The pre-crisis perspective: When do governments consolidate?

A quantitative analysis of 23 OECD countries (1980-2005)

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1. Introduction

The current debt crisis in countries like Greece, Spain or Portugal has put the issue of budget consolidation on top of the political agenda in many countries. Rising interest rates for highly indebted countries, ballooning deficits and the speculation of financial markets against the Euro and other currencies have increased the political and economic pressure on governments to adjust public finances. However, the consolidation of public finances is a difficult task for governments. Any government that cuts social security benefits, increases taxes, or makes public service employees redundant will trigger protests from the groups concerned and may jeopardize its chances of re-election. Therefore, the question arises what variables affect the probability of a fiscal adjustment, or to be more precise: Which factors influence budget consolidations?

This major research question of this paper can be answered by looking back a couple of decades, when several OECD countries experienced a development comparable to the actual situation. When economic growth in many Western industrialized nations slowed down after the first and second oil crisis, unemployment levels soared and increased pressure on public finances. In most cases, governments did not respond by introducing severe cuts or tax increases but chose instead to finance the growing monetary demand by increasing budget deficits. As a result, the level of public debt increased. Although public finances did recover temporarily at the end of the 1980s, by the mid-90s deficits in the OECD countries had increased to a record level. By 1995, the year in which the 23 OECD countries studied here generally recorded their highest levels of debt, the average figure

was 73 per cent of GDP. [1] The debt ratio of Belgium, for instance, increased to more than 140 per cent of GDP in 1993, and the Swedish budget deficit reached 11,2 per cent of GDP in the same year (OECD 2009a). Moreover, the currencies of these highly indebted countries were under a tremendous pressure – a situation quite comparable to the current circumstances.

In this situation, these two countries – and many others – succeeded in balancing their budget by the end of the 1990s. As a consequence, the average debt ratio was back on more sustainable levels in 2005, amounting to 64 per cent of GDP. Several countries recorded even budget surpluses during subsequent years. Thus, overall, the 1990s can be characterised – on average – as a period of fiscal adjustments in the OECD world. However, these averages conceal the fact that developments were far from uniform. Some countries managed to do much better than others. Countries such as Sweden, Canada, Denmark and Belgium generated sometimes large surpluses, reduced their public debt or built up reserves to cover future contingencies (such as demographic changes). Meanwhile, in other OECD countries, such as France and Germany, the level of public debt still continued to rise at the end of the 1990s and the public budgets continued to show a significant deficit each year.

This paper has three aims. First, we seek to identify the factors which determine how governments respond to budgetary pressures and problems: whether they allow deficits to grow or whether they seek to consolidate. In order to do this, we examine the development of public finances in 23 OECD countries by means of an empirical analysis using panel data. Second, we analyse some specific aspects of budget consolidations in greater detail, focusing, in particular on issues of timing and strategy. Finally, we concentrate on the

1 The following OECD countries were analysed in this study: Australia, Belgium, Denmark, Germany, Finland, France, Greece, UK, Ireland, Iceland, Italy, Japan, Canada, Luxembourg, New Zealand, The Netherlands, Norway, Austria, Portugal, Sweden, Switzerland, Spain and the USA. As a result of missing data, the number of cases may be lower for partial assessments. All statements in this article refer to the period prior to 2006, usually the period from 1980 to 2005.

group of budget consolidators and examine the socio-economic, political and institutional factors influencing the relative extent of these budget consolidations. Methodologically, our approach differs from other studies of budget consolidation (Mink and de Haan 2006, Maroto Illera and Mulas-Granados 2008, Mulas-Granados 2006, Mierau et al. 2007), which analyze annual data.[2] Instead, we focus on consolidation episodes, taking the time perspective of austerity politics more into account. From this comprehensive assessment of fiscal adjustments, we can draw some conclusions with respect to the current situation of public finances in the OECD world.

The remainder of the paper is organized as follows. Section 2 describes the dependent variable, i.e. the budget consolidation, which is a concept used in different operationalizations. Section 3 deals with the theoretical basis and methodological issues. Section 4 analyses the determinants of budget consolidations by means of a panel logit model, while section 5 discusses the findings of an analysis of some specific aspects of consolidation strategies. In section 6, we examine factors influencing consolidation performance within the group of consolidators. The final section of the paper offers some concluding comments.

2. Budget Consolidations – An overview

In the economics literature, we can find numerous studies dealing with budget consolidations and their effects (Zaghini 2001, Alesina and Perotti 1995, Alesina and Perotti 1996, Alesina and Perotti 1997, Hagen et al. 2002, Brandner 2003, Larch and Salto 2003, Mulas-Granados 2006). These studies normally use the cyclically-adjusted balance ratios (CAB) or the cyclically-adjusted primary balances (CAPB) as indicators of discretionary fiscal policy. These measures adjust the budget data for changes in the

[2] So far there have only been a very limited number of comparative studies focusing on consolidation episodes (Heylen and Everaert 2000, Guichard et al. 2007).

macroeconomic environment and/or for the non-discretionary interest payments. Arguably, cyclical adjustment is desirable as it makes it possible to filter out the discretionary effects of fiscal policy. However, the methods of calculation vary so greatly that it is doubtful whether cyclically-adjusted balance ratios are in fact suitable indicators for determining consolidation periods (AUTHOR II). International organisations use different methods for the cyclical adjustment of budget balances and the economics community is still discussing which is most appropriate (see most recently: Girouard and André, 2005). Even more problematic is the issue of data quality. For some countries, the adjusted fiscal indicators are only poorly correlated. Looking at different measurements of the CAB for Finland, data from the European Commission and data from the OECD (OECD 2005) for the period 1987–2005 only produce a correlation coefficient of r = 0.66. Moreover the data differs to a large extent, whether one uses IMF, EU or OECD data. Therefore the reliability of the CAB and CAPB data can be doubted.

Taking account of these problems, we define consolidation periods by using the (non-cyclically-adjusted) primary balance ratios. Using this indicator avoids the discussion of the "right" method of cyclical adjustment and the associated data problems. In the case of Finland, the correlation for the different data providers and their various calculations of the primary balance ratios is around 0.99. This improved data quality also applies for the other OECD countries.

