	(1.370)	(0.769)	(0.179)
<i>Recreat</i>								--	-0.308	-0.377*	-0.091
								--	(0.651)	(0.213)	(0.068)
<i>Educ</i>									--	-1.839***	-0.410**
									--	(0.675)	(0.168)
<i>SocProtect</i>										--	0.509
										--	(0.359)
<i>TotExpd</i>											--
											--

Notes: Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. Each line presents the consolidation effect (*Consolidation* coefficient, where each regression was estimated with the same covariates as in the baseline model – see Table 1) for the ratio of the respective component (in line) to each of the other components that are indicated in each column. The estimates for the coefficients on the other controllers are not reported here to save space, but they are available upon request.

Table 6. PIIGS versus the other EU countries

<i>Growth rate of</i>	<i>TotExpd</i>	<i>PubServ</i>	<i>Defence</i>	<i>PubOrder</i>	<i>EconAff</i>	<i>Environm</i>	<i>Housing</i>	<i>Health</i>	<i>Recreat</i>	<i>Educ</i>	<i>SocProtect</i>
PIIGS	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Consolidation</i>	-4.461*** (1.409)	-0.089 (1.534)	-1.878 (2.517)	-5.488* (3.188)	-6.777** (3.458)	-4.328*** (1.089)	-18.199** (8.181)	-6.866*** (1.098)	-8.203*** (1.613)	-5.816*** (1.419)	-3.819*** (1.173)
<i>RealGDPgr</i>	0.112 (0.157)	0.358 (0.416)	0.515 (0.417)	0.793* (0.418)	-1.610 (3.175)	1.598*** (0.271)	0.699 (1.623)	0.782** (0.380)	0.562* (0.328)	0.478** (0.197)	0.022 (0.254)
<i>InterestRate</i>	-0.529 (0.624)	0.345 (0.576)	-2.027** (0.878)	-1.187** (0.567)	-1.604 (1.966)	0.376 (0.970)	-2.208 (2.148)	-0.521 (0.952)	-0.186 (0.837)	-0.666 (0.810)	-0.561* (0.288)
<i>Election</i>	1.689 (1.149)	3.945*** (1.223)	4.075* (2.379)	0.873 (1.346)	-0.610 (7.678)	1.715 (3.669)	-0.663 (2.680)	2.947** (1.174)	2.950 (2.189)	2.166* (1.255)	2.018*** (0.615)
<i>LeftGov</i>	1.332 (1.518)	-1.044 (1.785)	7.311*** (1.895)	5.245** (2.308)	-2.243 (7.871)	0.518 (2.190)	3.486* (1.788)	2.188* (1.133)	1.500 (2.987)	4.388*** (1.057)	0.447 (1.046)
<i>Young</i>	-0.922 (1.472)	0.759 (0.622)	0.150 (1.638)	-0.480 (1.044)	-1.595 (5.291)	-0.822 (1.051)	-2.882 (3.860)	-0.105 (0.939)	-3.006* (1.802)	-0.435 (0.927)	-0.309 (0.708)
<i>Elderly</i>	-0.376 (0.854)	-1.447* (0.760)	0.458 (1.453)	0.470 (0.831)	-4.081* (2.363)	-0.256 (1.365)	4.306 (4.367)	-0.287 (1.393)	-0.088 (1.795)	0.182 (1.270)	-0.887 (0.538)
<i>Trend</i>	-0.049 (0.522)	0.778** (0.312)	0.057 (0.604)	-0.037 (0.350)	0.474 (2.144)	-0.320 (0.296)	-0.938 (1.107)	-0.079 (0.223)	-0.855 (0.556)	-0.208 (0.270)	0.173 (0.287)
#Observations	99	99	99	99	99	99	99	99	99	99	99
#Countries	5	5	5	5	5	5	5	5	5	5	5
R-squared	0.163	0.226	0.204	0.273	0.043	0.366	0.072	0.455	0.341	0.355	0.185
Other Countries	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Consolidation</i>	-0.815 (0.626)	2.552* (1.470)	-1.707** (0.716)	-1.528** (0.729)	2.316 (8.919)	-2.599 (2.837)	-2.949 (2.903)	-1.643* (0.762)	0.303 (1.226)	-0.911 (0.624)	-1.179** (0.439)
<i>RealGDPgr</i>	0.097 (0.133)	0.022 (0.222)	-0.568 (0.757)	0.266 (0.154)	-0.805 (1.036)	0.672** (0.258)	0.849** (0.400)	0.375* (0.177)	0.382 (0.288)	0.155 (0.196)	-0.122 (0.090)
<i>InterestRate</i>	0.269 (0.421)	0.169 (0.903)	0.437 (0.488)	0.665 (0.658)	0.405 (1.935)	0.069 (1.998)	0.335 (1.992)	0.355 (0.705)	0.569 (1.075)	0.262 (0.791)	0.135 (0.451)
<i>Election</i>	2.010** (0.746)	2.572** (1.030)	-0.155 (1.856)	2.285*** (0.813)	-14.817 (14.108)	1.415 (1.377)	4.476** (1.707)	2.526*** (0.703)	1.487 (1.378)	1.445 (1.014)	1.529** (0.581)
<i>LeftGov</i>	0.060 (0.984)	-1.842*** (0.631)	2.501 (1.671)	0.275 (1.589)	-10.696 (10.892)	3.287 (3.459)	1.426 (2.839)	0.363 (0.812)	1.209 (1.849)	1.140 (1.617)	-1.086 (0.705)
<i>Young</i>	0.251 (0.743)	-0.084 (0.233)	0.247 (1.332)	1.479* (0.772)	-3.885 (5.914)	-4.702* (2.359)	-5.624** (1.828)	1.294 (0.721)	-0.113 (1.205)	0.597 (0.820)	0.237 (0.913)
<i>Elderly</i>	0.321 (0.628)	0.380 (0.561)	-0.056 (1.325)	0.823 (0.584)	-4.690 (4.299)	-0.829 (1.420)	-3.320* (1.739)	0.624 (0.644)	0.759 (0.857)	0.667 (0.617)	0.474 (0.901)
<i>Trend</i>	-0.047 (0.084)	-0.071 (0.076)	0.101 (0.126)	-0.093* (0.048)	0.188 (0.225)	-0.691** (0.274)	-0.119 (0.250)	0.017 (0.061)	-0.191* (0.099)	-0.105 (0.076)	-0.153 (0.108)
#Observations	196	196	196	196	196	196	196	196	196	196	196
#Countries	10	10	10	10	10	10	10	10	10	10	10
R-squared	0.060	0.086	0.035	0.117	0.024	0.096	0.071	0.125	0.047	0.068	0.082

