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Fiscal Consolidations in Advanced Industrialized Democracies: Economics, Politics, and Governance

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1 Introduction

For the last thirty years, high government deficits and government debt have been recurring problems in many, if not most, advanced industrialized economies. While economic theory provides the normative foundations for the occasional use of government deficits and, thus, the resulting debt, the levels observed in the last three decades are difficult to reconcile with optimal government policies. Following the two oil shocks of the 1970s, most countries emerged in the early 1980s having accumulated large fiscal imbalances and spent the early 1980s trying to restore public finances and repay the large public debts. Towards the end of the 1980s, a large group of European countries were getting serious about forming a European Monetary Union and, partly as a response to the inability of national governments to consistently consolidate their public finances on their own, debt and deficit criteria were included as an integral part of the Maastricht Treaty, leading prospective member countries to increase their consolidation efforts. More recently, debt and deficit criteria are, along with other requirements, key components of the Stability and Growth Pact and remain a point of contention among member states, as well as a recurring policy challenge in most other advanced economies.

The current economic crisis has resulted in large government deficits (figure 1) and, as a result, substantial run-ups of government debt burdens (figure 2).[1] The reason for large deficits is a mix of slowing economic activity, which lowers tax revenues, and a continued need for government spending, both on its own and as part of fiscal stimulus programs. Governments are currently trying to formulate exit strategies, finding the right balance between exiting crisis policy and returning to a fiscally sustainable path for public finances without affecting negatively the chances of economic recovery. However, not all countries are embracing fiscal consolidation strategies.

Running deficits and thereby accumulating debt is generally recognized as the appropriate government response to an economic crisis or recession, and can also be the results of war or of long-term investment strategies. However, running deficits and accumulating government debt also has costs, in particular when population projections for most advanced economies suggest an unfavorable development in the share of retirees relative to the share of the workforce. First, government debt and deficits entail substantial borrowing costs in the form of interest rate payments to debt holders, requiring either additional tax revenues or less government spending. Second, while it is in principle possible to maintain a government deficit without sacrificing intergenerational distribution, continuous deficits and large government debt will tend to benefit current generations at the expense of future generations, who are typically not well represented in the current political process. Third, but related to the other two, large government debt can have growth effects.

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[1] See figure 5 for the set of OECD- countries analyzed in the paper.

Figure 1 The evolution of deficits and cyclically adjusted deficits, percent of GDP
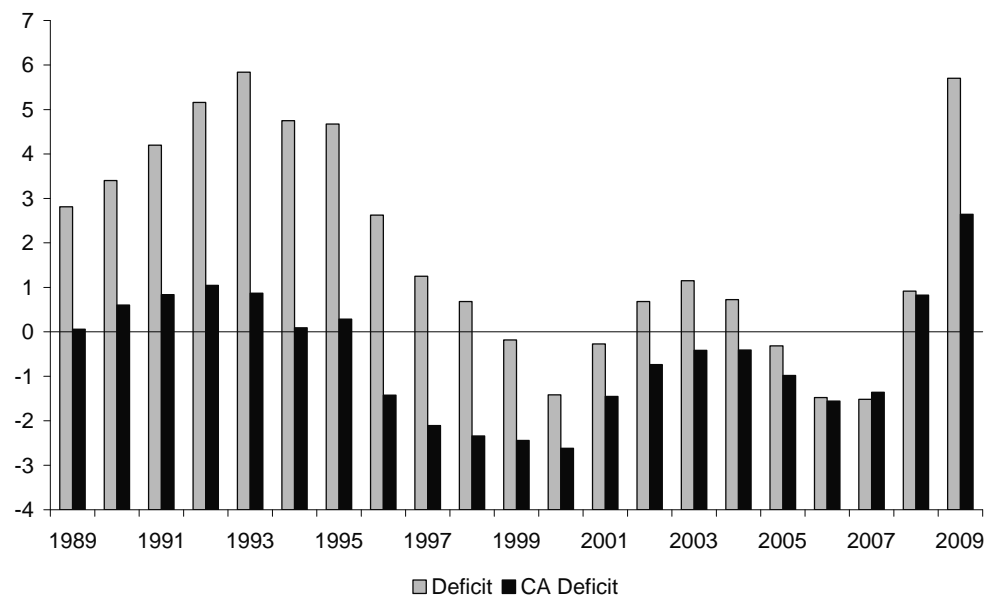

Note: Deficits is net lending in percent of GDP. C A Deficit is the cyclically adjusted primary balance in percent of potential GDP. Average across sample countries.