Two different types of consolidations can be identified. First, a period of consolidation exists when countries reduce a budget deficit and reduce or stabilize the public debt ratio (Type A). Second, instances in which countries that already have a considerable primary surplus significantly reduce their public debt ratio should also be designated as consolidation periods (Type B).

As it is difficult for countries to reduce a deficit and at the same time maintain a public debt ratio at a constant level, the threshold values for Type A consolidations should be set somewhat lower. In the case of a surplus (Type B) on the other hand, stricter criteria must be applied: a consolidation phase only exists if there are high primary surpluses and a significant reduction in debt. For this reason, the following definitions are chosen for this study:

(A) A consolidation period exists if a negative primary balance (= primary deficit) improves over a period of least two years by a minimum of one percentage point per year and at the same time the public debt ratio during this period remains at least constant (Type A).

(B) A consolidation period exists if there is an average primary surplus of at least two per cent of GDP over a period of at least two years and at the same time the public debt ratio falls by an average of two percentage points per year over the course of two years. In total, the reduction in the public debt ratio during the entire consolidation period must be at least ten percentage points (Type B).

The most difficult decision to be made when identifying consolidation phases is to determine threshold values. Previous studies of budget consolidation advanced a variety of criteria for defining consolidation phases. Table 1 gives an overview of the most important definitions used in previous research. It is very hard to understand why a certain threshold was used in a specific study. Therefore we fully agree with Brandner's notion "the question of the numerical threshold values cannot be determined objectively and/or clearly" (Brandner, 2003). None of the definitions itemized in the table allow any flexibility in terms of fulfilling the criteria. However, it is precisely because of measurement uncertainties that some kind of a "buffer" is appropriate when it comes to

determining consolidation phases. Thus, in view of the heterogeneous nature of the data we allow for a "buffer" of 0.2 percentage points.

A further question arises as to whether one-year improvements in the budget balance should really be designated as consolidations. In contrast to most studies displayed in table 1 we define a consolidation as a process lasting at least two years. The reason for doing so is that a one year consolidation can be influenced by an austerity packages using creative accounting or one-time measures. Ultimately, one-off improvements in the budget balance can also arise as a result of selling off assets, hiving off loss-making assets, or conducting other transactions within budgets. From a dynamic perspective, it therefore seems highly questionable to designate one-year improvements in budget balances as consolidations. For this reason, we consider it appropriate to deem a consolidation as only properly occurring where public finances have shown an improvement over two successive years. This ensures that a consolidation is based on conscious political choice and substantial consolidation efforts.

- Insert Table 1 -

A second criterion for assessing budget consolidations is their sustainability (or success). This focuses on the medium-term effect of a consolidation. Once again, the literature differs on the question of how sustainability should be determined. However, most studies argue that the sustainability of a consolidation should be assessed on the basis of the development of the public debt ratio (Brandner 2003, Alesina and Perotti 1995, Alesina and Perotti 1996, Alesina and Perotti 1997, Zaghini 2001). As a decreasing or a stable public debt ratio is already required for the definitions of consolidation phases, it makes sense to formulate the sustainability criterion somewhat less rigidly. Consolidations are

therefore designated here as being successful or sustainable if the public debt ratio in the third year after the consolidation is at least at the same level as in the last year of the consolidation phase. Since our consolidation episode ends latest 2005, our sustainability criterion ends latest 2008.

- Insert Table 2 -

If we apply the definition to the 23 OECD countries here under analysis, the following picture emerges. The assessment in the period from 1980 to 2005 gives a total of 26 consolidation phases in 17 countries (14 Type A, 12 Type B), of which 16 were successful or sustainable and ten were not sustainable, because public debt started to rise again within three years after the consolidation episode (Table 2).

3. Hypotheses and Methods of Analysis

3.1 Hypotheses

The theoretical basis for our analysis is a set of hypotheses derived from different theories of public policy. Schmidt (2000) identifies six different theoretical approaches that can be used to explain policy variance in different policy fields. These approaches have proved remarkably successful in accounting for the development of public expenditure (social expenditure (Siegel 2002), education spending (Wolf 2006)) and the determinants of public debt (AUTHOR) and it makes sense to start from the assumption that the factors adduced by these theories may also be relevant to questions of budgetary consolidation. These factors are as follows:

(1) A first set of factors is socio-economic in character. One can argue that the probability of a consolidation period increases with rising problem pressure on governments, such as

low economic growth. The higher the level of debt, of interest payments and of unemployment, the greater is the chance that a budget consolidation will be implemented. Empirical studies of fiscal policy (Mulas-Granados 2006) and budget consolidations (von Hagen and Strauch 2001) have already shown that the initial problem pressure has a significant influence.

(2) A second set of factors derive from the "parties-do-matter"-hypotheses, the basic argument of which is that left parties have different political preferences (because of their electorate) from right-wing parties (Hibbs 1977). However, in respect of budget consolidation, causal assumptions are ambivalent. On the one hand, some studies of the determinants of public debt (AUTHOR) and the study of deficits (Persson and Svensson 1989) have identified a positive link correlation between left incumbency and budgetary performance, while a number of authors have argued that left parties are more likely to be able to reform the welfare state than their opponents (Nixon-in-China-logic), just because they are the natural defenders of a big welfare state (Ross 2000, Kitschelt 2001). Add to this the traditional right-wing aversion to high taxation and the obvious implication is that budget consolidation will be more likely under left party auspices. On the other hand, the classic hypothesis of partisan influence on public policy strongly implies that left parties prefer big governments (Hibbs 1977) and Keynesian demand policy, which is empirically extremely well documented (Schmidt 1982, Castles 1982, Schmidt 1996). Therefore, an alternative hypothesis would suggest the strong probability of a negative association between left parties and consolidation performance.

(3) Power resources theory suggests that a third factor likely to affect policy outcomes is the strength of the trade union movement (Korpi 1980). With regard to consolidation performance, the theory suggests that stronger are the trade unions, the greater will be the

organized struggle against proposed public expenditure cuts and, hence, the greater the difficulty in achieving budgetary consolidation.