Notes: See Table 1. Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. In the first block of estimations are used only the group of countries named as PIIGS (Portugal, Ireland, Italy, Greece and Spain); in the second block are considered only the other ten countries.

ANNEX

Table A.1. Description of the Variables

Variable	Description
<i>TotExpd</i>	Total general government expenditure.
<i>PubServ</i>	General public services, which comprises the following items: (i) Executive and legislative organs, financial and fiscal affairs, and external affairs (<i>ExecAff</i>); (ii) Foreign economic aid (<i>ForAid</i>); (iii) General services (<i>GServ</i>); (iv) Basic research (<i>BasicRD</i>); (v) R&D general public services (<i>GServRD</i>); (vi) Other general public services (<i>OthServ</i>); (vii) Public debt transactions (<i>DebtTRS</i>); (viii) Transfers of a general character between different levels of government (<i>TransfGen</i>).
<i>Defence</i>	Defence expenditures, which comprises the following items: (i) Military defence (<i>MilDef</i>); (ii) Civil defence (<i>CivDef</i>); (iii) Foreign military aid (<i>FMilAid</i>); (iv) R&D defence (<i>DefRD</i>); (v) Other defence expenditures (<i>OthDef</i>).
<i>PubOrder</i>	Public order and safety, which comprises the following items: (i) Police services (<i>Police</i>); (ii) Fire-protection services (<i>Fire</i>); (iii) Law courts (<i>Courts</i>); (iv) Prisons (<i>Prisons</i>); (v) R&D public order and safety (<i>PubOrdRD</i>); (vi) Other public order and safety expenditures (<i>OthPO</i>).
<i>EconAff</i>	Economic affairs expenditures, which comprises the following items: (i) General economic, commercial and labour affairs (<i>GenAff</i>); (ii) Agriculture, forestry, fishing and hunting (<i>Agric</i>); (iii) Fuel and energy (<i>Energy</i>); (iv) Mining, manufacturing and construction (<i>Constr</i>); (v) Transport (<i>Transp</i>); (vi) Communication (<i>Communic</i>); (vii) Other industries (<i>OthInd</i>); (viii) R&D economic affairs (<i>EAffRD</i>); (ix) Other economic affairs expenditures (<i>OthEAff</i>).
<i>Environm</i>	Environmental protection expenditures, which comprises: (i) Waste management (<i>Waste</i>); (ii) Waste water management (<i>WastWater</i>); (iii) Pollution abatement (<i>Pollut</i>); (iv) Biodiversity and landscape protection (<i>Protect</i>); (v) R&D environmental protection (<i>EnvirRD</i>); (vi) Other environmental protection expenditures (<i>OthEnvir</i>).
<i>Housing</i>	Housing and community amenities, which comprises the following items: (i) Housing development (<i>HousDev</i>); (ii) Community development (<i>ComDev</i>); (iii) Water supply (<i>WatSup</i>); (iv) Street lighting (<i>StrLight</i>); (v) R&D housing and community amenities (<i>HousRD</i>); (vi) Other housing and community amenities expenditures (<i>OthHous</i>).
<i>Health</i>	Health expenditures, which comprises the following items: (i) Medical products, appliances and equipment (<i>MedProd</i>); (ii) Outpatient services (<i>OutPServ</i>); (iii) Hospital services (<i>HospServ</i>); (iv) Public health services (<i>PubHlth</i>); (v) R&D health (<i>HlthRD</i>); (vi) Other health expenditures (<i>OthHlth</i>).
