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Assessing fiscal episodes*

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Abstract

In an OCDE panel, for the period 1970-2010, we assess the effects of fiscal consolidation episodes, with four different definitions. Our results reveal that lower final government consumption would increase private consumption in three out of the four approaches, when there is a fiscal consolidation, and the debt ratio is above the cross-country average. The change in the cyclically adjusted primary balance and the duration of the consolidation episode contribute for the success of the consolidation, and the opposite applies if the latter is more based on the revenue side. Finally, the effects of social transfers on private investment tend to be negative.

JEL: C23, E21, E62, H5, H62
Keywords: fiscal consolidation, non-Keynesian effects, panel data, logit

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1. Introduction

The 2008-2009 economic and financial crisis brought again into the limelight the question of fiscal episodes and the importance of the so-called expansionary fiscal consolidations. Indeed, while several institutions and economists argued for the importance of fiscal stimuli in the context of the crisis, the case for fiscal retrenchment, which via expectations, promotes more private demand and growth, surfaced again in the discussion in the aftermath of the crisis. Therefore, in this paper we revisit the debate of the non-Keynesian effects of fiscal policy, and assess notably expansionary fiscal consolidation episodes in the context of OECD countries, via private consumption and private investment.

In view of the somewhat ad-hoc set-up that is usually available in the existing studies, we contribute to the literature by cross-checking several methods that have been used to determine the existence of fiscal episodes, in order to confer some robustness to the analysis. Consequently, on the one hand, we use several more established approaches to determine fiscal episodes, based on changes of the cyclically adjusted primary balance, proposed and applied by Giavazzi and Pagano (1996), Alesina and Ardagna (1998), and Afonso (2010). On the other hand, and as an additional comparison, we also use the fiscal episodes identified on the basis of a so-called policy action-based approach proposed by the IMF (2010).

Specifically, we assess in a panel framework, for the period 1970-2010, whether a usually expected positive response of private consumption and private investment to a fiscal expansion is reversed. Such event can arise if, for instance, consumers and investors might anticipate future difficulties stemming from fiscal expansions and a decrease in permanent income and in private consumption may occur. Moreover, if

agents actually expect benefits from the implementation of a credible fiscal retrenchment, such reverse effect may indeed take place. In addition, we also assess to what extent the duration and the composition of the fiscal adjustment plays a role in the success of the fiscal consolidations, for several alternative labelling of fiscal episodes.

In a nutshell, our results show that lower final government consumption would increase private consumption in the short-run, when there is a fiscal consolidation, and the debt ratio is above the cross-country average. In addition, the change in the cyclically adjusted primary balance and the duration of the consolidation episode contribute for the success of the consolidation. Regarding private investment, in general, our estimations deliver weaker but similar results to the ones reported for private consumption, with social transfers having a negative impact on private investment. The three approaches that determine the fiscal episodes in the basis of the cyclically adjusted primary balance tend to produce closer results than the so-called policy action method. Interestingly the IMF (2010) reports a lack of support in the date for the hypothesis that fiscal austerity promotes growth in the short-run, but such conclusion would be possible for the long-run.

In addition, the change in the cyclically adjusted primary balance and the duration of the consolidation episode contribute for the success of the consolidation and the opposite applies if the latter is more based on the revenue side. This last result is also in line with Alesina and Ardagna (2009).

The remainder of the paper is organised as follows. Section two briefly reviews the related literature. Section three determines the fiscal episodes. Sections four and

five assess respectively the effects of the fiscal adjustments and theirs successes. Section six concludes the paper.

2. Literature

The discussion of expansionary fiscal consolidations can be traced back to Feldstein (1982), who argued that when permanent public spending cuts are seen as an indication of future tax cuts, rising expectations of permanent income increases.[1] If a serious fiscal consolidation occurs, there may be an induced wealth effect, leading to an increase in private consumption. On the other hand, lower government borrowing requirements decrease the risk premium associated with government debt, contribute to reduce real interest rates and allow the crowding-in of private investment. However, if consumers do not think that a given fiscal consolidation is credible, then the usual negative Keynesian effect on consumption will occur.[2]

In addition, Bertola and Drazen (1993) refer to a "trigger point," as a moment after which a fiscal adjustment is highly probable. In other words, when government spending rises above a given threshold, this increases the probability that a fiscal consolidation takes place. In this context, consumers tend to exhibit a more Ricardian behaviour. They show through the use of a model of intertemporal optimizing behaviour that, if government spending follows an upward-trending stochastic process and if the public believes that the resulting fiscal imbalance will be cut sharply by tax increases when a specific trigger point is reached, there will be a nonlinear negative relationship between private sector consumption and government spending.

[1] Blanchard (1990), Sutherland (1997) and Perotti (1999) mentioned that with high debt ratios there is a higher probability of fiscal policy being non-Keynesian.
[2] Such reasoning is sometimes also labelled as "the expectational view of fiscal policy" (see Hellwig and Neumann, 1987).

Several studies have tackled empirically this issue, although with somewhat inconclusive results (see Hjelm, 2002, van Aarle and Garretsen, 2003, Afonso, 2010). Gobbin and van Aarle (2001) analyse EU countries and find that non-Keynesian effects dominate the traditional Keynesian expenditure effects of government spending, taxation and transfer payments. For instance, Afonso (2010) mentions that regarding general government final consumption there is no statistically significant short-run effect on private consumption, with or without fiscal consolidations for an OECD panel.

Regarding the possible effects of a fiscal consolidation in private investment, via, for instance, lower overall costs to provide public services or due to a downward impact on the government debt implicit interest rate, the question also deserves an assessment. A few results have been provided arguing for a positive effect of a fiscal consolidation on private investment notably by Ardagna (2009) and Schaltegger and Weder (2010).

Particular attention has been paid to investigating the conditions for successful consolidation, that is, consolidation that brings about a significant reduction in the government debt ratio. Several main hypotheses have guided the discussion: the composition of the adjustment (see, for instance, Giudice et al., 2004, and Afonso et al., 2006), its size and persistence, the gravity of the fiscal imbalance, the influence of the international macroeconomic environment and the contribution of a preceding devaluation (Heylen and Everaert, 2000, Lambertini and Tavares, 2005). Nevertheless, there is also no consensus on how to determine if a fiscal adjustment is successful.

For instance, Alesina and Perotti (1995), Giavazzi and Pagano (1990, 1996), McDermott and Wescott (1996), Alesina and Ardagna (1998), Perotti (1998) and Giavazzi et al. (2000) report empirical results concerning the composition and size determinants of successful adjustments, hinting at the higher likelihood of success when the adjustment is more spending based.

On the other hand, Heylen and Everaert (2000) empirically contest the idea that current expenditure reductions are the best policy for a successful fiscal consolidation to materialize, while Barrios et al. (2010) report that countries facing higher initial levels of government debt have a better probability of pursuing successful fiscal consolidations. In this context, von Hagen et al. (2001) also provide additional descriptive analysis and case studies.

3. Fiscal episodes

3.1. Approaches to determine fiscal episodes

The most commonly used approaches to determine fiscal episodes (either fiscal adjustments or expansions) are based on the changes in the cyclically adjusted primary budget balance, which allows the correction of the effects, on the budget balance, resulting from changes in economic activity such as inflation or real interest rate changes. Therefore, we use the change in the cyclically adjusted primary budget balance as a percentage of GDP, a widely used measure, along the lines of Giavazzi and Pagano (1996), Alesina and Ardagna (1998), and Afonso (2010). On the basis of the abovementioned studies, we determine the periods where fiscal episodes occur using the respective proposed measures, which we label in our study FE1, FE2, and FE3.

The FE1 measure follows Alesina and Ardagna (1998) who adopted a fiscal episode definition that allows that some stabilisation periods may have only one year. More specifically, they consider the change in the primary cyclically adjusted budget balance that is at least 2 percentage points of GDP in one year or at least 1.5 percentage points on average in the last two years.

On the other hand, the FE2 measure is the definition used by Giavazzi and Pagano (1996), which decreases the probability of fiscal adjustment periods with only one year by using a limit of 3 percentage points of GDP for a single year consolidation. They proposed using the cumulative changes in the primary cyclically adjusted budget balance that are at least 5, 4, 3 percentage points of GDP in respectively 4, 3 or 2 years, or 3 percentage points in one year.

In addition the FE3 measure, used by Afonso (2010), defines the occurrence of a fiscal episode when either the change in the primary cyclically adjusted balance is at least one and a half times the standard deviation (from the panel sample) in one year, or when the change in the primary cyclically adjusted balance is at least one standard deviation on average in the last two years.

Finally, and for comparison purposes, we also use directly the fiscal consolidations episodes identified by the IMF (2010). In this case, only consolidation events are available, while our computation of measures FE1, FE2, and FE3 allow us to determine both fiscal contractions and fiscal expansions.

Our analysis covers the period 1970-2010 for a set of 14 European Union (EU) countries plus four developed OECD economies, more specifically: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, U.K., and Australia, Canada, Japan and the

U.S. Overall, we have a panel of annual data whose dimension reaches a maximum of 738 observations (see Appendix A for data sources and descriptive statistics).

3.2. The fiscal episodes

In Table 1 we report the fiscal episodes computed according to the above mentioned four strategies. Under the headings FE1, FE2, and FE3 we report the fiscal episodes, both expansions and contractions, computed using the three alternative approaches proposed respectively by Giavazzi and Pagano (1996), Alesina and Ardagna (1998), and Afonso (2010), as discussed in the previous section. In addition, we also report in the table the fiscal contraction episodes as taken from IMF (2010).

[Table 1]

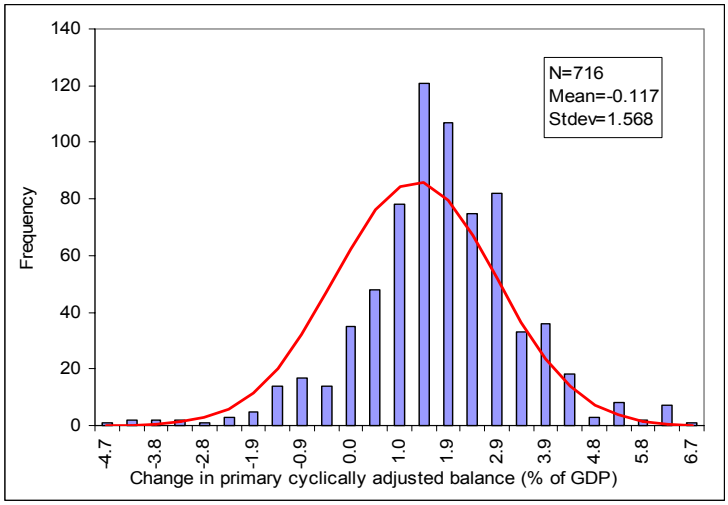
From Table 1 we observe that the number of fiscal contractions ranges from 59, in the approach proposed by Afonso (2010), to 79, using the approach from Giavazzi and Pagano (1996) approach. The IMF (2010) reports a much higher number of years where fiscal contractions take place (in around 42% of the years there are fiscal contractions), even though the covered time sample is smaller (1980-2007). On the other hand, the identified fiscal expansion episodes range from 78 for the FE3 measure to 95 for the other two approaches.