(4) A fourth factor is the character of political institutions. Several studies in different policy fields have shown that the institutional arrangements of different countries – such as federalism, fiscal decentralization or veto players – have an impact on public policy. Veto players are argued to be responsible for status quo bias in policy and for a failure of policy reforms (Tsebelis 1995, 2002). In addition to the influence of the veto players, the effects of federalism and fiscal decentralisation are widely discussed. Again, assumed causal impacts are ambivalent. The comparative social policy literature assumes that federalism impedes social expenditure growth, but has a ratchet-effect on recent policy settings (see Obinger, Leibfried and Castles 2005). Brennan and Buchanan (1980) argue that federalism is likely to curb spending because of tax competition amongst states, while Oates (1972) notes the federalism creates greater efficiency as a consequence of decentralization. On the other hand, other political economy approaches assume a logic of higher spending deriving from a "common-pool" problem that leads to a possible "overuse" of the tax subjects by too many state entities (Weingast et al. 1981, Hallerberg and Hagen 1999). Federalism also is criticised because of the absence of scale effects, decision blockades and better access for "rent seekers".

(5) Public expenditure development is highly path dependent, as Wildavsky's theory of budgetary instrumentalism (Wildavsky 1964) has postulated early. He argued that budgets are rather sticky and only very small changes over time can be observed. Rose and Karran (1987) have also stressed the path dependency argument for tax systems. Especially in countries where the social security system is organised via the insurance principle, social expenditure cannot be changed very much from one year to another as past contributions are seen as establishing social rights of subsequent benefit. Therefore we would expect that

budget consolidation would be harder to implement in countries where the insurance principle plays an important role in the social security system.

(6) The sixth theoretical approach takes an international perspective. It posits that the extent of the integration of economy into the world market plays a role when it comes to domestic politics. With regard to fiscal policy one would expect that governments in more open economies would have to pay more attention to sound public finances than countries in more closed economies as they must seek to attract foreign investment in a competitive environment – e.g. low taxes, low interest rates etc. Therefore the likelihood of budget consolidation should be positively related to the degree of the openness of the economy.

3.2 Methods of Analysis

Budget improvements and deterioration can be analysed in a variety of ways (AUTHOR II). The first approach is quite simple as it links the definition of budget consolidations to the annual rate of change of a specific indicator. When a certain indicator illustrating the budgetary situation of a country improves, a budget consolidation occurs. When it deteriorates, there is no consolidation. As a consequence, one can run a TSCS-regression and identify a number of independent variables that influence the development of this specific indicator, i.e. the dependent variable. Carlos Mulas-Granados conducts such an analysis and shows that the explanatory power of the independent variables varies over time and that economic variables (the lagged budget balance, the development of the unemployment rate or the inflation rate) are the most important determinants for the development of the budget balance (Mulas-Granados 2006: 77). Whereas the empirical analysis is straightforward, the definition of the dependent variable is problematic. What

Mulas-Granados basically does is to analyse the determinants of fiscal policy.[3] Therefore, the treatment of budget consolidations as annual changes seems not to be the optimal solution.

A second approach takes the characteristics of budget consolidations as periods into account. It is in line with our definition of budget consolidation episodes (see section 2): If a certain indicator in a certain country satisfies the criteria during a certain period of time, this period is labelled as a consolidation period. Defining budget consolidation in this way has important consequences because it affects the research design. Basically, three designs are possible: First, one can code consolidation countries in a sample with 1, non-consolidation countries with 0 and compare the means of the different independent variables. Second, one can define consolidation periods as a first step, but then go on to consider the metric data of the indicators in the analysis, e.g. by calculating the differences of the indicators between the first and the last year of the consolidation period (Heylen/Everaert 2000: 115 and section 5 and 6 of this paper). Both designs are cross-sectional, which limits the degrees of freedom of the analysis and fails to take into account the dynamics of the situation. A possible remedy is proposed by a third design, that splits periods into years coded with 1 (years in a consolidation period) and 0 for the rest of the years (Mierau et al. 2007). Following this strategy, a panel analysis is possible. The disadvantage is that the metric information of the data is lost.

Summing up, one may conclude that the definition of fiscal adjustments as periods of time is more straightforward than the "annual-rate"-solution. Within this approach, three research designs are possible. The most promising solution is to analyse the determinants of budget consolidations by splitting up the consolidation periods into years.

[3] In his book on fiscal adjustment, the TSCS-analysis of Mulas-Granados is just one of several methods of investigation (hazard models, probit regressions, etc.).

Methodologically a panel logit regression analysis is a appropriate method for such a research design.[4] In principle, the logistic regression analysis of pooled data faces the same problems as the linear TCSC-analysis: heterogeneity, serial correlation and heteroscedasticity – to name the most important difficulties. The remedies for these problems, however, differ from the OLS-case because of the maximum-likelihood-estimation and the binary nature of the dependent variable.[5] To correct for serial correlation, Beck, Katz and Tucker suggest introducing a series of splines and dummy variables (Beck et al. 1998). This approach is followed in this analysis. A possible way of dealing with the heterogeneity problem would be to model unit fixed effects by means of a conditional logistic regression model (Chamberlain 1980, Verbeek 2004: 375). But a conditional specification has the big drawback that time-invariant units cannot be included in the model. Such a specification would mean that five of the 23 instances of consolidation identified above would be excluded from the analysis. This does not seem logical as these instances should clearly contribute to our analytical understanding of successful budgetary performance. Thus, even if unit heterogeneity cannot be excluded, the estimation of a conditional logit model is not appropriate.[6]

4. Determinants of Budget Consolidation

The previous sections have briefly discussed a variety of theoretical and empirical approaches that can be used to account for cross-national and over-time variance in public policy. That discussion further identified a series of hypotheses derived from these theories

[4] A common abbreviation is BTSCS-analysis (binary time series cross sectional analysis) (Beck et al. 1998).

[5] Even in the linear case, the methodological debate concerning the correct „remedy“ for the different problems linked to the analysis of panel data still continues (e.g. about fixed effects models) (Maddala 1998, Plümper and Troeger 2007).