As shown by Reinhart and Rogoff (2010), moderate debt levels appear to pose no great problems for economic growth, but once debt levels pass 90 percent of GDP, median growth rates fall by one percent and average growth rates by almost two percent.

It is, therefore, important to know if it is possible to identify factors that impede or facilitate engaging in fiscal consolidation. Beginning in the mid-1990s (e.g. Alesina and Perotti, 1995, 1997), a large literature has tried to identify (a) factors that inhibit or promote the initiation of fiscal consolidation strategies; (b) factors that increase the likelihood that such consolidations are successful, that is, lasting; (c) which factors enable governments to respond (faster) to fiscal crises, and (d) whether such consolidation efforts have economic effects beyond stabilizing government budgets.

While there is agreement in the literature on some of these questions, considerable disagreement exists regarding other questions. For example, as will be explained in more detail below, a consistent finding in the literature is that fiscal consolidations achieved through spending reductions have a greater chance of lasting, that is, being successful, than consolidations based on tax increases. On the other hand, while some find political factors to be important determinants of fiscal consolidation efforts (e.g. Alesina and Perotti, 1997), others find no role for political explanations (Mierau et al. 2007).

Figure 2 General government debt, percent of GDP
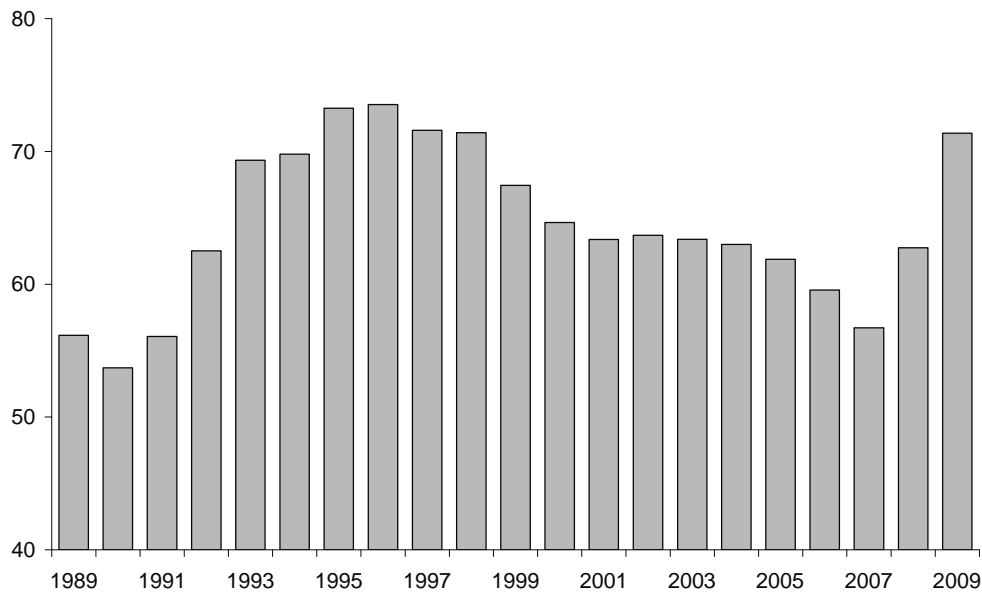
Note: Average across sample countries.

In this paper, I review the literature on fiscal consolidations, highlighting both main conclusions and existing controversies. Some aspects of fiscal consolidations and adjustments are well-developed, while others have been addressed only to a lesser extent. For example, while fiscal transparency is generally thought to be an important component in formulating timely exit strategies, as argued for example by Alesina (2010), very little research on the topic exists. Therefore, I carry out empirical analyses of the determinants of fiscal consolidations as well as policy responses to fiscal crises, highlighting the roles of fiscal transparency and political factors, in particular political polarization, on both the probability of engaging in fiscal consolidations and the extent of the response to large deficits.