The average duration of the reported fiscal episodes is around 1.6 years for the approaches of Alesina and Ardagna (1998), and Afonso (2010), around 2 years following the approach proposed by Giavazzi and Pagano (1996), and around 3.8 years for the fiscal contractions identified by the so-called policy action-based approach of the IMF.

The three methods that determine fiscal episodes on the basis of the change in the cyclically adjusted primary balance essentially coincide in identifying, for instance, the fiscal contractions of Denmark in 1983-84 and of Ireland in 1988-89. A broadly similar pattern also emerges from the IMF approach. Moreover, the fiscal expansions that took place in most countries around the period 2009-2010 are also captured by the three methods that use the cyclically adjusted primary balance.

In addition, from Figure 1 we can also see that the average change in the primary structural budget balance in the full panel is -0.117, and the standard deviation is 1.568, with a slightly left skewed distribution.

Figure 1: Changes in the primary cyclically adjusted budget balance: 1970-2010



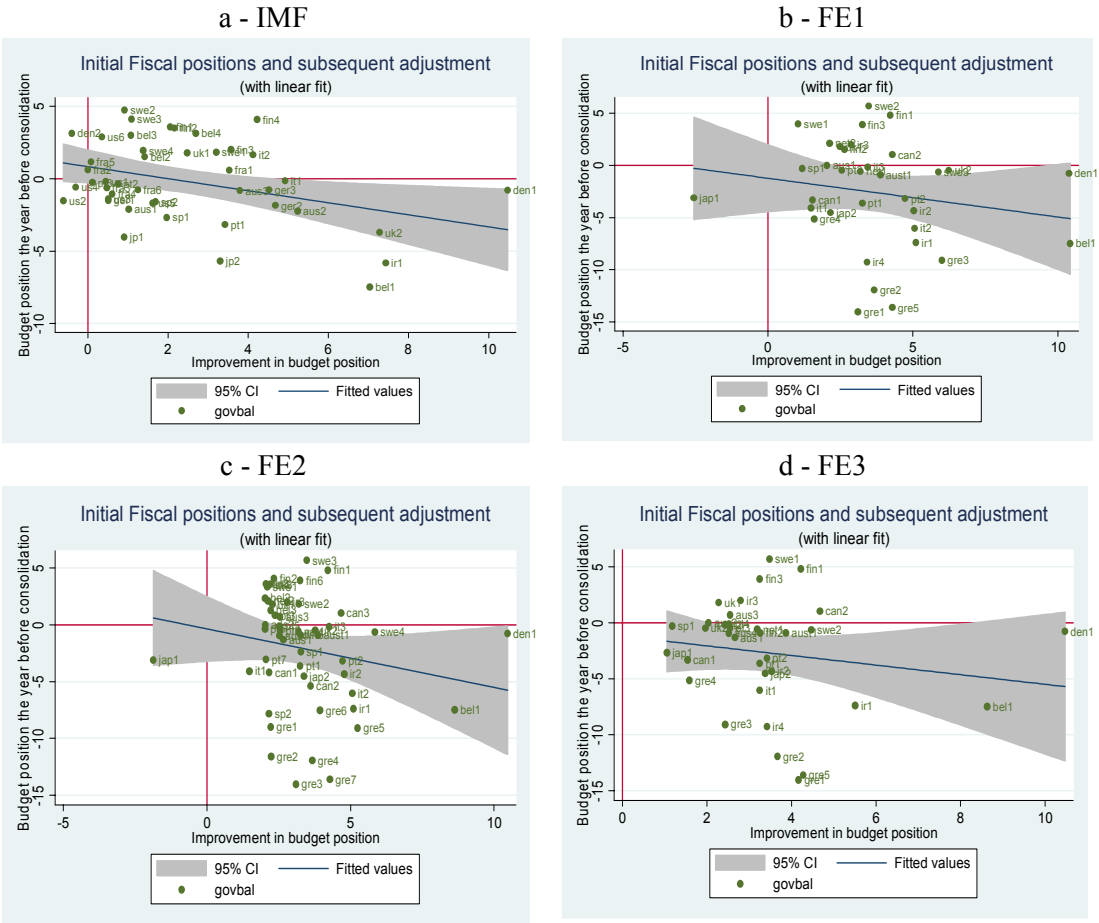
Source: authors' computations.

3.3. Characteristics of the fiscal episodes

Regarding the characteristics of the fiscal episodes, the fiscal conditions prevailing just before the beginning of a consolidation episode seem to have had an impact on the size of subsequent efforts (Figure 2.a-d). The larger the cyclically adjusted primary deficit, the larger was the size of ensuing fiscal consolidation. This

may reflect that large deficits made it more necessary to consolidate and, at the same time, raised public awareness of the extent of the fiscal imbalance problem, making it easier to act.

Figure 2: Initial fiscal imbalances and subsequent adjustment: 1970-2010



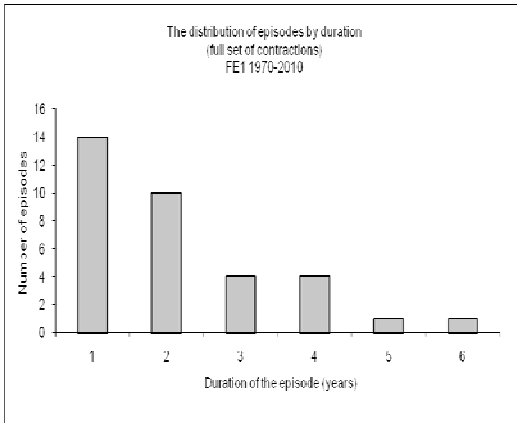
Note: budget position measured by the cyclically adjusted primary balance (% of GDP).
Source: authors' computations.

Moreover, most of the consolidation episodes were of short duration (with some exceptions for the IMF-based measure, see Table 1) and involved relatively modest gains (Figure 3). However, there were a number of large efforts, amounting to improvements of more than 7% of GDP for the four measures of fiscal episodes, as

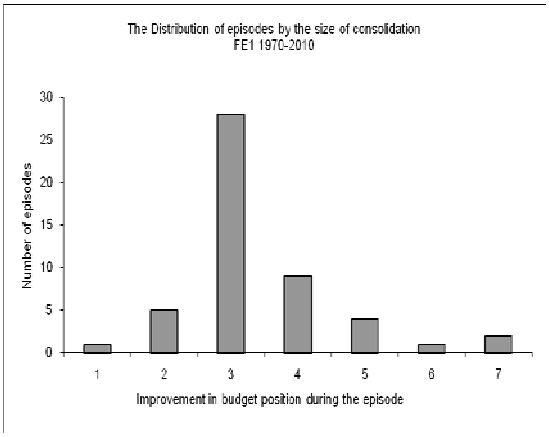
well as a few episodes lasting for four years (or more in the case of the IMF-based measure).

Figure 3: Strength and duration of consolidation episodes: 1970-2010

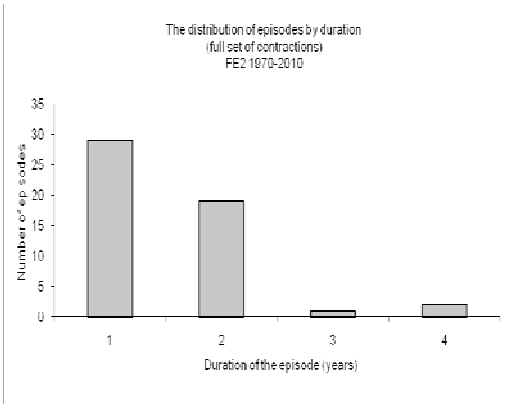
1a - FE1



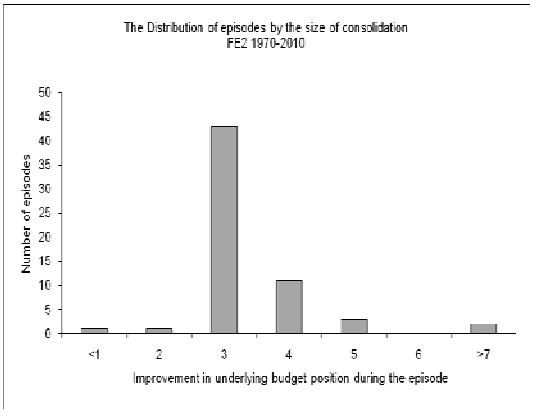
1b - FE1



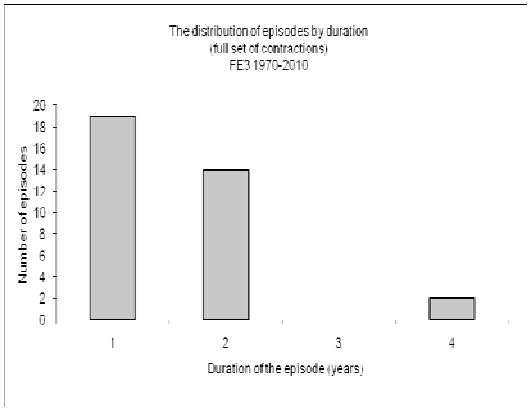
2a - FE2



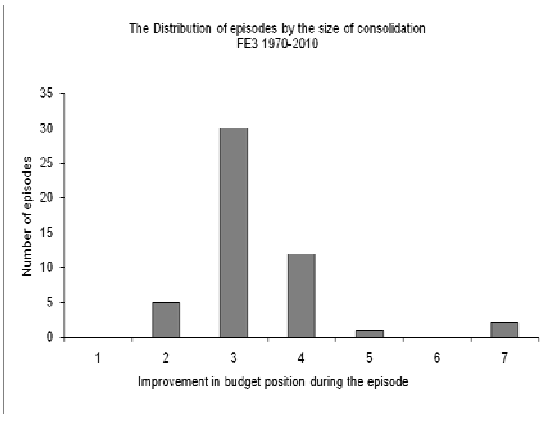
2b - FE2



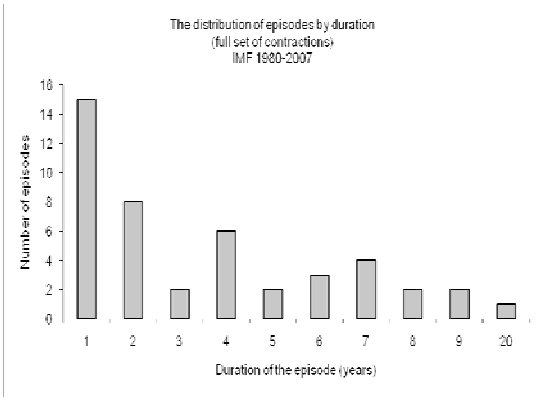
3a - FE3



3b – FE3



4a - IMF



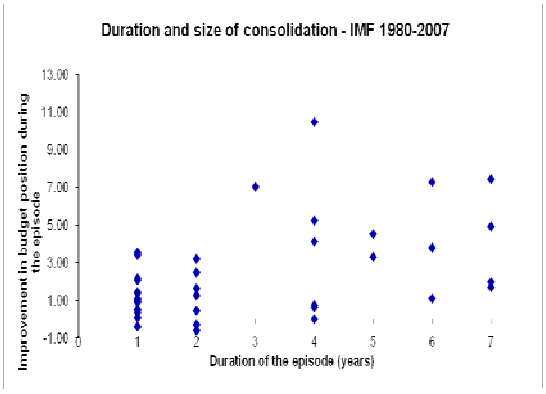
4b - IMF

Note: budget position measured by the cyclically adjusted primary balance (% of GDP). Source: authors' computations.