[6] That is the reason why Beck and Katz categorically reject the use of fixed effects (or conditional regression) in a BTSCS-analysis (Beck and Katz 2001: 488):”We show that the use of fixed effects is clearly a bad idea for the binary dependent variable case“.

that might assist in explaining variance in budgetary performance and, in particular, the occurrence or non-occurrence of budget consolidation. In this section, these hypotheses will be tested by a binary logistic regression empirical analysis. The operationalization of the variables featuring in these hypotheses are summarised in the Appendix.

Table 3 summarises the findings of the regression estimations. Model 1 is a baseline model including only economic variables. In order to control for serial correlation, a number of splines and a counting dummy are added in all estimations (Beck et al. 1998). In models 2-4 we added three different indicators for partisan ideology (right, left, centre), a variable for power resources (strike) and different indicators for the institutional arrangements of the countries (veto-player-index and some other institutional features). Some variables could not be included simultaneously because of multicollinearity. In model 5 we tested alternative economic indicators (economic growth instead of demand-index, debt-ratio instead of misery index) and included all the variables that proved to be significant in the other estimations.[7]

The findings in Table 3 are interesting in a variety of ways. First, the socio-economic factors have a significant and strong influence on the consolidation probability. Strong economic growth during the consolidation episode is positively associated, whereas a strong demand for social security expenditures (because of rising unemployment or population ageing) is negatively related to the probability of a consolidation episode. The indicators for socio-economic problem pressure – the misery-index and the level of the lagged (by one year) debt-ratio – show that governments are more likely to consolidate public finances when they are confronted with economic pressure. This result confirms the theoretical expectations as well as the empirical results of other studies (von Hagen/Strauch 2001, Mulas-Granados 2006).

[7] Again, the alternative specification was necessary in order to avoid multi-collinearity.

- Insert Table 3 -

Do parties matter when it comes to budget consolidation policy? The results of the logit analysis suggest a rather weak connection at best. The odds-ratios for the partisan variables show only a very small effect – even if the negative coefficient for right-wing cabinet seats is significant and the coefficient for the power of left parties is positive. Thus, even if there is some evidence that right-wing parties hinder budget consolidation, while left-wing parties enhance their likelihood, the empirical result is not very strong.[8] The strike-index measuring the influence of the power of organised labour on fiscal policy has no influence on the probability that a budget consolidation occurs. Replacing the indicator by a measure of trade union density does not lead to any significant association either. With respect of the institutional variables, we can observe a quite strong and significant influence of the veto-player index: the more veto-players, the smaller the probability of a budget consolidation. This finding is in line with the theory. It suggests that veto-players support the status quo, block policy reforms and thus hinder budget consolidation. No other institutional variables have any significant effects.[9]

The theoretical expectation for the influence of the path-dependency of the social security system on budget consolidations is strongly confirmed. Countries where the social insurance principle plays an important role in the social security system (strong path-dependency) have a smaller probability of consolidating their public finances. This can be explained by the rights-conferring nature of social contributions. In contrast, the analysis

[8] In addition, a jackknife analysis of model 2 shows that the result is not robust when excluding the US (the coefficient is no longer significant). The results of the jackknife analysis can be made available upon request.

[9] The same result is found when replacing some of the institutional variables with alternative indicators (e.g. including fiscal decentralization instead of federalism).

offered here demonstrates absolutely no support for the view that open economies are more successful in consolidating their budgets than closed ones.

To sum up, our analysis suggests that strong problem pressure, institutional arrangements with few veto-players, a tax-financed social security system, a decreasing share of unemployed and seniors in the population and high economic growth during the consolidation episode increase the chances that a country consolidates its public finances. Mixed but generally rather weak evidence is found for the partisan influence and of the influence of trade unions on budget consolidations. Overall, the goodness of fit with a MacFadden-R^2 of around between 0.3 and 0.4 is not too bad. The classification result shows that more than 80 per cent of the countries are correctly classified in their original groups by the function. The highly significant influence of the counting-dummy and the splines suggest that the control for autocorrelation was necessary.

5. Strategies for sustainable consolidations

Having examined some of the core factors in public policy research, which are supposed to have an influence on the consolidation performance over time and in different countries, we change our focus on the 26 consolidation periods. Therefore, in a next step, we look more closely at different consolidation strategies – for instance, by investigating the composition and timing of consolidations. Moreover, we compare sustainable with non-sustainable consolidation periods (see Table 2).

A first aspect of budget consolidations worth investigating is their composition. Whether consolidations should be revenue-based or expenditure-based and which strategy is the most sustainable in this respect is a matter of debate (Alesina and Perotti 1997, Zaghini 2001). Daily political discussion generally focuses only on the direct short-term effects and notes that you should not “save to the point of harming the economy”. For a sustainable

consolidation strategy, however, the dynamic and medium to long-term aspects are crucial (Giavazzi and Pagano 1990, 1996).

A first question is whether there is a connection between the sustainability of the consolidation and the change of the expenditure ratio (in per cent of GDP) for the 26 consolidation cases identified in Table 4. The findings are clear-cut: First, all consolidators cut their public expenditures stronger than the benchmark group of all OECD countries. Second, expenditure decreased much more in the group of sustainable consolidators than in the group of non-sustainable consolidators. Whereas the former reduced their expenditure by around 6.4 percentage points and therefore cut more than twice as much as the OECD during the same period, there is no difference between the mean values of the non-sustainable consolidators and the OECD average. The latter is measured as the average for all 23 OECD countries.

- Insert Table 4 -

A further and obviously complementary question is whether there is a link between the sustainability of consolidations and the change in government revenues, i.e. either a reduction or increase in taxes, contributions and other non-tax revenues. Table 5 shows the average development for all consolidators as well as for the sustainable and non-sustainable consolidation cases separately. The expectation is that consolidations would be particularly likely to be successful where a state ensured stable or growing revenues. However, on average, the opposite turns out to be the case. On average there is virtually no difference between the change of the revenue ratio (i.e. in per cent of GDP) and the OECD benchmark. Besides that, successful consolidations were on average associated with a slight reduction in revenues. However, examining the findings in greater detail shows that

this anomalous result is heavily influenced by Irish consolidation from 1993 to 2002. Excluding the outlier Ireland 2, from the analysis suggests that sustainable consolidation is associated with a very modest increase in taxes and contributions of 0.4 percentage points.