I find that fiscal transparency is associated both with a higher likelihood of initiating fiscal consolidations, both directly and indirectly: On its own, fiscal transparency increases the likelihood of observing a consolidation of the deficit, but the total effect of fiscal transparency also increases with the level of the cyclically-adjusted deficit, meaning that countries with higher fiscal transparency react to higher deficits by consolidating fiscal balance to a greater extent than countries with lower levels of fiscal transparency. In the second set of analyses, I find that countries with higher levels of fiscal transparency respond to fiscal shocks – large deficits – by cutting subsequent deficits significantly more than do countries with lower levels of fiscal transparency.

I also investigate the effects of a wider set of political variables on the same set of outcomes. Previewing some of the findings, I find no effects of coalition governments, in any direction, but some support for the argument that minority governments have a harder time achieving fiscal consolidation, reminiscent of the findings of Edin and Ohlsson (1991) – but in contrast to Alesina and Perotti (1995). The clearest impact of politics on fiscal consolidation efforts come from political polarization. The greater is political

polarization in a country, the lower is the likelihood of observing fiscal consolidations, the smaller is the reaction to a given structural deficit, and, furthermore, the less able is a country to react to fiscal shocks in a significant manner; in sum, the total opposite of the results on fiscal transparency. These results confirm and extend the theoretical and empirical findings of Alt and Lassen (2006a,b) that countries with higher levels of fiscal transparency have lower debt and deficits on average and that fiscal transparency decreases, while political polarization increases, the impact of elections on fiscal policy through political budget cycles.

The paper is organized as follows: Section 2 introduces fiscal consolidation in the context of government budgeting and reviews the literature on fiscal consolidations, including a discussion of the Swedish experience in the 1990s. Section 3 presents the framework for analyzing institutional and political effects on fiscal consolidation efforts, and section 4 presents the data and empirical approach. Section 5 presents results, section 6 discusses the extent to which we can expect fiscal institutions and frameworks conducive to sustainable fiscal policy to improve, and section 7 provides a discussion of the empirical results in light of the broader fiscal consolidation literature and sets out some recommendations for policy options based on this. All data, except when otherwise noted, pertains to OECD general government.

2 What works for fiscal consolidations?

The positive literature on fiscal consolidations and adjustments focuses on three questions:

1. What factors affect the probability of initiating a fiscal consolidation?

2. What factors affect whether the consolidation efforts are successful?

3. How do countries respond to fiscal crises and what factors influence this response?

Overall, the realization and size of fiscal consolidations typically depend on a mix of economic, political and institutional circumstances, but in spite of a large number of studies on various aspects of fiscal consolidations, only a few stylized facts have emerged, partly due to the different samples employed, both in terms of time periods and countries included, partly due to different empirical approaches, including both different empirical methods and different data definitions.

The strongest stylized facts are:
I. The best predictor of a fiscal consolidation, typically measured as a sizeable decrease in the cyclically adjusted deficit, is the size of the cyclically-adjusted deficit itself. The higher is the cyclically-adjusted deficit, the greater is the probability of observing a fiscal consolidation.

II. Fiscal consolidations are more successful, that is, have a higher probability of lasting, when consolidation is based on expenditure cuts rather than on tax increases.

In contrast, there is little agreement over the role of politics; while some studies find no or only a limited role for political factors (Mierau et al., 2007), others find that government ideology or coalition government status matters for the success of consolidation programs (e.g. Tavares, 2004). Likewise, there is little agreement on the role of fiscal rules or budgetary institutions and transparency; while Wurzel et al. (2007) find strong effects of fiscal rules, such rules apparently have no significant effects in a study by the European Commission (2007).

2.1 Starting and successfully completing fiscal consolidation programs

As noted above, the best predictor of observing a fiscal consolidation episode is the current cyclically-adjusted deficit: the higher the deficit, the higher is the probability of observing a fiscal adjustment towards a lower deficit, reflecting the fact that countries rarely default on their debt and, instead, tend to respect, or is forced to observe, the intertemporal government budget constraint securing that government finances are on a sustainable path in the future.