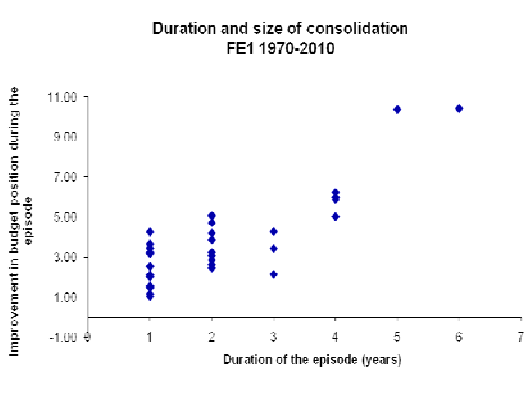
Furthermore, and in general, it is also possible to observe that sizeable consolidation episodes also lasted for longer periods, and vice-versa (Figure 4).

Figure 4: Relationship between duration and size of consolidation, IMF, FE1, FE2 and FE3: 1970-2010

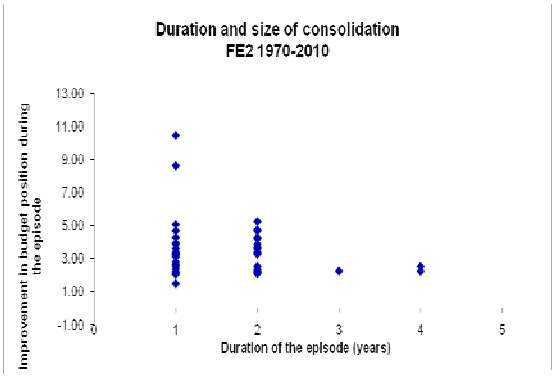
a - IMF



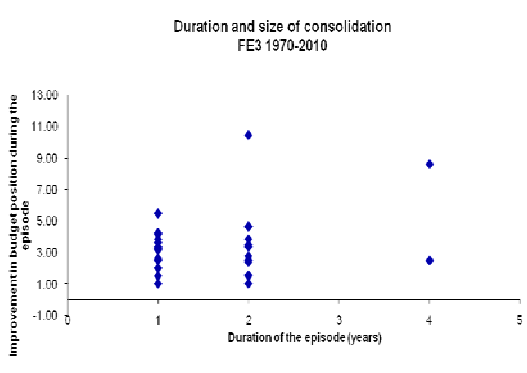
b - FE1



c - FE2



d - FE3



Note: budget position measured by the cyclically adjusted primary balance (% of GDP). Source: authors' computations.

4. Effects of fiscal adjustments

4.1. Stylised links to fiscal consolidations

In this sub-section we assess the stylised links between fiscal consolidations and a series of economic performance measures, such as real GDP growth, private consumption, private investment, changes in the unemployment rate, the debt ratio, and several budgetary components. Therefore, Table 2 follows the paths of several macroeconomic variables by reporting averages for the year before the episodes of significant fiscal consolidation, for the period during which the consolidation takes place, and for the following year.

[Table 2]

The first comment relates to the expected improvement in the cyclically adjusted primary balance during and after the consolidation episode has taken place (this is true for all the four approaches). This is accomplished by a simultaneous decrease in total government expenditures ratios during the consolidation period and an increase in total government revenues ratios. Secondly, it is also interesting to note that despite the decrease in total government expenditures identified above, government final consumption increases during and after the consolidation period. However, one does observe a reduction in public investment after the end of the consolidation episode (denoting a lagged effect). Finally, fiscal consolidations occur together with increases in government debt ratios (both during and after), denoting a dragging effect of the fiscal imbalances, as well as a general rise in the unemployment rate.

4.2. Empirical analysis: private consumption

Given that we wish to analyse more thoroughly the possible impact of fiscal episodes on private consumption and on private investment, we set up a baseline specification, for instance, for private consumption:

$$\Delta C_{it} = c_i + \lambda C_{it-1} + \omega_0 Y_{it-1} + \omega_1 \Delta Y_{it} + \delta_0 Y_{it-1}^{av} + \delta_1 \Delta Y_{it}^{av} + \quad (1)$$

$$(\alpha_1 FCE_{it-1} + \alpha_3 \Delta FCE_{it} + \beta_1 TF_{it-1} + \beta_3 \Delta TF_{it} + \gamma_1 TAX_{it-1} + \gamma_3 \Delta TAX_{it}) \times FC_{it}^{m} +$$
$$(\alpha_2 FCE_{it-1} + \alpha_4 \Delta FCE_{it} + \beta_2 TF_{it-1} + \beta_4 \Delta TF_{it} + \gamma_2 TAX_{it-1} + \gamma_4 \Delta TAX_{it}) \times (1 - FC_{it}^{m}) + \mu_{it}$$

where the index *i* denotes the country, the index *t* indicates the period, and c_i stands for the individual effects to be estimated for each country *i*. In addition we consider: *C* – private consumption; *Y* – GDP; Y^{av} – GDP of the full country sample (per capita average); *FCE* – general government final consumption expenditure; *TF* – social transfers; *TAX* – taxes. All the above mentioned variables are taken as the logarithms of the respective real per capita observations. FC^m is a dummy variable that controls for the existence of fiscal episodes that are labelled as contractions, with *m=1, 2, 3*, *4* for each of the four fiscal episode determination strategies used in the previous section. The dummy variable FC^m assumes the following values: $FC^m = 1$ when there is a fiscal consolidation episode and $FC^m = 0$ when those fiscal adjustments do not occur. Additionally, it is assumed that the disturbances u_{it} are independent and identical distributed random shocks across countries, with zero mean and constant variance.

Moreover, our fiscal data are also disentangled into taxes, general government final consumption, and social transfers. Taxes are the sum of current taxes on income and wealth (direct taxes) and taxes linked to imports and production (indirect taxes). In the subsequent analysis of the effects of fiscal adjustments, the variables are taken

as the logarithms of real per capita observations (in Appendix A, panel unit root tests reject the null of a common unit root, and non-stationarity, is mostly rejected).

4.2.1. Baseline results

We develop our empirical strategy by estimating specification (1) initially with only one of the relevant budgetary items at a time, and afterwards with all the spending and revenue items included together. In addition, we report the results of panel fixed effects estimations both for per capita real private consumption and for real per capita private investment.

Considering the specification with only total government expenditure as an initial baseline (Table 3a), the short-run and long-run elasticities of private consumption to income are statistically significant. The short-run elasticity is around 0.73-0.78 in the four alternative approaches for determining fiscal episodes, with the long-run effect of income close to unity on the three standard approaches and around 0.81 in the IMF one.

[Table 3a]

The short-run elasticity of private consumption with respect to total government spending is negative, in the three standard methods, implying that curtailing government consumption increases private consumption, when there are no fiscal contraction episodes. In the presence of such fiscal episode, the result is not statistically significant, and no statistical evidence is uncovered for the IMF method either. Moreover, for method FE1, the respective negative long-run elasticity, when a fiscal consolidation episode occurs ($FC = 1$), implies that 1 euro decrease in total spending is estimated to raise long-run private consumption by around 11 cents.

Interestingly, when we use only general government final consumption, instead of total spending (Table 3b), the abovementioned negative long-run effect is statistically significant for the three standard methods of determination of fiscal episodes, regardless of the existence of fiscal contractions. In this case, one euro decrease in general government final consumption raises long-run private consumption by around 23-32 cents.

[Table 3b]

On the other hand, spending on social benefits and welfare transfers have a positive short-run effect on private consumption for the two approaches FE2 and FE3 for the determination of fiscal episodes, but only when a fiscal contraction occurs (Table 3c).

[Table 3c]

Regarding the existence of possible effects from government revenue items on private consumption developments, only in three (IMF, FE2, and FE3) out of the four approaches total revenue has a non-Keynesian effect when a fiscal contraction episode occurs.[3] In terms of direct taxes (current taxes on income and wealth) and indirect taxes (taxes linked to imports and production), when taken separately as the single budgetary items in the baseline specification, no statistically significant effects can be reported.

In the next step, we estimated the full specification (1) with the two spending items, general government final consumption and social transfers, and with total tax revenues (direct plus indirect taxes) considered at the same time. The results (Table 4) show that final government consumption has the already uncovered statistically significant negative long-run effect, for the three standard methods of determination

[3] Results availble from the authors.

of fiscal episodes. Such effect has now a bigger magnitude particularly when a fiscal contraction episode occurs.

[Table 4]

Moreover, we can also conclude that social transfers now have both a positive short- and long-run effect on private consumption for the approaches FE2 (Alesina and Ardagna, 1998), and FE3 (Afonso, 2010), in the presence of a fiscal consolidation episode. Finally, total tax revenues also depict a so-called non-Keynesian result similarly to what was observed for total revenues.

4.2.2. Debt thresholds

The effects of government spending notably on private consumption may depend on the level the of government indebtedness. That is, the effects of government spending could become less Keynesian if large increases in the debt-to-GDP ratio occur or if these are already at relatively high levels.

In order to assess how different levels of government indebtedness affect the responsiveness of private consumption we consider a threshold for the debt ratio using a dummy variable *Byear* defined as follows: $Byear_{it}$ takes the value 1 if the debt ratio is above the average of the debt ratio in year *t* for the entire cross-country sample, and 0 otherwise.

According to the results reported in Table 5, lower final government consumption would increase private consumption in the short run, when there is a fiscal consolidation and the debt ratio is above the cross-country average (methods FE1 and FE2). Nevertheless, the level of government indebtedness in this context does not provide relevant additional value regarding the short-run positive effect of socials transfers.

[Table 5]

As an alternative we also considered another debt threshold construction, $Bcountry_{it}$, which takes the value 1 if the debt ratio is above the average debt ratio in country *i* for the entire sample average and 0 otherwise. The country average of the debt ratio, on a given period, can also be important since markets compare individual countries notably in terms of the respective sovereign rating category. The results (available form the authors) still uncover a similar result for general government final consumption, although with lower long-run magnitudes.

4.3. Empirical analysis: private investment

We now consider specification (1) with real per capita private investment as our dependent variable instead. Our purpose is then also to check whether fiscal episodes play a role via this GDP component, notably via possible crowding-out effects. In addition, in several situations of high fiscal imbalances, and when a fiscal adjustment takes place, government fixed capital formation is one of the budgetary items that usually suffers cuts. One may wonder whether such development impacts also negatively on private investment, via a complementary effect of public spending, or positively, via a substitution effect of government investment.

Therefore, similarly to the private consumption analysis we start off by initially estimating (1), via panel fixed-effects with only one of the relevant budgetary items at a time, and afterwards with all the spending and revenue items included together. Considering the specification with only total government expenditure (Table 6a), the short-run elasticities of private investment to income are statistically significant for all approaches; the long-run elasticity is only significant for the IMF method (and well above unity) in contrast with results obtained for private consumption in Table

3a. The short-run elasticity is around 2.6-2.9 in the four alternative approaches for determining fiscal episodes (thus much higher in magnitude than the coefficient estimates in Table 3a for private consumption).

[Table 6a]

The short-run elasticity of private investment with respect to total government spending is negative, in the four approaches, implying that curtailing government consumption increases private investment, regardless of the existence of a fiscal contraction episode. On the other hand, the respective negative long-run elasticities, when a fiscal consolidation episode occurs ($FC = 1$) is only statistically significant for the IMF and FE1 cases.