- Insert Table 5 -

The findings displayed in tables 4 and 5 reveal that reductions in public expenditures are an important cornerstone of successful budget consolidations. In addition expenditure-based measures are more successful than revenue-based measures (i.e. tax increases). Especially the non-sustainable consolidations have mainly relied upon a revenue increase. A third – and more detailed – perspective takes the changes in the composition of public expenditure over time into account. This is possible with the COFOG data (= classification of functions of government) that summarises public expenditure in ten expenditure categories: general public services; defence; public order and safety; economic affairs; environmental protection; housing and community amenities; health; recreation/culture/religion; education; and social protection (see Castles 2007 for a detailed analysis of the COFOG data). Looking at the COFOG data there are some similarities but also huge differences between the consolidators and the non-consolidators. First, expenditure cuts have been larger in the group of consolidators than in the group of non-consolidators except for defence. Second, whereas both groups have made significant expenditure cuts in the areas of general public services, economic affairs (notably subsidies, slightly less investment) and defence, huge differences in the expenditure profile during the consolidation episodes can be observed especially for social spending: the non-consolidators increased their social expenditures by over 20 per cent, while the

consolidators have reduced their social spending on average by 1.4 per cent (see also AUTHOR).

A fourth aspect of consolidation strategies relates to the timing of the consolidations. Are they initiated after major changes in the party complexion of government or are they just as likely to occur at any stage in the life of a government? In response to this question, we examined the starting point for each consolidation government (i.e. the governments in office during the course of the 26 consolidation periods identified in Table 2 – 48 governments in all) and identified how long after a change in the partisan complexion of government a consolidation commenced and how long that consolidation lasted (see Table 6).[10]

- Insert Table 6 –

The findings are clear: in 22 of the 35 consolidation governments (63%), the consolidations were started at the latest one year after the change of power. Consolidations obviously have a good chance of success if they are carried out soon after a substantial change in the party complexion of government. In this case the period of consolidation is also longer. This finding, which is referred to in the literature as the "honeymoon" effect (Williamson and Haggard 1994), shows that as a consequence of the enhanced legitimacy conferred by election victory, reforms can be implemented more easily and with a higher level of credibility when the parties in government just have changed. For parties in power for a longer period of time, however, the probability of being able to implement radical reforms is drastically reduced. In the remaining time of a first legislature period, only a very few reforms are initiated (there are only seven such cases between 1980 and 2005).

[10] Excluding from the assessment those successor governments that merely continued a consolidation reduces the number of cases from 48 to 35.

Even when the same party is in office for five years or longer very few consolidations are pursued (six cases). Thus, it seems to be crucial that budget consolidations are carried out soon after a change of government. This frontloading of reforms is important for two reasons: First, the opportunities for policy implementation are increased. Second, the reform governments have a better chance of deriving positive effects from a reform and not getting punished at the ballot box.

- Insert Table 7 –

Finally, the political-economic literature links different institutional arrangements to the budget consolidation performance. Generally speaking, the key point of the argument is that strong and stable governments, especially single party governments, perform significantly better – in terms of consolidation – than minimal winning coalitions, surplus and minority governments. The reason is because they are less hampered by coalition negotiations and do not have to satisfy as many special interests. Moreover, it is argued that stable governments have more room in which to manoeuvre when it comes to consolidations (Persson and Svensson 1989, Roubini and Sachs 1989).

In table 7 we link the different types of governments (measured as the mode during each consolidation episode) to the consolidation success. It is obvious, that the type of government does not appear to have a significant influence on the consolidation performance. Countries with minority governments like Sweden, Denmark, Norway and New Zealand managed quite well their public finances.

Despite this poor performance, institutions do matter for effective consolidation strategies. Consolidators often shifted their budget process from a “bottom-up” to a “top-down” model. The pioneering work by Jürgen von Hagen (1992) and subsequently by Hallerberg

and von Hagen (1999), Hallerberg (2003) and Hallerberg, Strauch and von Hagen (2009) focused on the importance of budget institutions in the individual countries. In the consolidation process it is important whether a country follows a so-called “delegations” or a “commitment” approach. Typically, majority systems concentrate more on the delegations approach, which includes a strengthening of the position of the minister of finance, than countries that are organised on the basis of a consensus democracy. Successful consolidators – according to the data of (von Hagen 1992) and 2001 (Hallerberg 2003), reformed substantially their budget institutions. Especially countries like Canada and Italy strengthened the “delegations institutions”, while Belgium and the Netherlands went for a commitment strategy and some countries like Sweden choose a mixed strategy (AUTHOR).

6. What determines consolidation performance within the group of consolidators?

After having investigated general factors influencing consolidation performance in all the OECD countries (section 4) and having displayed descriptive aspects and some more specific features of the consolidation strategies (section 5), the final stage of our analysis seeks to identify the factors influencing consolidation performance within the group of consolidators. As the regressions are based on the 26 consolidation episodes, these findings tell us something about the determinants of “relative” success within this group. In the analysis two dependent variables are used: first, the reduction of public debt within the consolidation episode and, second, the time-span of each consolidation episode. Table 8 shows the results.

In regressions 1 and 2, the impact of five independent variables is estimated for the first dependent variable, i.e. the reduction of public debt during the consolidation period. These

two models serve as the economic base line models and consist of mainly economic and budgetary factors. In equations 3 and 4, we added political and institutional variables.

The findings display that the reduction in aggregate public spending measured relatively to the change of aggregate spending of all OECD countries during the same time-span as the consolidation episode has the strongest impact, according to the beta weights (not shown in Table 8). With this kind of measurement we are able to capture the relative effort of the consolidator in comparison to the OECD benchmark, controlling thereby – at least to a certain extent – for global economic fluctuations and the problem of endogeneity. It also turns out that the developments of government revenues are less important. Again, for the reasons mentioned above, government revenues are measured in relation to the development of all OECD countries. Regressions 1 to 3 therefore reveal that increasing government income is not as effective as a retrenchment of government spending, supporting the descriptive findings of table 4 and 5. The controversy over whether tax increases or spending cuts are most effective can be answered on the basis of these results: both measures are of assistance – however spending cuts are more beneficial.