Similarly, a higher level of government debt also tends to increase the chance of observing a cut in the deficit (e.g. Mierau et al. 2007), but the marginal effects on the probabilities of observing a cut are typically not large. The effect of favorable economic circumstances, measured by economic growth or the output gap, is sometimes positive, as in European Commission (2007) and sometimes negative, as in Wurzel et al. (2007), or both. The same goes for inflation. The mid-1990s saw stronger attempts by EU countries to consolidate (Wurzel et al. 2007), in preparation for the EMU. Similar effects are observed for the size of the adjustment, conditional on having undertaken it.

Obviously, initiating a fiscal consolidation program does not necessarily imply that it is successful. In fact, according to a recent comprehensive study of EU-countries by the European Commission (2007), approximately one out of three consolidation episodes ends in success, where success is defined by the following condition: in the three years after the end of the consolidation the cyclically-adjusted primary balance should not deteriorate by more than 0.75 % of GDP in cumulative terms compared to the level recorded in the final year of the consolidation period (European Commission, 2007, p. 202).

Turning a deficit into a surplus and, eventually, reducing public debt can be achieved by cutting public expenditures, increasing public incomes, primarily tax revenues, or a combination of the two. Does how a fiscal consolidation is designed matter for its success, that is, its persistence and ultimate goal of reducing the budget deficit and debt? Repeating the stylized fact above, a general conclusion of the literature, and probably the strongest result identified in the literature at all, for example by Alesina and Perotti (1995, 1997) and

Alesina, Perotti and Tavares (1998) and confirmed by, among others, the European Commission (2007), is that consolidations driven by cutting government expenditures tend to be more persistent than consolidations based on tax increases or cuts in public investments. Furthermore, an early result based on evidence from OECD countries, reported in Alesina and Perotti (1997), was that most successful expenditure cuts were based on cuts in social transfers and government wages, but this result seems to be driven by non-EU OECD-countries, as no particular spending categories stand out as determinants of successful consolidation programs in EU-countries (European Commission, 2007, p. 226). That expenditure cuts are important for deficit reduction is also confirmed by the response from financial markets: While large fiscal adjustments and consolidations in general are rewarded with lower interest rates from financial markets, consolidations based on expenditure cuts, in particular those based on wage cuts and reductions in transfer programs, result in even lower interest rates (Ardagna, 2009).

The qualification is that the success of a consolidation program is conditional on its legislative passage; we observe the consequences only of consolidation programs that are actually passed in the legislature, either through annual budgets, special crisis packages or both. In order for a crisis package to pass in the first place, it may be necessary to combine spending cuts and tax increases in a way considered fair or reasonable by (a majority of) voters. This observation can also help explain the question raised by Alesina and Perotti (1997): why, if consolidations based on spending cuts are so effective, do not all consolidation efforts focus on this? The reason could easily be that consolidation efforts focused solely on expenditure cuts, the incidence of which almost by necessity will fall primarily on those dependent on the state for their livelihood, can be politically infeasible, a point reinforced by former Prime Minister of Sweden, Göran Persson, in his account of the Swedish consolidation experience of the 1990's (Persson, 2009). According to Persson, the consolidation package consisted of two-thirds spending cuts and one third tax increases, a mix necessary for popular support of the entire policy of consolidation.

A number of additional determinants of success in fiscal consolidations have been identified (Alesina and Ardagna, 1998; Tavares, 2004; Ardagna, 2004; Wurzel et al. 2007; European Commission, 2007; Tagkalakis, 2009): First, there is ample evidence that starting from a high level of public debt increases the chance of successful consolidations substantially (e.g. Alesina and Ardagna, 1998), possibly owing to the increased awareness for the need for stabilization in such a situation as well as a resulting general acceptance of measures required to bring about such stabilization. However, for voters to accept significant cuts in current expenditures and/or increases in taxes the government must be able to convince voters that (considerable) fiscal consolidation is the right choice in current circumstances; this requires some degree of credibility on the part of voters, an issue we return to below, and may also require a change in government if the incumbent government is seen as having been a contributing cause of the fiscal situation due to fiscal profligacy or its inability to handle government finances.