<i>Recreat</i>	Recreation, culture and religion expenditures, which comprises the following items: (i) Recreational and sporting services (<i>Sports</i>); (ii) Cultural services (<i>Culture</i>); (iii) Broadcasting and publishing services (<i>Broadcast</i>); (iv) Religious and other community services (<i>Religious</i>); (v) R&D recreation, culture and religion (<i>RecrRD</i>); (vi) Other recreation, culture and religion expenditures (<i>OthRecr</i>).
<i>Educ</i>	Education expenditures, which comprises the following items: (i) Pre-primary and primary education (<i>Prim</i>); (ii) Secondary education (<i>Second</i>); (iii) Post-secondary non-tertiary education (<i>PosSec</i>); (iv) Tertiary Education (<i>Tert</i>); (v) General education expenditures not defined by level (<i>Genr</i>); (vi) Subsidiary services to education (<i>SubServ</i>); (vii) R&D education (<i>EducRD</i>); (viii) Other education expenditures (<i>OthEduc</i>).
<i>SocProtect</i>	Social protection expenditures, which comprises the following items: (i) Sicknes and disability (<i>SickDis</i>); (ii) Old age (<i>Olders</i>); (iii) Survivors (<i>Survivors</i>); (iv) Family and children (<i>Family</i>); (v) Unemployment protection (<i>UnemPrt</i>); (vi) Housing protection (<i>HousPrt</i>); (vii) Social exclusion (<i>SocExcl</i>); (viii) R&D social protection (<i>SocPrtRD</i>); (ix) Other social protection expenditures (<i>OthSocP</i>).
<i>Consolidation</i>	Dummy variable that takes the value of 1 in the years in which a fiscal consolidation is implemented; 0 otherwise.
<i>SpendConsol</i>	Dummy variable that takes the value of 1 in the years during which a spending-driven fiscal consolidation is implemented; and 0 otherwise; this is defined as the change in the primary expenditure (as percentage of GDP) that is larger than 50% of the overall change in the CAPB (as percentage of GDP).
<i>TaxConsol</i>	Dummy variable that takes the value of 1 when a tax-driven fiscal consolidation is implemented; 0 otherwise.
<i>SizeConsol</i>	Size of the fiscal consolidation package in percentage of GDP.
<i>SizeSpendConsol</i>	Size of the spending-driven fiscal consolidation in percentage of GDP.
<i>SizeTaxConsol</i>	Size of the tax-driven fiscal consolidation in percentage of GDP.
<i>DurConsol</i>	Duration of the fiscal consolidation programme (in years).
<i>Debt</i>	Government debt as percentage of GDP.
<i>GBS</i>	Government budget surplus before interest payments (primary balance) as percentage of GDP.
<i>AdjGBS</i>	Cyclically adjusted government budget surplus before interest payments (primary balance) as percentage of GDP.
<i>RealGDPgr</i>	Growth rate of real GDP.
<i>InterestRate</i>	Long-term interest rate on government bonds.
<i>Election</i>	Dummy variable that takes de value of 1 in the year of legislative elections; 0 otherwise.
<i>LeftGov</i>	Dummy variable that takes de value of 1 when there is hegemony or dominance of left-wing parties; 0 otherwise.
<i>Young</i>	Percentage of the population between 0 and 14 years of age.
<i>Elderly</i>	Percentage of the population with 65 or more years of age.