Interestingly, when we use only general government final consumption, instead of total spending (Table 6b), the abovementioned negative long-run effects remain statistically insignificant for all methods of determination of fiscal episodes, regardless of the existence of fiscal contractions.

[Table 6b]

On the other hand, spending on social benefits and welfare transfers have a negative short-run effect on private investment for the four approaches for the determination of fiscal episodes, regardless of the existence of fiscal contractions (Table 6c) – this contrasts with our results for private consumption in Table 3c. This result also holds consistently for the long-run effect, for all four approaches to the determination of fiscal contraction episodes, with and without fiscal episodes. However, the long-run effect (the detrimental effect on private investment of an increase in social transfers) has a higher magnitude when a consolidation occurs in cases FE2 and FE3.

[Table 6c]

Regarding the existence of possible effects from government revenue items on private consumptions developments, only in two (FE2, and FE3) out of the four approaches has total revenue a non-Keynesian effect when a fiscal contraction episode occurs (results available upon request). In terms of direct taxes (current taxes on income and wealth) and indirect taxes (taxes linked to imports and production), when taken separately as the single budgetary items in the baseline specification, similar non-Keynesian effects can be reported, particularly in the case of the latter set of taxes for all approaches. Estimating the full specification (1) with the two spending items and with total tax revenues considered at the same time, final government consumption retains the already uncovered statistically insignificant negative long-run effect.

Moreover, we can also conclude that social transfers have both a negative short- and long-run effect on private investment for the IMF approaches, in the presence of a fiscal consolidation episode, and statistically significant negative short-run effects from the remaining three approaches (in contrast to our results using private consumption as the dependent variable). Finally, total tax revenues also depict a so-called non-Keynesian result (for short-run elasticity in the IMF approach).[4]

5. Success of fiscal adjustments

5.1. Fiscal adjustments and growth

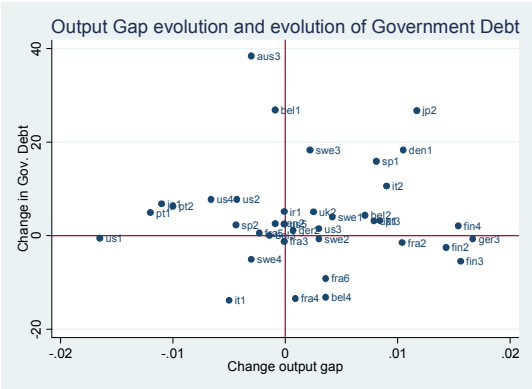
It is usually understood that higher real GDP growth is of crucial importance for the success of consolidation efforts, notably given also the denominator effect in this

[4] Estimations assessing the (un-)importance of debt thresholds have also been carried out using private investment as the dependent variable in specification (1) and with both the $Bcountry_{it}$ and $Byear_{it}$ alternative dummies. Results convey a similar message to the ones obtained with private consumption and are available from the authors upon request.

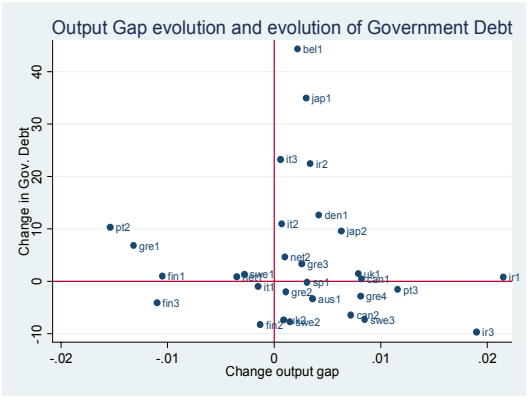
context. Figure 5.a-d shows the relevance of real GDP growth, relating the change in the debt ratio between t_s and t_{f+2} to the change in the output gap between t_{s-1} and t_{f+1} (with t_s indicating the first year of the fiscal consolidation period and t_f the final year). The latter change indicates the cumulated difference between actual real GDP growth and potential real growth in the years t_s to t_{f+1}. Simply eyeballing the charts, one can observe that fiscal consolidations tend to bring about reductions in debt ratios only if economic growth is strong and the output gap increases. If the output gap falls, fiscal consolidations have an associated lower drop in the debt ratio.

Figure 5: Output gap (before the episode) and government debt evolution (after the episode): 1970-2010

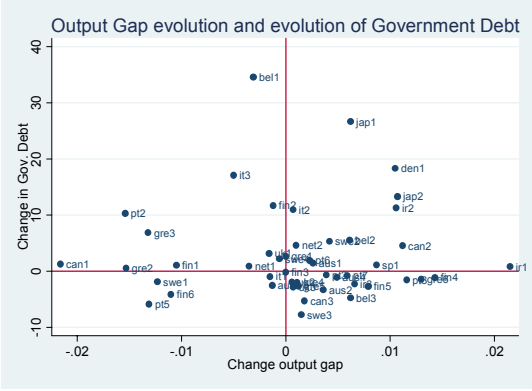
a - IMF



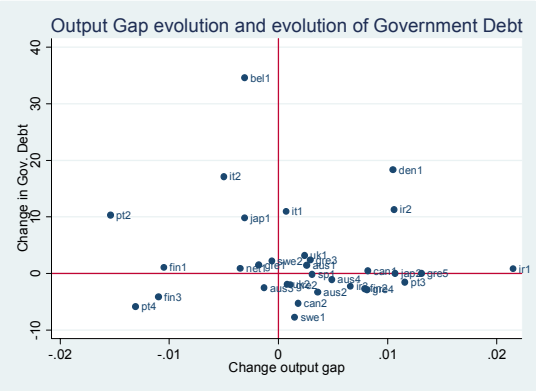
b - FE1



c - FE2



d - FE3



Note: change in the debt ratio between t_s and t_{f+2} (%); change in the output gap between t_{s-1} and t_{f+1}(pp). s, f, respectively starting year and final year of the fiscal consolidation.
Source: authors' computations.

5.2. Empirical analysis

For our econometric analysis in this context, we assume that a fiscal adjustment is successful (*SU*) if the improvement in the cyclically adjusted primary budget balance (*b*) for two consecutive years is at least η-times the standard deviation of the cyclically adjusted primary budget balance in the full panel (rather like, or instance, Alesina and Perotti, 1995, and Afonso et al., 2006):

$$SU_t = \begin{cases} 1, \text{ if } \sum_{i=0}^{1} \Delta b_{t+i} > \eta\sigma \\ 0, \text{ otherwise} \end{cases}. \qquad (2)$$

In our analysis we use a threshold value of $\eta = 1$ in (2).

In order to assess the relevance of the composition of the fiscal adjustment we use the dummy variable *EXP* as an explanatory variable in the subsequent Logit analysis. Therefore, *EXP*, as a percentage of GDP, is defined as follows

$$EXP_t = \begin{cases} 1, \text{ if } (\Delta \exp_t / \Delta b_t) > \lambda \\ 0, \text{ otherwise} \end{cases}, \qquad (3)$$

where *exp* is the value for total expenditure in year *t*, and λ is a threshold value (assuming the values 1/2, 2/3, 3/4). A similar dummy variable construction, as explained in (3), is done regarding total revenue.

Table 7 reports the number of fiscal consolidation episodes, or events, together with the respective success rate for each of the approaches used to determine the fiscal episode. According to Table 7, the success rate, measured as the number of successful fiscal consolidations over the total number of fiscal consolidation episodes, ranges from 37% in the IMF so called-policy action-based method to around 64-65% in the FE2 and FE3 approaches.

[Table 7]

In addition, and from Table 8, we can also observe that the size of the fiscal consolidations does not differ much in terms of the share of the consolidation that is done via the expenditure side of the budget. This is notably true in the cases of the FE2 and FE3 approaches, but a slightly relative stronger adjustment is found in this context for the two other approaches.

[Table 8]

Having determined the nature of the fiscal consolidation episodes as either successful or unsuccessful, we can also assess their potential determinants. Therefore, a Logit model was estimated, as follows

$$P_i = E[S = 1 \mid Z_i] = \frac{e^{Z_i}}{1 + e^{Z_i}}, \tag{4}$$

where $E[S=1|Z_i]$ is the conditional expectation of the success of a fiscal consolidation, given Z_i, with

$$S = \begin{cases} 1, \ if \ the \ consolidation \ is \ successful, \\ 0, \ if \ the \ consolidation \ is \ not \ successful; \end{cases}' \tag{5}$$

One can interpret (4) as the conditional probability that a successful consolidation occurs given Z_i, and in general terms we have

$$Z_i = \alpha_1 + \alpha_2 D_i + \beta_1 b_i + \delta_1 EXP_i + \delta_2 (b_i EXP_i), \tag{6}$$

where b is the change in the cyclically adjusted primary balance, the dummy variable EXP was defined in (3), and D is the duration of the fiscal adjustment. The results of such estimations are reported in Tables 9, 10, 11, and 12 for each of the four alternative methods that we use to determine the fiscal episodes. We also report several thresholds for the share of the fiscal adjustment that occurred via the spending side or via the revenue side of the budget.

According to the results in Tables 9 to 12, in all four cases, the change in the cyclically adjusted primary balance contributes positively for the success of a fiscal consolidation. The share of the consolidation that takes place via the spending side of the budget has almost always a positive estimated coefficient but it is never statistically significant (columns 1 to 3). On the other hand, the estimated coefficients of the share of the adjustment that is carried out via the revenue side (columns 4 to 6) is almost always negative, and, in the case of the FE3 approach for fiscal episodes, is statistically significant (see Table 12). Therefore, in those cases, if a fiscal consolidation is more based on the revenue side, that reduces the corresponding probability of success.

In terms of the importance of the duration of the fiscal consolidation a larger duration always contributes positively to the probability of success of the fiscal adjustment in the approaches FE1, FE2, FE3, but it is not statistically significant in the case of the IMF approach. Finally, we also tested the possibility of an interaction effect between the change in the cyclically adjusted primary balance and the expenditure thresholds but no statistically significant effect was uncovered (columns 10 to 12).

6. Conclusion

This paper has revisited the debate on the so-called expansionary fiscal adjustments using four alternative approaches of computing and defining fiscal episodes, in particular: Giavazzi and Pagano (1996), Alesina and Ardagna (1998), Afonso (2010), and the policy action-based IMF (2010) procedure. In a panel of OECD countries between 1970 and 2010 we pay special attention to the short and long-run elasticities of different (aggregated and disaggregated) budgetary elements

in affecting private consumption and investment levels. Moreover, we also assess to what extent the composition and duration of fiscal adjustments play a role in their success via the estimation of logit models.