Second, there seems to be a size effect in successful fiscal consolidations. The larger is the initial fiscal adjustment, typically measured by the increase in change in primary fiscal balance, the larger is the likelihood of success (Ardagna, 2004); however, this result may be driven by the inclusion of non-EU OECD countries, as studies based exclusively on EU-countries fail to find such size effects (European Commission, 2007).

Third, the framework of fiscal governance can potentially play a role in achieving success in consolidation efforts. Countries that score higher on a fiscal rules index, measuring the presence, coverage and strength of numerical fiscal rules, have a higher likelihood of experiencing successful consolidations (Wurzel et al., 2007), as do countries that score higher on an index measuring budgetary procedures (European Commission, 2007); we return to the issue of fiscal transparency in more detail below. Contrary to this, there seem to be no effects of whether fiscal policy follows a delegation vs. contracts approach. Hallerberg et al. (2009a) analyze whether delegation vs. contract regimes differ in the way they approach fiscal consolidations, including whether such regimes affect the probability of expenditure-led consolidations. They find that countries with strong delegation procedures have a higher expenditure contribution in fiscal consolidations, but they do not address whether the response, in the form of fiscal consolidation, to economic crises differ between delegation and contract regimes.

Furthermore, recent analyses explore the effect of labor and product market regulation on successful consolidations, echoing work by Alesina and Perotti in the 1990s. For example, Tagkalakis (2009) confirms most existing findings and report negative effects of (levels of) government ability to interfere with wage formation and centralized wage bargaining procedures. While statistically significant, the quantitative importance of these results seems to be limited. Similarly, the European Commission's (2007) study finds that labor and product market reforms, rather than their level, are important correlates of successful fiscal adjustments. Their labor market reform measure is based on a composite labor market index consisting of the unweighted average of indicators of employment restriction, unemployment benefit replacement rate and benefit duration. When the value of the index increases, which is equivalent to reducing labor market regulations, this constitutes a reform. The product market reform measure includes measures of entry barriers, public ownership, market structure, vertical integration and price controls in public utilities. It remains unclear which specific components of reform contribute to the consolidation success, but it is likely that both labor and product market institutions affect the economy's capabilities for economic adjustment and subsequent growth, allowing for an increase in GDP for a given budget deficit.

Finally, as already mentioned above, a crucial part of any consolidation effort is credibility: Is a fiscal adjustment really necessary for the entire economy in the sense that it can justify the related costs in the eyes of voters, or is it another way of furthering partisan goals? In the literature, a number of factors have been suggested to increase government credibility, including the size of the

fiscal adjustments (Giavazzi and Pagano, 1990), the composition of the consolidation package (Alesina and Perotti, 1997) and general economic circumstances such as the levels of debt and deficits (Perotti, 1999). While it is not possible to measure credibility in a general way, one interesting additional factor influencing credibility has been argued (Tavares, 2004) to be the ideology of the government in charge of the consolidation efforts. For right-wing governments with ideological goals of smaller state involvement, the problem in convincing voters of the necessity of fiscal consolidation is that consolidation efforts focused on spending cuts fulfill also the ideological goals of the government and, therefore, voters can be uncertain as to whether spending cuts are introduced for the sake of restoring fiscal balance or for distributional and/or ideological reasons. Conversely, left-wing governments, who by definition value government spending more, will cut spending only when it is absolutely necessary, as it goes against their ideological interests. However, left-wing governments trying to consolidate by increasing taxes are prone to voter concerns about the true need for crisis measures similar to those experienced by right-wing governments consolidating by cutting spending. Tavares (2004) find support for this argument in an empirical analysis of OECD countries over 40 years: Spending cuts by left-wing governments and tax increases by right wing governments are associated with more persistent fiscal adjustments.