Sources: OECD (2009, 2011, 2013, 2015), *Government at a Glance*; Eurostat (<http://ec.europa.eu/eurostat/data/database>); Comparative Political Data Set I (<http://www.cpcds-data.org/>). The data for fiscal consolidations were obtained from Devries et al. (2011) for the period 1990-2009 and updated from Kataryniuk and Vallés (2015) for the years 2010-2012 (both follow a narrative approach). For Greece and Luxembourg, we are consistent with the narrative approach and combine the information provided by Kataryniuk and Vallés (2015), Dellepiane and Hardiman (2012) and OECD (2011) country notes on *Restoring Public Finances* to obtain the respective consolidation periods, kind and size.

Table A.2. Descriptive Statistics

	Obs	Mean	Std.Dev.	Min.	Max.
<i>TotExpd</i>	304	1.927	5.470	-26.934	34.653
<i>PubServ</i>	304	0.748	6.338	-20.380	29.341
<i>Defence</i>	304	-0.003	10.920	-70.082	78.868
<i>PubOrder</i>	304	18.312	272.288	-28.437	474.367
<i>EconAff</i>	304	0.771	49.520	-68.114	279.137
<i>Environm</i>	304	3.883	17.288	-73.078	210.175
<i>Housing</i>	304	2.118	29.849	-93.373	397.462
<i>Health</i>	304	4.282	19.388	-17.679	321.667
<i>Recreat</i>	304	3.668	16.316	-36.217	235.357
<i>Educ</i>	304	2.114	6.088	-19.062	45.758
<i>SocProtect</i>	304	2.566	4.772	-14.449	21.271
<i>Consolidation</i>	345	0.351	0.478	0.000	1.000
<i>SpendConsol</i>	345	0.214	0.411	0.000	1.000
<i>TaxConsol</i>	345	0.125	0.331	0.000	1.000
<i>SizeConsol</i>	345	0.465	0.976	-0.200	7.800
<i>SizeSpendConsol</i>	345	0.281	0.616	-0.290	3.800
<i>SizeTaxConsol</i>	345	0.193	0.491	-0.740	4.100
<i>DurConsol</i>	345	0.878	1.532	0.000	8.000
<i>Debt</i>	345	71.466	31.322	4.638	179.868
<i>GBS</i>	345	0.107	3.689	-28.030	8.113
<i>AdjGBS</i>	345	0.093	3.336	-23.165	7.899
<i>RealGDPgr</i>	345	2.094	2.776	-8.539	11.272
<i>InterestRate</i>	337	6.020	3.164	1.403	22.498
<i>Election</i>	345	0.264	0.441	0.000	1.000
<i>LeftGov</i>	344	0.259	0.439	0.000	1.000
<i>Young</i>	345	17.476	2.227	12.809	27.319
<i>Elderly</i>	345	15.834	2.090	10.767	21.080