Furthermore the duration of a consolidation period is a strong predictor of the success of a consolidation. Long perseverance is the second key factor for consolidators. In conjunction with the descriptive finding of a 'honeymoon effect', the lesson is that governments should start their consolidation immediately after taking office and should keep it up as long as possible.

The pressure arising from high public debt (in per cent of GDP) displays a (rather weak) small significant impact. When problems are not pressing enough, governments seem to have not too much interest in starting a consolidation. Alternatively (not displayed in Table 8 due to multicollinearity), it turned out that the magnitude of the public deficit just before

the consolidation is also a relevant explanatory factor. These results are in line with the finding for the entire OECD-sample in section 3 (influence of problem pressure).

Robustness checks revealed a strong impact especially of one case: Ireland 2. Because of high the leverage values we skipped this case in regressions 2 and 4. The effects in regression 2 are considerable: the adjusted R^2 dropped substantially and one of the independent variables, the change of revenues during the consolidation period (in relation to the OECD benchmark), became insignificant.

Supplementing what is to this point an essentially economistic model with political and institutional variables (see regressions 3 and 4) we are only able to improve slightly the explanatory power of the model. Within the group of consolidators the partisan complexion of government – the core variable for partisan theory (Castles, 1982) – is irrelevant.[11] It should be noted that also the strength of government (in other words: the fragmentation of the government) is also insignificant in all models, though this is variable is prominent in theories dealing with the accumulation of public debt (Roubini and Sachs 1989, Perotti and Kontopoluos 2002, Ricciuti 2004).

Lijphart's (1999) federalism-unitarism score, which correlates high with a dummy for federal states, is used as a proxy for the impact of federalism. In line to the reasoning of the regional fragmentation argument, federal consolidators performed comparatively worse, although qualitative evidence has also suggested that some federal states were able to shift consolidation costs to the sub-national level (for instance in Belgium and Canada). In general, it seems that federal states have problems to fix all levels of a state to a common consolidation strategy.[12]

[11] Tsebelis (1995) has argued that the number of veto players is negatively associated with reforms. However, neither the reduction of public debt nor the duration of a consolidation reform is associated significantly with any of the veto player variables used in the analysis,

[12] Obviously, the result can also be explained with a veto-player argument.

Budget institutions are currently among the most prominent variables discussed in the literature about public finances (von Hagen 1992, Hallerberg and von Hagen 1999, Hallerberg 2003, Wehner 2006, Hallerberg et al. 2009). Therefore we included an indicator measuring the use of debt and deficit rules in the regressions. We used data from the OECD budget database (except the fiscal revenue rules) and constructed an index ranging from 1 to 4 (membership Euro area, existence of an expenditure, balanced budget and public debt rule) (OECD 2009b: 87). We hypothesize that such rules will favour budget consolidation. Other indicators such as the delegation index of Hallerberg et al. (2009) [13] and the Wehners' index of legislative budget institutions (Wehner 2006) were used, too. Though the three indices measure budgetary institutions and fiscal rules from different perspectives, their influence is insignificant.

Finally, the economic problem pressure for reforms, measured by a so-called "misery index" at the beginning of a consolidation episode, is not a significant predictor of debt reduction. This is somewhat surprising since the debt ratio as well as the initial budget deficit did have an impact and because problem pressure was one of the major explanatory variables in the analysis of the entire OECD-sample (section 3).

- Insert Table 8 –

The second dependant variable is the duration of consolidation measured in years. Regressions 5 and 6 in Table 8 display the results of a multivariate model with socio-economic, political and institutional explanatory factors. Again partisan complexion, the strength of government, federalism and fiscal rules, exhibit no influence. Only two variables turned out to be significant: (1) the level of the public debt at the beginning of the

[13] The authors collected data for only 16 countries.

consolidation process and – most important – (2) the change of the misery-index during the consolidation episode within the entire OECD. In Table 8, it turns out that the key factor for the duration of reforms is the improvement of macroeconomic conditions. However, the causality (and the estimation) has to be discussed, because of endogeneity. First, the consolidation might be carried forward because governments harvest the success of their reforms in terms of less unemployment and higher economic growth, due to the so-called "non-Keynesian" effects of consolidation. Second, the improvement of the fiscal stance could be interpreted as a result of the exogenous reduction of the misery index, which enables governments to consolidate further. Again one case shows a high leverage values in regression 5: United Kingdom 2. The effects of a re-estimation are displayed in regression 6, with a higher adjusted R^2, but no real difference for the significant variables (except the higher significance level).

7. Conclusions

This study has analysed budget consolidations quantitatively from a variety of perspectives. It included (1) a binary logistic regression analysis of the consolidation probability for 23 OECD countries, (2) a descriptive analysis of specific features of successful consolidations and (3) an analysis of the factors explaining the consolidation performance within the groups of consolidators.

After having discussed some measurement issues, it was shown for the first approach, that "demand factors", such as the development of the unemployment rate and the share of elderly in the population, are of particular influence in accounting for consolidation performance. A higher demand for social expenditure from the unemployed and the elderly makes budget consolidation more difficult. The opposite is true for economic growth: high economic growth facilitates budget consolidations considerably. A second important factor

is the problem pressure with which governments have to cope. The higher the initial debt burden, the interest rate and the unemployment rate in the year before the start of a consolidation period, the more probable is a budget consolidation. When it comes to party effects, the evidence is weak. Although we find a small negative influence of right-wing parties on consolidation performance, the result is not robust and the influence rather small. The same finding applies to the strength of government and the strength of organised labour. On the other hand, the number of veto-players in a country does affect the probability of a consolidation. The more institutional constraints, the less likely are consolidations. The other institutional variables, such as federalism or corporatism, do not show any significant influence. However, the path-dependency of the social security system does make a difference. Where the insurance principle has a strong role within the social security system this serves as a constraint on budget consolidation. This is to be explained by the fact that in an insurance-based social security system, cuts are harder to implement as the social contributions can be considered to be “social rights”.