The third branch of the literature looks at policy outcomes in the years following a deficit crisis, where a country is said to experience a crisis when the budget deficit is among the top 25 % observed among all countries and years in the sample. Alesina et al. (2006) use this definition and find, in a sample including both developed and developing countries over the period 1960-2003, in general that 'stronger' governments adjust more swiftly and more aggressively to a fiscal crisis, where 'stronger' is proxied by an indicator for presidential systems, in which the executive is not hindered by the possibilities of no-confidence motions from the legislature, and by a measure of so-called executive constraints, or veto players (Tsebelis, 1998), where it is generally thought that executives facing more veto players find it more difficult to find common ground when contemplating a policy response to the crisis.

2.2 The Swedish experience: Consolidation and Reform following (Fiscal) crisis

During the Swedish economic crisis of the early 1990s, government deficits increased to more than 10 % of GDP and government debt exploded from less than 50 percent of GDP to more than 80 percent of GDP in just three years. However, as can be seen from figure 3, since the mid-late 1990s, Sweden has experienced only a few, moderate government deficits and government debt has been brought down considerably.

The good fiscal performance of Sweden following the primary consolidation efforts has been widely credited to the establishment of medium-term fiscal frameworks, allowing a three-year perspective rather than just focusing on a single year, combined with the introduction of top-down budgeting and overall

expenditure ceilings, or targets, with clear budget frames breaking the targets into a number of categories (Ljungman, 2007; Hallerberg et al. 2009). As expenditure ceilings are set three years in advance, this has created a demand for realistic and reliable forecasts, by themselves contributing to a better fiscal policy decision-making process; see Ljungman (2007) for a detailed exposition of the Swedish system of budgeting.

While there is no doubt that the reform of the budget process has been an important factor in improving public finances in Sweden, the Swedish experience is also an example of how difficult it is to ascertain the (causal) effects of fiscal rules and frameworks. As noted by Hallerberg et al. (2009, pp. 117-9), Sweden provides "an example of a success case that managed to get out of its culture of weak fiscal discipline," and as emphasized also by politicians actually involved in setting government policy at the time (Henriksson, 2007; Persson 2009), a strong and widespread sense of crisis was a key factor in the establishment of the medium-term fiscal framework in 1997. Consistent with the evidence cited above, the seriousness of the crisis was emphasized, and made credible, by the fact that spending cuts were being aggressively pursued by a left-wing (Social Democratic) government.

However, as is obvious from figure 4, government deficits were already brought largely under control when the framework was implemented, marked by the dashed vertical line, and the evolution in the overall fiscal balance since then has not been markedly different from Denmark and Finland, two neighboring countries, with different fiscal policy frameworks. While Finland's deficit did not reach the level of Sweden's, and Denmark was not hit by a crisis in the same way, both Finland and Denmark have run a surplus since the late 1990s until 2009.

In the end, while the reform of the Swedish budgeting framework has certainly not hurt Swedish public finances, it is thus difficult to establish once and for all whether the implementation of the fiscal framework caused the better fiscal outcomes or were a consequence of the improved culture of fiscal discipline; the most systematic studies of the introduction of fiscal rules, to which we return in section 6, suggest that most fiscal rules are introduced when the public finances are already improving, as was obviously the case for Sweden, and that the rules by themselves have little lasting effect on public finance outcomes.