Notes: See Table A.1. All government expenditures are in growth rates of the respective real values (base year: 2005). Time period: 1990-2012 (annual data); Countries and respective years of fiscal consolidations: Austria (1996-1997, 2001-2002, 2011-2012), Belgium (1990, 1992-1994, 1996-1997, 2010-2012), Denmark (1995, 2011-2012), Finland (1992-1997, 2010-2012), France (1991, 195-1997, 1999-2000, 2011-2012), Germany (1991-1995, 1997-2000, 2003-2004, 2006-2007, 2011-2012), Greece (1991-1992, 1994-2000, 2010-2012), Ireland (2009-2012), Italy (1991-1998, 2004-2007, 2011-2012), Luxembourg (1996-1997), Netherlands (1991-1993, 2004-2005, 2011-2012), Portugal (2000, 2002, 2005-2007, 2010-2012), Spain (1992-1997, 2010-2012), Sweden (1993-1998), United Kingdom (1994-1999, 2010-2012).

Table A.3. Panel unit root tests: Im, Pesaran and Shin test

	Level		Growth rate / 1 st -Diff.	
	Stat.	p-value	Stat.	p-value
<i>TotExpd</i>	1.6606	0.9516	-8.3716	0.0000
<i>PubServ</i>	0.7933	0.7862	-6.0609	0.0000
<i>Defence</i>	-0.3946	0.3466	-6.8883	0.0000
<i>PubOrder</i>	0.7690	0.7791	-6.9157	0.0000
<i>EconAff</i>	-0.2080	0.4176	-9.6827	0.0000
<i>Environm</i>	-0.5905	0.2774	-6.1128	0.0000
<i>Housing</i>	0.1144	0.5455	-6.4122	0.0000
<i>Health</i>	2.8627	0.9979	-6.1401	0.0000
<i>Recreat</i>	-0.7601	0.2236	-4.4237	0.0000
<i>Educ</i>	0.6114	0.7295	-7.1947	0.0000
<i>SocProtect</i>	3.1508	0.9992	-8.0413	0.0000
<i>Debt</i>	2.1822	0.9855	-3.7738	0.0001
<i>GBS</i>	-2.8064	0.0025	-9.4788	0.0000
<i>AdjGBS</i>	-2.9966	0.0014	-8.1028	0.0000
<i>RealGDP</i>	1.4257	0.9230	-5.1036	0.0000
<i>InterestRate</i>	-0.6388	0.2615	-5.5852	0.0000
<i>Young</i>	-4.0402	0.0000	-1.4457	0.0741
<i>Elderly</i>	-7.0569	0.0000	-15.2489	0.0000

Notes: See Table A.1. The tests in the last column for the variables *Debt*, *GBS*, *AdjGBS* and *InterestRate* are in first differences while for the other variables are in growth rates.