Our results, regarding the fiscal effects on private consumption and on investment, can be summarized as follows:

i) Most of the consolidation episodes in our sample were of short duration and involved relatively modest gains. However, there were a number of large efforts, amounting to improvements of more than 7% of GDP ii) Stylised evidence shows that the larger the initial fiscal imbalance the larger was the ensuing fiscal consolidation. iii) Our initial baseline specification with total government expenditure reports positive and statistically significant short and long-run elasticities of private consumption to income. iv) The short-run elasticity of private consumption with respect to total government spending is negative, implying that curtailing government consumption increases private consumption (with no fiscal contraction episodes). iv) In the specification using only general government final consumption we find a statistically negative long-run effect in three out of four approaches regardless of the existence of fiscal contraction episodes. v) In three out of four cases, total revenue has a non-Keynesian effect when a fiscal contraction episode occurs. vi) When taking into account different levels of government indebtedness, lower final government consumption would increase private consumption in the short-run when there is a fiscal consolidation and the debt ratio is above the cross-country average. vii) Regarding private investment, in general, our estimations deliver weaker but similar results to the ones reported for private consumption, with negative effects of social transfers on private investment. For comparison, the IMF

(2010) reports that fiscal austerity promotes growth in the long-run, which would differ somewhat from our result of lower final government consumption having a positive effect on private consumption in the short-run.

Regarding the success of fiscal consolidations, we uncover the result that such fiscal episodes tend to bring about reductions in debt ratios only if economic growth is strong and the output gap increases. Furthermore, the size of the fiscal consolidations does not differ much in terms of the share of the consolidation that is done via the expenditure side of the budget. Finally, evidence suggests that the change in the cyclically adjusted primary balance contributes positively for the success of a fiscal consolidation and the opposite applies if the latter is more based on the revenue side. Also duration matters and it contributes positively to the probability of success of a fiscal consolidation episode.

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Appendix: Data sources

Original series	Ameco codes
Total population, millions.	1.0.0.0.NPTN
Gross Domestic Product at current market prices, thousand national currency.	1.0.0.0.UVGD
Price deflator of Gross Domestic Product, national currency, 1995 = 100.	3.1.0.0.PVGD
Private final consumption expenditure at 1995 constant prices, thousand national currency.	1.1.0.0.OCPH
Final consumption expenditure of general government, national currency, current prices.	1.0.0.0.UCTG0F, 1.0.0.0.UCTG0
Gross fixed capital formation at current prices: private sector	1.0.0.0.UIGP
Price deflator - Gross fixed capital formation: total economy	3.1.0.0.PIGT
Gross fixed capital formation at 2000 prices: total economy	1.1.0.0.OIGT
Social benefits other than social transfers in kind, general government, national currency, current prices.	1.0.0.0.UYTGHF, 1.0.0.0.UYTGH
Current taxes on income and wealth (direct taxes), general government, national currency, current prices.	1.0.0.0.UTYGF, 1.0.0.0.UTYG
Taxes linked to imports and production (indirect taxes), general government, national currency, current prices.	1.0.0.0.UTVGF, 1.0.0.0.UTVG
Net lending (+) or net borrowing (-) excluding interest of general government adjusted for the cyclical component. Adjustment based on potential GDP Excessive deficit procedure (% of GDP at market prices (excessive deficit procedure).	1.0.319.0.UBLGBP
Total expenditure: general government, Excessive deficit procedure (% of GDP at market prices).	1.0.319.0.UUTGF, 1.0.319.0.UUTGE
Total revenue: general government, Excessive deficit procedure (% of GDP at market prices).	1.0.319.0.URTGF, 1.0.319.0.URTGE
General government consolidated gross debt, excessive deficit procedure (based on ESA 1995) and former definition (linked series) (% of GDP at market prices).	1.0.319.0.UDGGF, 1.0.319.0.UDGGL

Table 1: Fiscal Episodes (FE), based on the change in the primary cyclically adjusted budget balance and on the so-called policy action-based approach

Country	IMF	FE1		FE2		FE3	
	contractions	expansions	contractions	expansions	contractions	expansions	contractions
Australia	1980, 1985-88, 1994-99	2009	1987-88	1975, 2009	1987-88	2009	1987-88
Austria		1976, 2004	1997	1976, 2004	1984, 1997, 2001, 2005	2004	1984, 1997, 2001, 2005
Belgium	1982-84, 1987, 1990, 1992-99	1981, 2005, 2009	1982-87	1981, 2005, 2009	1982-85, 1993, 2006	1981, 2005, 2009	1982-85
Canada	1980-1999	1975, 1977-78, 2002, 2009	1987, 1996-98	1977, 2001-02, 2009	1981, 1986-87, 1996-97	1975, 2009	1987, 1996-97
Denmark	1983-86, 1995	1975-76, 1982, 1991, 2010	1983-87	1975-76, 1982, 1990-91, 1994, 2009-10	1983-86	1975-76, 1982, 1991, 2010	1983-86
Finland	1984, 1988, 1992-2000, 2006-07	1979-80, 1991-93, 2010	1976-77, 1997-98, 2000-01	1978-79, 1987, 1991-92, 2009-10	1976-77, 1981, 1984, 1988, 1996-97, 2000-01	1978-79, 1987, 1991-92, 2010	1976-77, 1996-97, 2000-01
France	1984, 1986-89, 1991, 1995-98, 2000, 2006-07	2009-10		2009-10		2009-10	
Germany	1982-89, 1992-2000, 2003-07	1975, 1991, 2001-03		1975, 1990-91, 2001-02		1975, 1990-91, 2001-02	
Greece		1981-85, 1989-90, 1996-99, 2008-09	1991-92, 1994, 1996-99, 2006, 2010	1981-82, 1985, 1989-90, 2008-09	1982, 1986, 1991-92, 1996-98, 2005-06, 2010	1981-82, 1985, 1990, 2008-09	1991,1994, 1996-97, 2006, 2010
Ireland	1982-88	1975, 1979, 2001-03, 2007-10	1976-77, 1983-86, 1988-89, 2010	1974-75, 1978-79, 1995, 2001-02, 2007-09	1976-77, 1983-84, 1988, 2010	1974-75, 1978-79, 2001-02, 2007-09	1976-77, 1983-84, 1988, 2010
Italy	1992-98, 2004-07	2001	1977, 1982-83, 1992-94	1981, 2001	1977, 1982-83, 1992-93	1981, 2001	1977, 1982-83, 1992-93
Japan	1997, 2003-07	1993-95, 1998 2009-10	1998-2000, 2005-07	1975, 1994-95, 1998, 2009-10	1998-99, 2005-06	1993-94, 1998, 2009-10	1999-00, 2006-07
Netherlands		2002, 2010	1991, 1993	2001-02, 2009-10	1991, 1993	2002, 2009-10	1991
Portugal	1983, 2000-03, 2005-07	1978-80, 2005, 2009-10	1977, 1983-84, 1986	1978-79, 1985, 1990, 1993, 2005, 2009-10	1977, 1983-84, 1986, 1988, 1992, 1995,2006	1978-79, 1993, 2005, 2009-10	1977, 1983-84, 1986, 1988, 1992
Spain	1983-89, 1992-98	2008-10	1987	2008-09	1986, 1987, 2010	2008-09	1987
Sweden	1983-84, 1986, 1992-97, 2007	1974, 1979-80, 1991-94, 2002-03	1984, 1987, 1996-99	1974, 1979, 1991-93, 2002-03, 2010	1976, 1983-84, 1987, 1996-97	1974, 1979, 1991-93, 2002	1984, 1987, 1996-97
United Kingdom	1981-82, 1994-99	1972-75, 1992-94, 2001-04, 2009-10	1981-82, 1997-2000	1972-73, 1990, 1992-93, 2001-02, 2009-2010	1981, 1997-98, 2000	1972-73, 1992-93, 2001-03, 2009-10	1981, 1997-98
United States	1980-81, 1985-86, 1988, 1990-91, 1993-94, 2000	2001-02, 2007-10		2001-02, 2007-08		1974, 2001-02, 2007-08	
Years with episodes	171	95	73	95	79	78	59
Average duration (years)	3.8	2.0	2.1	1.6	1.5	1.6	1.6

Notes: all measures computed by the authors, except the IMF one.
FE1 – measure used by Giavazzi and Pagano (1996): the cumulative change in the primary cyclically adjusted budget balance is at least 5, 4, 3 percentage points of GDP in respectively 4, 3 or 2 years, or 3 percentage points in one year.
FE2 – measure used by Alesina and Ardagna (1998): the change in the primary cyclically adjusted budget balance is at least 2 percentage points of GDP in one year or at least 1.5 percentage points on average in the last two years.
FE3 – measure based on Afonso (2010): a fiscal episode occurs when either the change in the primary cyclically adjusted balance is at least one and a half times the standard deviation (from the full panel sample) in one year, or when the change in the primary cyclically adjusted balance is at least one standard deviation on average in the last two years.
IMF – measure computed by the IMF (2010), so-called policy action-based approach to account for consolidation episodes.

Table 2: Economic performance and fiscal adjustments, 1970-2010

2.1: IMF

capbb_gdp			totgovexp_gdp			totgovrev_gdp			rpubinv			rgovcons		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*
-0.25	1.19	1.94	46.59	36.50	44.82	42.78	34.74	43.41	43.12	43.51	38.86	304.00	315.34	293.65
rgdp			**rprivcons**			**rprivinv**			**debt ratio**			**unemp**		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*During*	*t+1*	*t-1*	*during*	*t+1*
1607.79	1676.85	1519.15	1008.20	1051.28	937.63	269.92	278.76	250.11	51.56	61.37	61.39	7.44	8.06	7.28

2.2: FE1

capbb_gdp			totgovexp_gdp			totgovrev_gdp			rpubinv			rgovcons		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*During*	*t+1*	*t-1*	*during*	*t+1*
-2.64	0.53	0.70	47.81	46.62	46.22	41.02	42.61	42.91	15.21	14.12	14.75	95.41	97.59	105.64
rgdp			**rprivcons**			**rprivinv**			**debt ratio**			**unemp**		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*During*	*t+1*	*t-1*	*during*	*t+1*
432.96	450.14	492.31	240.23	249.15	270.36	73.35	77.65	87.41	67.39	70.94	73.20	8.09	8.54	8.03

2.3: FE2

capbb_gdp			totgovexp_gdp			totgovrev_gdp			rpubinv			rgovcons		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*
-2.05	0.83	0.86	47.05	46.18	46.21	41.04	42.71	43.02	13.94	13.12	13.09	89.36	90.96	94.17
rgdp			**rprivcons**			**rprivinv**			**debt ratio**			**unemp**		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*
415.48	427.26	440.07	236.23	243.22	248.97	71.91	74.76	77.85	60.82	63.26	64.31	7.48	7.76	7.42

2.4: FE3

capbb_gdp			totgovexp_gdp			totgovrev_gdp			rpubinv			rgovcons		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*
-2.67	0.58	0.81	47.46	46.28	43.32	40.75	42.35	40.07	12.46	11.50	11.33	84.22	85.18	86.31
rgdp			**rprivcons**			**rprivinv**			**debt ratio**			**unemp**		
t-1	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*	*t-1*	*during*	*t+1*
390.94	403.61	411.18	221.49	229.23	232.17	66.26	69.79	72.78	63.60	65.99	66.49	7.98	8.30	7.41

Note: each entry corresponds to average the values from the different fiscal episodes (contractions) computed under the four different methods: IMF, FE1, FE2 and FE3. The full set of information with the individual episodes is available from the authors upon request.