The second step of the empirical analysis focussed on some particular aspects of what may be described as “consolidation strategies”. The analysis demonstrated a number of successful strategies. Expenditure reductions seem to lead to more sustainable consolidations whereas revenue increases are not essential. The analysis of the COFOG data revealed that successful consolidators cut expenditure relatively stronger especially on social security and health. Furthermore, the analysis showed that reforms should be implemented as early as possible at the start of a legislative period in order to take advantage of the ‘honeymoon’ effect and to allow the reforms to produce positive effects during the legislative period.

Which variables explain the different consolidation performance for countries which have carried out budget consolidations? This question is examined in the third step of the

quantitative analysis. The dependent variables are the development of the debt ratio and the duration of the consolidation episodes. The results of the analysis show that most of the political and institutional variables do not play a role, and that economic factors are considerably more important in accounting for relative performance. The only exception is federalism which seems to impede consolidations.

Some caveats are to be mentioned. First, the findings are influenced by research design. If one examines all OECD countries, veto-players make a difference when it comes to budget consolidations, but within the group of the consolidators, the effect vanishes. Second, the results suggest that the politics of budget consolidation are quite complex. Causal factors can be identified when one looks at the evidence from one perspective, but changing the point of view affects the results. Moreover, qualitative evidence indicates that different countries follow very different roads in order to balance their budgets. And lastly, in many countries consolidation is connected to political personalities and a certain leadership quality. Such consolidators were either heads of government or ministers of finance. Names like Göran Persson, Paavo Lipponen, Wim Kok, Margaret Thatcher, Roger Douglas, or Paul Martin have become synonymous with successful consolidations.

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Table 1: Threshold values used to determine consolidation periods

Study	*Indicator*	*Threshold value*
(Alesina and Perotti, 1995, Alesina and Perotti, 1996, Alesina and Perotti, 1997)	CAPB	1) Improvement of 1.5 percentage points in one year
	("Blanchard Fiscal Impulse")	2) Improvement of 1.25 percentage points per year in two successive years
(Alesina and Ardagna, 1998)	CAPB	1) Improvement of two percentage points in one year
	("Blanchard Fiscal Impulse")	2) Improvement of 1.5 percentage points per year in two successive years
Heylen/Everaert 2000	CAPB	1) Improvement of at least 2 percentage points during the entire period 2) Consolidation begins if the CAPB improves by at least 0.25 percentage points and continues as long as the CAPB improves.
(Zaghini, 2001, Brandner, 2003)	CAPB	1) Improvement of more than 1.6 percentage points in one year
		2) Improvement of more than 0.8 percentage points per year in two or more successive years
(Hagen et al., 2002)	CAB	1) Improvement of 1.5 percentage points in one year if the CAB is positive in the previous year and the following year
		2) Improvement of 1.25 percentage points per year in two successive years
German Council of Econmic Advisers (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, 2003)	CAPB	1) Improvement of two percentage points in one year
		2) Improvement of 1.5 percentage points per year in two successive years
Mulas-Granados 2004	CAPB	Improvement of 1.25 percentage points per year if the CAPB improves in the previous and the following year as well.
Guichard et al. 2007	CAPB	● Beginning: Improvement of 1 percentage point per year during two years, if the improvement is more than 0.5 points in the first year, ● Continuation: if CAPB improves; A deterioration is possible if it doesn't exceed 0.3 percentage points and if the CAPB improves more than 0.5 points in the subsequent year.

Table 2: Budget Consolidations in OECD Countries (1980-2005)

Country	*Type*	*Consolidation episode*	*Sustainability (t+3 after end of episode)*
Australia	A	1993-1999	Sustainable
Belgium	B	1993-2005	Sustainable
Denmark 1	B	1984-1989	Not sustainable
Denmark 2	B	1996-2001	Sustainable
Finland	A	1993-2000	Sustainable
UK 1	B	1986-1990	Not sustainable
UK 2	A	1993-2000	Sustainable
Ireland 1	A	1985-1989	Sustainable
Ireland 2	B	1993-2002	Sustainable
Iceland 1	A	1994-2000	Not sustainable
Iceland 2	A	2003-2005	Sustainable
Italy	B	1998-2001	Sustainable
Japan	B	1987-1991	Not sustainable
Canada 1	A	1992-2000	Sustainable
Canada 2	B	2000-2005	Sustainable
New Zealand 1	A	1992-1995	Sustainable
New Zealand 2	B	2000-2005	Sustainable
Netherlands	B	1996-2001	Not sustainable
Norway	A	1992-1997	Not sustainable
Austria	A	1995-1997	Not sustainable
Sweden 1	A	1982-1987	Sustainable
Sweden 2	B	1987-1990	Not sustainable
Sweden 3	A	1993-2000	Sustainable
Spain 1	A	1985-1988	Not sustainable
Spain 2	B	1998-2002	Sustainable
USA	A	1992-2000	Not sustainable

Table 3: Results of the binary logistic regression analysis

	1		2		3		4		5	
Demand index	-.687*** (.116)	.503	-.707*** (.120)	.493	-.646*** (.119)	.524	-.690*** (.119)	.502		
Economic growth									.584*** (.085)	1.793
Misery-Index, t-1	.232*** (.073)	1.261	.239*** (.078)	1.269	.284*** (.077)	1.328	.213*** (.081)	.124		
Debt Ratio, t									.035*** (.006)	1.035
Cabinet seats right wing parties			-.006* (.003)	.994					-.012*** (.004)	.988
Left party power in government					.084 (.080)	1.088				
Cabinet seats centrist parties							.006 (.004)	1.006		
Strike-index			-.0002 (.0005)	1.00						
Veto-player-index (encompassing)			-.237*** (.088)	.789					-.196* (.101)	.822
Federalism					.122 (.085)	1.130				
Form of democracy					.112 (.125)	1.120				
Corporatism							-.010 (.111)	.990		
Path-dependency social security system					-.033*** (.011)	.967			-.041*** (.012)	.960
Openness of economy							.003 (.004)	1.003		
Spline 1	.018*** (.005)	1.012	.018*** (.005)	1.018	.018*** (.005)	1.019	.017*** (005)	1.018	.016*** (.004)	1.016
Spline 2	.033*** (.006)	1.034	.033*** (.006)	1.034	.034*** (.006)	1.035	.031*** (.006)	1.032	.033*** (.006)	1.033
Spline 3	-.059*** (.012)	.943	-.058*** (.013)	.943	-.060*** (.013)	.942	-.056 (.013)	.946	-.054*** (.011)	.948
Counting dummy	.100*** (.037)	1.106	.050 (.039)	1.052	.098** (.038)	1.103	.116*** (.041)	1.123	.087 (.037)	1.091
Pseudo R^2	0.3062		0.3078		0.3258		0.3153		0.3991	
Correct classification	83.46		83.73%		83.09%		83.88%		85.19%	
Nobs	544		504		538		521		574	