Table A.4. Endogeneity: IV estimator

Dep. Vars.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Growth rate of</i>	<i>TotExpd</i>	<i>PubServ</i>	<i>Defence</i>	<i>PubOrder</i>	<i>EconAff</i>	<i>Environm</i>	<i>Housing</i>	<i>Health</i>	<i>Recreat</i>	<i>Educ</i>	<i>SocProtect</i>
<i>Consolidation</i>	-2.294** (1.113)	2.524* (1.526)	-2.848** (1.304)	-2.869* (1.644)	0.550 (7.014)	-7.910** (3.584)	-12.034* (6.510)	-3.430* (2.083)	-2.099 (2.484)	-4.135** (1.995)	-2.988* (1.677)
<i>RealGDPgr</i>	0.957** (0.458)	-0.009 (0.424)	0.743 (0.743)	1.542** (0.611)	-1.548 (4.462)	0.421 (1.000)	3.034* (1.832)	0.978** (0.496)	1.538** (0.742)	0.466 (0.534)	0.011 (0.369)
<i>InterestRate</i>	-0.339 (0.665)	2.547* (1.407)	-1.160 (1.440)	0.040 (0.636)	-1.515 (8.356)	-1.215 (1.203)	0.326 (1.733)	-1.914** (0.808)	-1.725 (1.132)	-1.410*** (0.283)	-2.395** (1.207)
<i>Election</i>	1.875** (0.890)	2.403** (0.972)	1.022 (1.809)	1.682 (1.075)	-10.866 (8.988)	1.819 (1.625)	0.759 (3.068)	3.167*** (0.934)	2.481* (1.322)	1.884** (0.876)	2.222*** (0.786)
<i>LeftGov</i>	0.085 (0.988)	-1.400 (1.016)	3.717* (1.907)	1.622 (1.224)	-7.491 (4.993)	2.996 (2.158)	0.551 (2.200)	0.864 (0.833)	-0.061 (2.052)	2.441* (1.301)	0.282 (1.216)
<i>Young</i>	-0.323 (0.489)	-0.849 (0.627)	0.304 (0.612)	0.236 (0.436)	-3.404 (3.995)	-1.948** (0.981)	-0.124 (1.877)	0.522 (0.622)	-1.370* (0.746)	-0.075 (0.584)	-0.668 (0.788)
<i>Elderly</i>	-0.207 (0.726)	-0.119 (0.572)	-0.388 (1.316)	-0.044 (0.561)	-4.062** (1.894)	0.724 (0.674)	0.263 (2.264)	0.390 (0.667)	0.115 (0.388)	0.678 (0.495)	0.214 (0.835)
<i>Trend</i>	0.098 (0.137)	-0.132 (0.133)	0.305 (0.280)	0.054 (0.146)	0.169 (0.692)	-0.617** (0.284)	0.225 (0.685)	0.085 (0.139)	-0.170 (0.157)	-0.149 (0.121)	-0.001 (0.127)
#Observations	286	286	286	286	286	286	286	286	286	286	286
#Countries	15	15	15	15	15	15	15	15	15	15	15
Endog.Test	13.79 [0.087]	13.90 [0.084]	6.41 [0.601]	6.99 [0.538]	1.39 [0.994]	5.75 [0.676]	4.82 [0.776]	7.32 [0.503]	7.85 [0.448]	12.60 [0.126]	15.63 [0.048]

Notes: Robust standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. The growth rate of the real values of each expenditure component is used as the respective dependent variable in each equation. *RealGDP* is lagged one period and the *InterestRate* is in first differences. An IV estimator controlling for fixed effects is used. *Consolidation*, *RealGRPgr* and *InterestRate* are assumed to be endogenous and are instrumented with their lags, the lag of inflation and the lag of the cyclically adjusted deficit. The results of the Durbin-Wu-Hausman chi-square test-statistic are reported at the bottom of the table (the respective p-values in square brackets).