Table 3a: Fixed Effects' estimation results for real per capita private consumption – 1970-2010

Specification			1		2		3		4	
			IMF	*lr*	**FE1**	*lr*	**FE2**	*lr*	**FE3**	*lr*
λ	C_{t-1}		-0.102***		-0.044***		-0.045***		-0.046***	
			(0.018)		(0.011)		(0.011)		(0.011)	
ω_0	Y_{t-1}		0.082***	0.808***	0.048***	1.09***	0.048***	1.076***	0.049***	1.06***
			(0.012)	(0.160)	(0.010)	(0.255)	(0.010)	(0.2523)	(0.011)	(0.250)
ω_1	ΔY_t		0.783***		0.742***		0.740***		0.734***	
			(0.084)		(0.063)		(0.064)		(0.065)	
δ_0	$Y^{av}{}_{t-1}$		0.014		-0.008		-0.007		-0.008	
			(0.017)		(0.011)		(0.012)		(0.012)	
δ_1	$\Delta Y^{av}{}_t$		-0.053		-0.032		-0.028		-0.016	
			(0.101)		(0.088)		(0.091)		(0.093)	
α_1	TEX_{t-1}	$\times FC^m$	0.003	0.029	-0.005*	-0.113*	-0.005*	-0.106	-0.004	-0.078
			(0.010)	(0.091)	(0.002)	(0.064)	(0.002)	(0.062)	(0.002)	(0.058)
α_3	ΔTEX_t		-0.030		0.039		0.054		0.063	
			(0.041)		(0.033)		(0.034)		(0.041)	
α_2	TEX_{t-1}	$\times (1-FC^m)$	0.004	0.039	-0.005*	-0.107	-0.005*	-0.104	-0.003	-0.074
			(0.009)	(0.089)	(0.003)	(0.068)	(0.003)	(0.065)	(0.002)	(0.059)
α_4	ΔTEX_t		-0.011		-0.034*		-0.034**		-0.028*	
			(0.026)		(0.017)		(0.015)		(0.015)	
Obs.			422		694		694		694	
R-squared			0.696		0.639		0.640		0.638	
Null hypothesis			**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\alpha_1 - \alpha_2 = 0$			4.42	0.055	0.25	0.624	0.04	0.837	0.07	0.796

Note: *TEX* denotes total government expenditure in real terms and per capita. Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private consumption with respect to the relevant explanatory variable (standard errors are approximated with the Delta Method). FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010).

Table 3b: Fixed Effects' estimation results for real per capita private consumption – 1970-2010

Specification			1		2		3		4	
			IMF	*lr*	**FE1**	*lr*	**FE2**	*lr*	**FE3**	*lr*
λ	C_{t-1}		-0.096***		-0.042***		-0.041***		-0.042***	
			(0.016)		(0.009)		(0.009)		(0.009)	
ω_0	Y_{t-1}		0.086***	0.897***	0.054***	1.275***	0.054***	1.318***	0.054***	1.287***
			(0.013)	(0.192)	(0.012)	(0.293)	(0.012)	(0.325)	(0.012)	(0.311)
ω_1	ΔY_t		0.781***		0.717***		0.719***		0.717***	
			(0.075)		(0.059)		(0.061)		(0.060)	
δ_0	$Y^{av}{}_{t-1}$		0.016		0.001		-0.000		0.000	
			(0.018)		(0.013)		(0.013)		(0.014)	
δ_1	$\Delta Y^{av}{}_t$		-0.050		0.025		0.019		0.025	
			(0.093)		(0.086)		(0.090)		(0.089)	
α_1	FCE_{t-1}	$\times FC^m$	-0.006	-0.066	-0.013**	-0.302**	-0.013**	-0.316**	-0.013**	-0.230**
			(0.011)	(0.120)	(0.005)	(0.137)	(0.005)	(0.133)	(0.005)	(0.127)
α_3	ΔFCE_t		0.067*		-0.003		0.028		0.003	
			(0.035)		(0.045)		(0.040)		(0.034)	
α_2	FCE_{t-1}	$\times (1-FC^m)$	-0.005	-0.052	-0.013**	-0.311**	-0.014**	-0.332**	-0.013**	-0.311**
			(0.011)	(0.119)	(0.005)	(0.136)	(0.005)	(0.130)	(0.005)	(0.127)
α_4	ΔFCE_t		0.002		0.034		0.030		0.032	
			(0.044)		(0.031)		(0.029)		(0.027)	
Obs.			422		694		694		694	
R-squared			0.697		0.644		0.644		0.643	
Null hypothesis			**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\alpha_1 - \alpha_2 = 0$			3.92	0.069	0.25	0.62	0.82	0.37	0.16	0.698

Note: Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private consumption with respect to the relevant explanatory variable. FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010). The long-run coefficients are computed as described in the main text and the standard errors are approximated with the Delta Method.

Table 3c: Fixed Effects' estimation results for real per capita private consumption – 1970-2010

Dependent Variable			**Real Private consumption per capita**							
Specification			**1**		**2**		**3**		**4**	
			IMF	*lr*	**FE1**	*lr*	**FE2**	*lr*	**FE3**	*lr*
λ	C_{t-1}		-0.098***		-0.042***		-0.042***		-0.043***	
			(0.016)		(0.010)		(0.010)		(0.010)	
ω_0	Y_{t-1}		0.083***	0.845***	0.046***	1.101***	0.046***	1.087***	0.046***	1.085***
			(0.013)	(0.133)	(0.010)	(0.233)	(0.010)	(0.215)	(0.010)	(0.218)
ω_1	ΔY_t		0.765***		0.732***		0.732***		0.731***	
			(0.102)		(0.064)		(0.064)		(0.063)	
δ_0	$Y^{av}{}_{t-1}$		0.014		-0.002		-0.002		-0.002	
			(0.016)		(0.014)		(0.014)		(0.014)	
δ_1	$\Delta Y^{av}{}_t$		-0.027		-0.001		-0.001		0.000	
			(0.107)		(0.101)		(0.101)		(0.100)	
α_1	TF_{t-1}	$\times FC^m$	-0.001	-0.014	-0.007	-0.170	-0.007	-0.172	-0.007	-0.163
			(0.006)	(0.062)	(0.004)	(0.118)	(0.005)	(0.121)	(0.004)	(0.116)
α_3	ΔTF_t		-0.059		0.046		0.076***		0.062***	
			(0.071)		(0.030)		(0.017)		(0.020)	
α_2	TF_{t-1}	$\times(1-FC^m)$	-0.000	-0.005	-0.007	-0.160	-0.007	-0.164	-0.006	-0.151
			(0.006)	(0.051)	(0.005)	(0.120)	(0.005)	(0.116)	(0.004)	(0.115)
α_4	ΔTF_t		0.005		-0.016		-0.023		-0.018	
			(0.027)		(0.028)		(0.028)		(0.028)	
Obs.			420		692		692		692	
R-squared			0.698		0.640		0.645		0.641	
Null hypothesis			**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\alpha_1 - \alpha_2 = 0$			2.09	0.171	0.34	0.567	0.22	0.64	0.31	0.584

Note: *TF* denotes social transfers in real terms and per capita. Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private consumption with respect to the relevant explanatory variable (standard errors are approximated with the Delta Method). FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010).

Table 4: Fixed Effects' estimation results for real per capita private consumption – 1970-2010

Specification			1		2		3		4	
			IMF	*lr*	FE1	*lr*	FE2	*lr*	FE3	*lr*
λ	C_{t-1}		-0.102***		-0.048***		-0.048***		-0.048***	
			(0.017)		(0.009)		(0.008)		(0.008)	
ω_0	Y_{t-1}		0.076***	0.743***	0.055***	1.144***	0.054***	1.129***	0.053***	1.111***
			(0.018)	(0.202)	(0.011)	(0.164)	(0.013)	(0.197)	(0.012)	(0.203)
ω_1	ΔY_t		0.738***		0.712***		0.717***		0.711***	
			(0.087)		(0.057)		(0.059)		(0.060)	
δ_0	$Y^{av}{}_{t-1}$		0.006		-0.006		-0.005		-0.005	
			(0.014)		(0.012)		(0.013)		(0.013)	
δ_1	$\Delta Y^{av}{}_t$		-0.065		0.003		0.008		0.017	
			(0.087)		(0.091)		(0.091)		(0.092)	
α_1	FCE_{t-1}	$\times FC^m$	-0.014	-0.139	-0.057***	-1.184**	-0.040**	-0.844**	-0.032*	-0.679*
			(0.010)	(0.108)	(0.018)	(0.561)	(0.014)	(0.343)	(0.016)	(0.369)
α_3	ΔFCE_t		0.073		0.011		0.075		0.040	
			(0.043)		(0.044)		(0.051)		(0.058)	
β_1	TF_{t-1}		0.007	0.0677	0.018**	0.367*	0.013*	0.265*	0.007	0.141
			(0.009)	(0.092)	(0.007)	(0.187)	(0.007)	(0.139)	(0.008)	(0.168)
β_3	ΔTF_t		-0.053		0.061*		0.111***		0.084**	
			(0.084)		(0.029)		(0.026)		(0.033)	
γ_1	TAX_{t-1}		0.022	0.216	0.035***	0.725*	0.023**	0.473**	0.021**	0.431*
			(0.014)	(0.129)	(0.012)	(0.358)	(0.009)	(0.216)	(0.009)	(0.221)
γ_3	ΔTAX_t		0.039		-0.002		0.030		0.035	
			(0.035)		(0.030)		(0.023)		(0.030)	
α_2	FCE_{t-1}	$\times(1-FC^m)$	-0.001	-0.013	-0.021***	-0.428**	-0.023***	-0.473**	-0.022***	-0.462**
			(0.011)	(0.113)	(0.006)	(0.182)	(0.006)	(0.181)	(0.007)	(0.188)
α_4	ΔFCE_t		0.012		0.030		0.029		0.028	
			(0.050)		(0.026)		(0.028)		(0.025)	
β_2	TF_{t-1}		-0.001	-0.007	-0.001	-0.014	-0.000	-0.001	-0.000	-0.0018
			(0.006)	(0.060)	(0.006)	(0.120)	(0.005)	(0.110)	(0.005)	(0.108)
β_4	ΔTF_t		0.012		-0.008		-0.016		-0.009	
			(0.032)		(0.030)		(0.030)		(0.029)	
γ_2	TAX_{t-1}		0.017	0.170	0.016**	0.329*	0.017**	0.354**	0.017**	0.354**
			(0.013)	(0.132)	(0.006)	(0.167)	(0.006)	(0.158)	(0.007)	(0.169)
γ_4	ΔTAX_t		0.023		0.003		-0.009		-0.003	
			(0.032)		(0.019)		(0.019)		(0.019)	
Obs.			420		692		692		692	
R-squared			0.706		0.654		0.660		0.653	

Null hypothesis	Test statistic	p-value	Test statistic	p-value	Test statistic	p-value	Test statistic	p-value
$\alpha_1 - \alpha_2 = 0$	1.12	0.31	4.72	0.04	1.57	0.226	0.42	0.525
$\gamma_1 - \gamma_2 = 0$	0.30	0.59	3.88	0.06	0.34	0.56	0.12	0.729
$-\alpha_1 - \gamma_1 = 0$	0.27	0.610	6.47	0.02	6.45	0.021	1.81	0.195
$\beta_1 - \beta_2 = 0$	1.45	0.249	5.14	0.036	4.63	0.046	0.72	0.409

Note: *FCE, TF* and *TAX* denote government consumption expenditure, social transfers, and total tax revenue in real terms and per capita. Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private consumption with respect to the relevant explanatory variable (standard errors are approximated with the Delta Method). FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010).