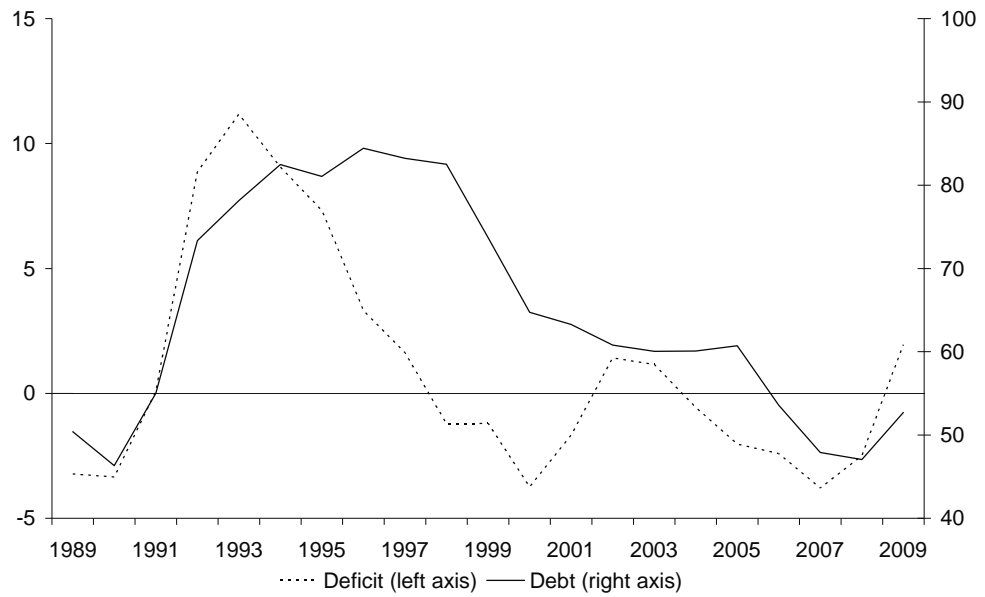**Figure 3 Government debt and deficits in Sweden, 1989-2009**

Figure 4 Government deficits in Sweden, Finland and Denmark

Note: Net borrowing in percent of GDP.

3 The political economy of fiscal consolidations

Faced with a fiscal crisis, a natural response of governments is to cut the deficit, either by cutting expenditures or increasing taxes. However, even glaringly necessary fiscal adjustments or consolidations are often delayed, or implemented in inadequate ways. The reason for this is politics: If the government is afraid of voter reactions to large cutback in expenditures or dramatic tax increases, it may postpone adjustment. If partners in a coalition government, or different branches in a divided government, cannot agree on the distribution of costs, this can delay adjustment. In this section, I discuss, based on formal models and empirical findings in the literature, what is known about government choice of crisis policy and, subsequently, how political variables, including the form of government and political polarization, and fiscal institutions affect both government adjustment decisions and voters' perception of it.

3.1 Voters and Fiscal policy: Do we know what voters want?

How do voters evaluate fiscal consolidations and adjustments? Do they reward governments for prudent action, or do they punish them for cutting back expenditures? Do voters react at all to government budgets?

Governments seem to think so, based on the evidence on the existence of political budget cycles, where governments boost deficits, or reduce surpluses, by a combination of lower taxes and higher expenditures before elections. The consensus in the literature is that there is little evidence for political business cycles, that is, electorally-motivated cycles in economic outcomes such as unemployment, inflation or aggregate output. On the other hand, there is some evidence for the existence of political budget cycles, that is, electorally-motivated cycles in government budgets; in particular, there is some evidence for the existence of conditional political budget cycles. For example, Persson and Tabellini (2003) and Shi and Svensson (2006) show that public finances in weaker democracies and countries with less broad information provision to its citizens are more affected by the presence of elections, and Brender and Drazen (2006) argue that these findings may be due to the inclusion of new(er), rather than weak(er), democracies. However, this phenomenon is not exclusively found in weaker and more recent democracies.

Alt and Lassen (2006b) confirm the findings that within the group of OECD countries, there is no unconditional political budget cycle, but find that there within this group of countries is clear evidence of political budget cycles in countries with less fiscal transparency and countries that are more politically polarized. The logic of this is the following: running deficits are costly, and governments will do it only if they can benefit electorally. However, the incentives encountered by governments to engage in political budget cycles are not the same across regimes, whether characterized by differences in election systems, partisan politics or budgetary institutions, or exchange rate regimes. If, for example, fiscal transparency is high, voters can more easily distinguish

electorally motivated fiscal policy changes from changes dictated by the economic situation.

Compared to the large literature on political business and budget cycles, there is surprisingly little work cross-country work on electoral consequences of fiscal imbalances. The few existing studies suggest that the fact that politicians supply such political cycles does not imply that deficits are rewarded by voters; in fact, a recent analysis by Brender and Drazen (2008) suggests no beneficial effects for incumbent governments from running budget deficits in developed countries. However, this is perhaps not so surprising in light of the findings reported above that no such unconditional cycles can be found in advanced economies. A number of challenges remain: First, it has yet to be investigated whether effects of fiscal balance on reelection probabilities are conditional on the economic, political and institutional context, including for example fiscal transparency, as is the case for political budget cycles. Second, if one takes at face value the current wave of theoretical modeling of the political budget cycle, the reelection decision on the part of voters also includes their beliefs about incumbent government ability, which is missing from current specifications, which, in turn, could lead to biased estimates.