Table A.5. The impact of fiscal consolidations on the real per capita values of each component

Dep. Vars.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Growth rate of</i>	<i>TotExpd</i>	<i>PubServ</i>	<i>Defence</i>	<i>PubOrder</i>	<i>EconAff</i>	<i>Environm</i>	<i>Housing</i>	<i>Health</i>	<i>Recreat</i>	<i>Educ</i>	<i>SocProtect</i>
<i>Consolidation</i>	-0.015** (0.007)	0.022*** (0.008)	-0.029** (0.014)	-0.031*** (0.009)	-0.024 (0.029)	-0.048*** (0.017)	-0.039* (0.023)	-0.035*** (0.007)	-0.029*** (0.011)	-0.027*** (0.007)	-0.014** (0.006)
<i>RealGDPgr</i>	0.001 (0.001)	0.001 (0.001)	0.000 (0.002)	0.005*** (0.001)	-0.005 (0.006)	0.010*** (0.003)	0.008 (0.006)	0.006*** (0.001)	0.007*** (0.002)	0.004*** (0.001)	-0.002* (0.001)
<i>InterestRate</i>	-0.002 (0.003)	0.006* (0.003)	-0.016*** (0.006)	-0.006* (0.004)	-0.013 (0.012)	0.006 (0.007)	-0.024* (0.013)	-0.006** (0.003)	-0.005 (0.005)	-0.005* (0.003)	-0.002 (0.002)
<i>Election</i>	0.017*** (0.006)	0.029*** (0.007)	0.011 (0.012)	0.015** (0.007)	0.008 (0.027)	0.011 (0.015)	0.048 (0.030)	0.025*** (0.006)	0.021** (0.010)	0.016** (0.006)	0.015*** (0.005)
<i>LeftGov</i>	0.014 (0.010)	-0.010 (0.011)	0.039** (0.020)	0.018 (0.012)	0.016 (0.039)	0.028 (0.024)	0.050 (0.045)	0.012 (0.010)	0.011 (0.015)	0.025** (0.010)	0.006 (0.008)
<i>Young</i>	-0.011* (0.006)	-0.002 (0.006)	-0.003 (0.011)	0.003 (0.006)	-0.056*** (0.018)	-0.058*** (0.013)	-0.091*** (0.026)	0.003 (0.006)	-0.014* (0.008)	-0.000 (0.006)	-0.005 (0.005)
<i>Elderly</i>	-0.011** (0.005)	0.003 (0.005)	-0.002 (0.008)	0.001 (0.005)	-0.093*** (0.022)	-0.046*** (0.012)	-0.070*** (0.019)	0.002 (0.005)	-0.002 (0.006)	0.000 (0.005)	-0.003 (0.004)
<i>Trend</i>	0.003** (0.001)	-0.000 (0.001)	0.000 (0.002)	0.001 (0.001)	0.013*** (0.005)	0.004 (0.003)	0.001 (0.005)	0.001 (0.001)	-0.001 (0.002)	0.000 (0.001)	0.000 (0.001)
<i>LagDepVar</i>	0.847*** (0.047)	0.960*** (0.033)	0.849*** (0.037)	0.940*** (0.030)	0.475*** (0.057)	0.751*** (0.040)	0.525*** (0.048)	0.970*** (0.038)	0.951*** (0.031)	0.949*** (0.035)	0.924*** (0.037)
#Observations	295	295	295	295	293	295	295	295	295	295	295
#Countries	15	15	15	15	15	15	15	15	15	15	15

Notes: Bootstrapped standard errors are in parentheses; significance level at which the null hypothesis is rejected: ***, 1%; **, 5%; and *, 10%. The logarithm of the real value of each expenditure component per capita is used as dependent variable in each equation. A bias-corrected least squares dummy variable (LSDVC) estimator for dynamic panel data models is employed (for details, see Bruno 2005a, b). The Blundell and Bond (1998) procedure is used as the initial estimator. Following Bloom et al. (2007), we undertake 50 repetitions of the procedure to bootstrap the estimated standard errors. The results do not qualitatively change with more repetitions (100, 200 or 500) or when the Arellano and Bond (1991) or Anderson and Hsiao (1982) estimator are chosen as initial estimators. *RealGDP* is lagged one period and the *InterestRate* is in first differences.

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