*Notes: This table shows the coefficients of the logistic regressions. Standard errors in brackets. Odds-Ratios in the second column of each model. * = .10 Significance level, ** = .05 Significance level, *** = .01 Significance level (two tailed tests).*

Table 4: Development of expenditure ratios within the consolidation episodes

	Change in the expenditure ratio of the consolidators within the consolidation period (= End – Start)	*Change in the expenditure ratio of all OECD countries within the same consolidation periods (= End – Start)*
Sustainable consolidations (16 cases)	-6.4	-2.7
Non-sustainable consolidation (10 cases)	-2.6	-2.6
Total	-4.9	-2.7

Note: own calculations based on table 2 and OECD Economic Outlook Data. Data refers to general government.

Table 5: Development of the revenue ratios within the consolidation episodes

	Change in the revenue ratio of the consolidators within the consolidation period (= End – Start)	*Change in the revenue ratio of of all OECD countries within the same consolidation period (= End – Start)*
Sustainable consolidations (16 cases)	-0.2	0.3
Non-sustainable consolidation (10 cases)	1.4	0.2
Total	0.4	0.3

Note: own calculations based on table 2 and OECD Economic Outlook Data. Revenue Ratio is measured in per cent of GDP and consists of tax and non-tax revenue. Data refers to general government.

Table 6: Change in the party complexion of government and duration of the consolidation

Time when the consolidation started after the last change in the party complexion of government	*Average Consolidation period in years*	*Cases*
At the latest 1 year after the change	3.7	22
Between 2 and 4 years after the change	2.7	7
More than 5 years after the change	3.0	6
Average	3.4	35
Total (not including row 1)	(2.8)	(13)

Source: Authors' calculations and data collection.

Table 7: Success of consolidation and type of government

	Single Party Government	*Minimal Winning Coalition Government*	*Surplus Government*	*Minority Government*
Sustainable consolidations (16 cases)	5	2	3	6
Non-sustainable consolidation (10 cases)	3	3	1	3
Total (26 cases)	8	5	4	9

Note: own calculations. Governments are classified by the mode prevailing during a consolidation episode.

Table 8: Determinants of consolidation performance in 26 consolidation episodes

	(1)	(2) [d]	(3)	(4) [d]	(5)	(6) [e]
	Δ gross public debt during consolidation period	Δ gross public debt during consolidation period	Δ gross public debt during consolidation period	Δ gross public debt during consolidation period	Duration of consolidation (years)	Duration of consolidation (years)
Constant	-4.93	-4.94	-8.08	-6.71	0.62	0.72
	(4.71)	(4.81)	(6.06)	(6.45)	(1.94)	(1.63))
Difference of general government expenditures to the average of OECD-countries [f]	-1.55***	-1.40***	-1.46***	-1.05***		
	(0.27)	(0.49)	(0.25)	(0.38)		
Difference of general government revenues to the average of OECD-countries [f]	1.17**	0.85	1.15**	g		
	(0.53)	(0.99)	(0.49)			
Gross public debt at the beginning of consolidation	0.11*	0.12*	0.07	0.09	0.04	0.03
	(0.06)	(0.06)	(0.06)	(0.06)	(0.02)**	(0.01)**
Duration of consolidation (years)	2.17***	2.01**	2.64***	2.20***		
	(0.64)	(0.77)	(0.58)	(0.63)		
Partisan complexion of Government (1 to 5)[a]			1.21	1.37	0.30	0.32
			(0.83)	(0.87)	(0.29)	(0.25)
Strength of Government (1 to 4, 1 = single party gov.)			-0.26	-0.97	0.51	0.34
			(1.31)	(1.32)	(0.41)	(0.35)
Federalism-unitarism score according to Lijphart (1999)			-3.43**	-3.30**	0.42	0.26
			(1.43)	(1.52)	(0.43)	(0.37)
Fiscal rules (additive Index based on OECD 2009b)			0.38	0.56	-0.26	-0.16
			(1.04)	(1.08)	(0.32)	(0.27)
Misery-index at start of consolidation			-1.07	-1.38		
			(0.71)	(0.77)		
Change of misery-index in the OECD during consolidation episodes [f]					0.69***	1.19***
					(0.20)	(0.24)
Adj. R^2	0.758	0.487	0.814	0.586	0.344	0.551
F-statistics	20.53	6.69	13.17	5.25	3.18	4.93
N	26	25	26	25	26	25

*Notes: This table shows the coefficients of the OLS-regressions. Standard errors in brackets. * = .10 Significance level, ** = .05 Significance level, *** = .01 Significance level (two tailed tests). a: 1 = Bourgeois hegemony, 2 = Bourgeois dominance, 3 = Balance, 4 = Left party dominance, 5 = Left party hegemony (see Schmidt, 1992). Hegemony means the share of cabinet seats equals 100 per cent. Dominance means the share of cabinet seats ranges from greater than 66.6 per cent to less than 100 per cent. Balance means that both tendencies have cabinet shares greater than 33.3 per cent and equal to or less than 66.6 percent. The calculations are based on yearly data. b = unemployment rate + inflation rate – growth rate; c: PMS = plurality/majority System, MS = mixed systems, PRS = proportional representation systems, d = without Ireland 2; e = without United Kingdom 2; f = measured for each consolidation period separately, g = this variable is skipped due to very high multicollinearity (VIF > 4.0).*