Table 5: Fixed Effects' estimation results for real per capita private consumption – *Byear* dummy for debt ratio threshold, 1970-2010

Specification			1		2		3		4	
			IMF	*lr*	FE1	*lr*	FE2	*lr*	FE3	*lr*
λ	C_{t-1}		-0.104***		-0.045***		-0.049***		-0.046***	
			(0.021)		(0.010)		(0.009)		(0.008)	
ω_0	Y_{t-1}		0.072***	0.694**	0.052***	1.148***	0.052***	1.068***	0.050***	1.095***
			(0.024)	(0.251)	(0.015)	(0.206)	(0.015)	(0.209)	(0.015)	(0.223)
ω_1	ΔY_t		0.715***		0.690***		0.699***		0.687***	
			(0.100)		(0.052)		(0.053)		(0.050)	
δ_0	$Y^{av}{}_{t-1}$		0.010		0.001		0.002		0.002	
			(0.016)		(0.012)		(0.013)		(0.012)	
δ_1	$\Delta Y^{av}{}_t$		-0.072		0.012		0.012		0.024	
			(0.078)		(0.081)		(0.085)		(0.081)	
α_{10}	FCE_{t-1}		0.001	0.013	-0.168***	-3.698**	0.029	0.591	-0.101***	-2.19***
			(0.021)	(0.196)	(0.049)	(1.481)	(0.026)	(0.482)	(0.017)	(0.507)
α_{30}	ΔFCE_t		0.117*		0.153***		0.197***		0.143**	
			(0.064)		(0.051)		(0.056)		(0.056)	
β_{10}	TF_{t-1}	$\times HC^m$	0.011	0.105	0.069***	1.528**	-0.002	-0.049	0.044***	0.957***
			(0.015)	(0.132)	(0.020)	(0.592)	(0.008)	(0.168)	(0.011)	(0.256)
β_{30}	ΔTF_t	$\times(1-Byear)$	-0.001		0.144***		0.131***		0.132***	
			(0.047)		(0.024)		(0.026)		(0.018)	
γ_{10}	TAX_{t-1}		0.005	0.045	0.080**	1.759**	-0.027	-0.550	0.042***	0.921***
			(0.019)	(0.188)	(0.028)	(0.801)	(0.018)	(0.336)	(0.009)	(0.266)
γ_{30}	ΔTAX_t		0.060		-0.030		0.017		-0.003	
			(0.039)		(0.038)		(0.017)		(0.026)	
α_{20}	FCE_{t-1}		-0.019	-0.180	-0.032***	-0.703**	-0.033***	-0.670**	-0.032***	-0.694**
			(0.011)	(0.133)	(0.008)	(0.262)	(0.009)	(0.246)	(0.009)	(0.261)
α_{40}	ΔFCE_t		0.044		0.036		0.038		0.035	
			(0.073)		(0.039)		(0.046)		(0.041)	
β_{20}	TF_{t-1}	$\times(1-HC^m)$	0.005	0.049	0.001	0.017	0.001	0.024	0.001	0.002
			(0.008)	(0.076)	(0.004)	(0.094)	(0.004)	(0.083)	(0.004)	(0.089)
β_{40}	ΔTF_t	$\times(1-Byear)$	-0.036		-0.033		-0.043		-0.033	
			(0.036)		(0.030)		(0.027)		(0.028)	
γ_{20}	TAX_{t-1}		0.029*	0.280*	0.023**	0.498**	0.024***	0.485**	0.024**	0.512**
			(0.014)	(0.142)	(0.008)	(0.218)	(0.008)	(0.197)	(0.008)	(0.223)
γ_{40}	ΔTAX_t		0.042		0.031		0.018		0.030	
			(0.040)		(0.018)		(0.023)		(0.019)	
α_{11}	FCE_{t-1}		-0.006	-0.055	-0.045**	-0.981**	-0.060**	-1.22**	-0.036	-0.786
			(0.022)	(0.214)	(0.017)	(0.444)	(0.024)	(0.450)	(0.026)	(0.545)
α_{31}	ΔFCE_t		0.057		-0.030		0.048		0.039	
			(0.065)		(0.050)		(0.066)		(0.079)	
β_{11}	TF_{t-1}	$\times HC^m$	-0.007	-0.064	-0.001	-0.013	0.008	0.231	-0.008	-0.175
			(0.018)	(0.174)	(0.014)	(0.305)	(0.006)	(0.238)	(0.014)	(0.322)
β_{31}	ΔTF_t	$\times Byear$	-0.164		-0.066		-0.027		-0.033	
			(0.180)		(0.068)		(0.029)		(0.068)	
γ_{11}	TAX_{t-1}		0.028	0.265	0.037***	0.816**	0.042**	0.854***	0.036**	0.784**
			(0.017)	(0.164)	(0.008)	(0.287)	(0.015)	(0.292)	(0.015)	(0.318)
γ_{31}	ΔTAX_t		-0.017		0.011		0.023		0.030	
			(0.061)		(0.040)		(0.037)		(0.048)	

α_{21}	FCE_{t-1}	$\times(1-FC^{m})$	0.028	0.271	-0.006	-0.136	-0.012	-0.236	-0.012	-0.261
			(0.030)	(0.279)	(0.010)	(0.224)	(0.010)	(0.212)	(0.010)	(0.211)
α_{41}	ΔFCE_{t}		-0.008		0.038		0.032		0.033	
			(0.064)		(0.029)		(0.032)		(0.031)	
β_{21}	TF_{t-1}		-0.018	-0.170	-0.007	-0.148	-0.004	-0.075	-0.004	-0.091
			(0.021)	(0.200)	(0.010)	(0.237)	(0.009)	(0.191)	(0.009)	(0.197)
β_{41}	ΔTF_{t}	$\times Byear$	-0.002		0.016		0.010		0.013	
			(0.049)		(0.043)		(0.045)		(0.044)	
γ_{21}	TAX_{t-1}		0.005	0.049	0.005	0.099	0.008	0.159	0.009	0.190
			(0.014)	(0.133)	(0.005)	(0.125)	(0.006)	(0.131)	(0.007)	(0.156)
γ_{41}	ΔTAX_{t}		-0.005		-0.014		-0.027		-0.026	
			(0.037)		(0.024)		(0.029)		(0.028)	
Obs.			400		639		639		639	
R-squared			0.729		0.688		0.694		0.689	

Null hypothesis	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\beta_{30}-\beta_{40}=0$	1.33	0.270	12.79	0.002	24.87	0.0001	17.15	0.001
$\beta_{40}-\beta_{31}=0$	0.58	0.458	0.20	0.659	1.49	0.2384	0.00	0.99
$\beta_{31}-\beta_{41}=0$	0.87	0.367	8.93	0.008	1.73	0.2053	5.33	0.0339
$\gamma_{10}-\gamma_{11}=0$	1.28	0.277	2.19	0.157	9.94	0.0058	0.016	0.696

Note: *FCE, TF* and *TAX* denote government consumption expenditure, social transfers, total tax revenue in real terms, and per capita. Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private consumption with respect to the relevant explanatory variable (standard errors are approximated with the Delta Method). FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010). $Byear_{it}$ takes the value 1 if the debt ratio is above the average of the debt ratio in year *t* for the entire cross-country sample

Table 6.a: Fixed Effects' estimation results for real per capita private investment – 1970-2010

Dependent Variable			**Real Private investment per capita**							
Specification			**1**		**2**		**3**		**4**	
			IMF	*lr*	**FE1**	*lr*	**FE2**	*lr*	**FE3**	*lr*
λ	INV_{t-1}		-0.036		-0.061*		-0.060*		-0.060*	
			(0.028)		(0.031)		(0.032)		(0.031)	
ω_0	Y_{t-1}		0.099	2.768**	0.039	0.643	0.037	0.615	0.035	0.581
			(0.068)	(1.026)	(0.060)	(0.696)	(0.059)	(0.690)	(0.057)	(0.689)
ω_1	ΔY_{t}		2.937***		2.652***		2.658***		2.635***	
			(0.159)		(0.103)		(0.104)		(0.106)	
δ_0	$Y^{av}{}_{t-1}$		0.079		0.055		0.057		0.056	
			(0.051)		(0.042)		(0.039)		(0.038)	
δ_1	$\Delta Y^{av}{}_{t}$		0.164		0.118		0.108		0.150	
			(0.204)		(0.266)		(0.256)		(0.258)	
α_1	TEX_{t-1}	$\times FC^{m}$	-0.112***	-3.117	-0.025**	-0.411	-0.025*	-0.415	-0.024*	-0.407
			(0.022)	(2.601)	(0.012)	(0.249)	(0.012)	(0.270)	(0.012)	(0.262)
α_3	ΔTEX_{t}		-0.446**		-0.199*		-0.033		-0.085	
			(0.164)		(0.110)		(0.069)		(0.078)	
α_2	TEX_{t-1}	$\times(1-FC^{m})$	-0.114***	-3.164	-0.026**	-0.423	-0.026**	-0.438	-0.024*	-0.406
			(0.023)	(2.656)	(0.012)	(0.243)	(0.012)	(0.266)	(0.012)	(0.249)
α_4	ΔTEX_{t}		-0.273**		-0.285***		-0.303***		-0.286***	
			(0.120)		(0.084)		(0.090)		(0.084)	
Obs.			422		694		694		694	
R-squared			0.754		0.656		0.658		0.657	
Null hypothesis			**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\alpha_1-\alpha_2=0$			0.81	0.38	0.15	0.701	0.40	0.53	0.33	0.57

Note: *TEX* denotes total government expenditure in real terms and per capita. Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private investment with respect to the relevant explanatory variable (standard errors are approximated with the Delta Method). FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010).

Table 6.b: Fixed Effects' estimation results for real per capita private investment – 1970-2010

Dependent Variable			**Real Private investment per capita**							
Specification			**1**		**2**		**3**		**4**	
			IMF	*lr*	**FE1**	*lr*	**FE2**	*lr*	**FE3**	*lr*
λ	INV_{t-1}		-0.015		-0.064*		-0.063*		-0.064*	
			(0.022)		(0.032)		(0.032)		(0.031)	
ω_0	Y_{t-1}		0.026	1.800	0.039	0.608	0.037	0.582	0.039	0.617
			(0.053)	(2.15)	(0.079)	(0.955)	(0.074)	(0.907)	(0.074)	(0.883)
ω_1	ΔY_t		3.019***		2.631***		2.625***		2.613***	
			(0.178)		(0.109)		(0.111)		(0.112)	
δ_0	$Y^{av}{}_{t-1}$		0.092**		0.067		0.069		0.069	
			(0.042)		(0.045)		(0.041)		(0.041)	
δ_1	$\Delta Y^{av}{}_t$		0.258		0.302		0.304		0.322	
			(0.213)		(0.271)		(0.270)		(0.272)	
α_1	FCE_{t-1}	$\times FC^m$	-0.045*	-3.07	-0.016	-0.258	-0.015	-0.243	-0.019	-0.301
			(0.023)	(4.83)	(0.023)	(0.288)	(0.022)	(0.286)	(0.022)	(0.273)
α_3	ΔFCE_t		-0.131		0.113		0.215		0.289	
			(0.153)		(0.246)		(0.201)		(0.204)	
α_2	FCE_{t-1}	$\times(1-FC^m)$	-0.046*	-3.18	-0.018	0.288	-0.018	-0.292	-0.020	-0.313
			(0.024)	(5.04)	(0.023)	(0.291)	(0.023)	(0.329)	(0.022)	(0.282)
α_4	ΔFCE_t		-0.094		-0.091		-0.097		-0.105	
			(0.140)		(0.082)		(0.081)		(0.080)	
Obs.			422		694		694		694	
R-squared			0.738		0.646		0.648		0.649	
Null hypothesis			**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\alpha_1 - \alpha_2 = 0$			0.23	0.641	0.42	0.52	1.31	0.26	0.06	0.802

Note: Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private consumption with respect to the relevant explanatory variable. FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010). The long-run coefficients are computed as described in the main text and the standard errors are approximated with the Delta Method.

Table 6.c: Fixed Effects' estimation results for real per capita private investment – 1970-2010

Dependent Variable			**Real Private investment per capita**							
Specification			**1**		**2**		**3**		**4**	
			IMF	*lr*	**FE1**	*lr*	**FE2**	*lr*	**FE3**	*lr*
λ	INV_{t-1}		-0.056*		-0.081**		-0.081**		-0.080**	
			(0.030)		(0.030)		(0.030)		(0.030)	
ω_0	Y_{t-1}		0.096	1.705***	0.081	0.996**	0.079	0.984**	0.077	0.957**
			(0.063)	(0.503)	(0.061)	(0.439)	(0.061)	(0.440)	(0.059)	(0.438)
ω_1	ΔY_t		2.783***		2.458***		2.466***		2.458***	
			(0.141)		(0.089)		(0.089)		(0.090)	
δ_0	$Y^{av}{}_{t-1}$		0.101*		0.077		0.079		0.081*	
			(0.056)		(0.047)		(0.046)		(0.046)	
δ_1	$\Delta Y^{av}{}_t$		0.291*		0.295		0.288		0.303	
			(0.147)		(0.255)		(0.252)		(0.254)	
α_1	TF_{t-1}	$\times FC^m$	-0.083**	-1.48	-0.049*	-0.602*	-0.048*	-0.590*	-0.049*	-0.613*
			(0.033)	(0.870)	(0.026)	(0.326)	(0.026)	(0.328)	(0.025)	(0.333)
α_3	ΔTF_t		-0.260**		-0.341***		-0.340***		-0.359***	
			(0.112)		(0.044)		(0.042)		(0.047)	
α_2	TF_{t-1}	$\times(1-FC^m)$	-0.085**	-1.51	-0.053*	-0.645*	-0.053*	-0.655*	-0.052*	-0.653*
			(0.035)	(0.888)	(0.026)	(0.327)	(0.026)	(0.334)	(0.026)	(0.333)
α_4	ΔTF_t		-0.282***		-0.251***		-0.250***		-0.249***	
			(0.086)		(0.055)		(0.052)		(0.053)	
Obs.			420		692		692		692	
R-squared			0.754		0.670		0.670		0.671	
Null hypothesis			**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**	**Test statistic**	**p-value**
$\alpha_1 - \alpha_2 = 0$			0.31	0.588	4.69	0.044	6.41	0.021	2.13	0.163

Note: *SS* denotes social security and welfare transfers in real terms and per capita. Robust heteroskedastic-consistent standard errors are reported in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. The data sample includes yearly observations for the list of countries described in the main text over the period 1970-2010. *lr* – long-run elasticity of private investment with respect to the relevant explanatory variable (standard errors are approximated with the Delta Method). FE1 – measure used by Giavazzi and Pagano (1996); FE2 – measure used by Alesina and Ardagna (1998); FE3 – measure used by Afonso (2010).

Table 7: Events and successes, 1970-2010

	Total Events	Successes	Success Rate (%)
IMF	171	63	36.8
FE1	73	39	53.4
FE2	79	51	64.6
FE3	59	38	64.4

Table 8: Size of Consolidations, total budget balance, 1970-2010

	Size of consolidation (% GDP)		Average fiscal balance prior to consolidation (% GDP)		Average output growth prior to consolidation (%)	
	All	Expenditure-based	All	Expenditure-based	All	Expenditure-based
IMF	0.665	1.199	0.257	0.232	0.998	1.138
FE1	1.824	2.078	-0.720	-1.007	0.926	0.841
FE2	2.231	2.251	-1.574	-1.492	0.908	0.857
FE3	2.314	2.281	-1.340	-1.374	0.886	1.030

Table 9: Consolidation successes: logistic regressions (using different thresholds), 1970-2010 (IMF approach)

Specification	**Expenditure**			**Revenue**			**Expenditure**			**Interaction**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
constant	-1.761***	-1.676***	-1.774***	-1.649***	-1.828***	-1.609***	-1.881***	-1.804***	-1.892***	-1.656***	-1.665***	-1.653***
	(0.499)	(0.546)	(0.472)	(0.380)	(0.420)	(0.376)	(0.552)	(0.597)	(0.527)	(0.282)	(0.283)	(0.282)
dcapb	1.382***	1.370***	1.387***	1.362***	1.399***	1.346***	1.385***	1.374***	1.389***	1.549***	1.506***	1.566***
	(0.233)	(0.230)	(0.235)	(0.233)	(0.234)	(0.238)	(0.234)	(0.230)	(0.235)	(0.313)	(0.339)	(0.298)
exp23	0.095						0.068					
	(0.470)						(0.475)					
exp12		-0.003						-0.027				
		(0.517)						(0.522)				
exp34			0.114						0.086			
			(0.448)						(0.451)			
rev23				-0.048								
				(0.409)								
rev12					0.204							
					(0.417)							
rev34						-0.118						
						(0.427)						
duration							0.020	0.021	0.019			
							(0.038)	(0.038)	(0.038)			
inter23										-0.304		
										(0.337)		
inter12											-0.202	
											(0.357)	
inter34												-0.369
												(0.326)
McFadden R2	0.295	0.295	0.295	0.295	0.296	0.295	0.296	0.296	0.296	0.298	0.296	0.301
N	171	171	171	171	171	171	171	171	171	171	171	171

Note: The standard errors are in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. Interaction terms between dcapb and EXP.

Table 10: Consolidation successes: logistic regressions (using different thresholds), 1970-2010 (FE1 case)

Specification	Expenditure			Revenue			Expenditure			Interaction		
	1	2	3	4	5	6	7	8	9	10	11	12
constant	-2.032***	-2.027***	-1.695**	-1.565**	-1.250*	-1.466**	-4.985***	-5.038***	-4.827***	1.529***	1.523***	1.478***
	(0.726)	(0.731)	(0.688)	(0.656)	(0.650)	(0.637)	(1.339)	(1.360)	(1.357)	(0.505)	(0.500)	(0.497)
dcapb	1.009***	0.989***	0.962***	0.944***	0.896***	0.919***	1.374***	1.368***	1.352***	0.909***	0.894***	0.969***
	(0.253)	(0.247)	(0.250)	(0.256)	(0.238)	(0.255)	(0.337)	(0.333)	(0.342)	(0.250)	(0.266)	(0.253)
exp23	0.648						0.356					
	(0.619)						(0.712)					
exp12		0.634						0.399				
		(0.624)						(0.722)				
exp34			0.239						0.095			
			(0.602)						(0.708)			
rev23				0.080								
				(0.632)								
rev12					-0.352							
					(0.586)							
rev34						-0.074						
						(0.653)						
duration							0.884***	0.887***	0.898***			
							(0.274)	(0.273)	(0.274)			
inter23										0.063		
										(0.270)		
inter12											0.074	
											(0.268)	
inter34												-0.125
												(0.274)
McFadden R2	0.265	0.265	0.256	0.254	0.258	0.254	0.413	0.414	0.411	0.255	0.255	0.256
N	73	73	73	73	73	73	72	72	72	73	73	73

Note: The standard errors are in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. Interaction terms between dcapb and EXP.

Table 11: Consolidation successes: logistic regressions (using different thresholds), 1970-2010 (FE2 case)

Specification	1	2	3	4	5	6	7	8	9	10	11	12
constant	-1.566**	-1.851**	-1.288*	-0.905	-0.900	-0.842	-6.066***	-6.850***	-5.862***	-1.238**	-1.269**	-1.198**
	(0.728)	(0.760)	(0.701)	(0.692)	(0.716)	(0.676)	(1.850)	(2.006)	(1.820)	(0.608)	(0.614)	(0.601)
dcapb	0.928***	0.957***	0.882***	0.817***	0.842***	0.808***	1.609***	1.744***	1.558***	0.862***	0.796***	0.909***
	(0.280)	(0.283)	(0.274)	(0.270)	(0.264)	(0.271)	(0.502)	(0.529)	(0.495)	(0.272)	(0.278)	(0.273)
exp23	0.497						0.227					
	(0.554)						(0.638)					
exp12		0.819						0.936				
		(0.553)						(0.640)				
exp34			0.091						-0.071			
			(0.556)						(0.644)			
rev23				-0.508								
				(0.542)								
rev12					-0.448							
					(0.546)							
rev34						-0.718						
						(0.554)						
duration							2.019***	2.085***	2.035***			
							(0.628)	(0.651)	(0.629)			
inter23										0.031		
										(0.239)		
inter12											0.185	
											(0.233)	
inter34												-0.152
												(0.242)
McFadden R2	0.170	0.184	0.162	0.170	0.169	0.178	0.316	0.337	0.315	0.162	0.168	0.166
N	79	79	79	79	79	79	77	77	77	79	79	79

Note: The standard errors are in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. Interaction terms between dcapb and EXP.

Table 12: Consolidation successes: logistic regressions (using different thresholds), 1970-2010 (FE3 case)

Specification	Expenditure			Revenue			Expenditure			Interaction		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
constant	-2.053**	-1.917**	-1.669**	-0.572	-0.545	-0.669	-6.026***	-6.220***	-5.684***	-1.338**	-1.294**	-1.251*
	(0.896)	(0.890)	(0.835)	(0.734)	(0.758)	(0.725)	(1.937)	(2.032)	(1.854)	(0.669)	(0.655)	(0.654)
dcapb	1.001***	0.944***	0.941***	0.766***	0.828***	0.786***	1.553***	1.537***	1.499***	0.837***	0.834***	0.876***
	(0.311)	(0.293)	(0.298)	(0.281)	(0.272)	(0.285)	(0.457)	(0.451)	(0.443)	(0.278)	(0.294)	(0.278)
exp23	1.013						1.114					
	(0.691)						(0.800)					
exp12		0.785						1.068				
		(0.677)						(0.802)				
exp34			0.556						0.763			
			(0.675)						(0.797)			
rev23				-1.315*								
				(0.671)								
rev12					-1.108*							
					(0.661)							
rev34						-1.352*						
						(0.693)						
duration							1.770***	1.836***	1.752***			
							(0.682)	(0.696)	(0.662)			
inter23										0.142		
										(0.280)		
inter12											0.077	
											(0.267)	
inter34												-0.042
												(0.281)
McFadden R2	0.229	0.217	0.208	0.250	0.237	0.250	0.372	0.370	0.358	0.203	0.200	0.199
N	59	59	59	59	59	59	59	59	59	59	59	59

Note: The standard errors are in parenthesis. *, **, *** denote significance at 10, 5 and 1% levels. Interaction terms between dcapb and EXP.