More direct evidence on voters' evaluations of fiscal adjustments is available from Alesina et al. (1998). They argue that since fiscal consolidations are not always contractionary, voters have no a priori reason to dislike such consolidations. Examining voter response to fiscal balance, they find very little evidence in favor of the hypothesis that voters dislike deficit cuts – but, on the other hand, there is no compelling evidence that they reward it either. In fact, they find almost no significant effects of fiscal balance and adjustments on incumbent reelection probabilities across OECD countries, foreshadowing the results by Brender and Drazen (2008). This raises the puzzle why governments do not always stabilize, as the political costs of doing so seem limited. The reason suggested by Alesina et al. (1998) is that governments uncertain about the allocation of responsibility for the costs of fiscal adjustments may find it optimal to do nothing.

Furthermore, as was pointed out above regarding the Brender and Drazen study, two caveats remain regarding the study itself: First, voter response to fiscal adjustments may be conditional on other economic, political and institutional variables. Second, as also suggested by the Swedish experience discussed above, the effect on incumbent government support following fiscal adjustment may depend on whether the current crisis is perceived to be caused by that very government.

In the Swedish case, the Social Democratic government came to power during the crisis, and it was able to implement a fiscal consolidation package without the political baggage of having been implicated in the unfolding of the economic crisis. This is consistent with work on economic voting, e.g. Duch and Stevenson (2008), who show that attribution of responsibility for current economic conditions often falls on the executive, as voters have a difficult time

distinguishing the relative importance of external factors and incumbent government choices.

3.2 Fiscal policy and fiscal politics

Fiscal consolidation requires political action. Not all governments are equally ready or able to provide this kind of action. The reasons for this are many. The main theoretical framework for understanding these reasons originate with the work on delayed or insufficient stabilization due to disagreements over burden sharing, proposed in a seminal paper by Alesina and Drazen (1991). In their setting, a fiscal crisis is on-going. Two parties or fractions can unilaterally end the crisis, but in doing so they also incur the costs of stabilization. On the other hand, waiting also entails a cost, as the economy deteriorates under inaction. In this line of modeling, opposing political interests is a strong predictor of lack of stabilization. Studies in this tradition see political actors as agents for groups in society, without making explicit the link between these groups and the choice of political actors; when political actors delay stabilization, whether this is due to a concern about the welfare of the groups it represents, or is solely for electoral reasons, is left unspecified.2

In the context of fiscal stabilization and fiscal policy-making, most of the interest has focused on coalition vs. single party governments and minority vs. majority governments. Since decision-making rights in coalition governments are not placed with one political party, such governments fit the assumptions of the delayed stabilization model. In this case, a coalition partner, by not agreeing on a stabilization package, exerts a negative externality on the other members of the coalition, as everyone bears the costs of continued bargaining; this is also the topic of so-called dynamic common pool problems, wherein debt accumulation, which can be interpreted as the opposite of consolidation, is accelerated by multiple decision-makers.

In s seminal paper on institutions and fiscal policy, Roubini and Sachs (1989) find that countries with coalition (or multi-party) governments and minority governments have a harder time maintaining fiscal discipline than their single-party and majority counterparts. Their reasoning, as in Alesina and Drazen, is that coalition governments find it hard to agree on the distribution of spending cuts, as coalition partners dislike cuts in their constituencies' preferred spending. At the same time, minority governments can find it difficult to get the votes needed for fiscal consolidation efforts, as potential non-government coalition partners not necessarily want a share of the blame from the associated spending cuts.

Both coalition governments and minority governments are much more frequently occurring in countries with a proportional election system, where a party's share of seats in parliament is (more) closely linked to the share of votes is received, while this is generally not the case under plurality rule. As such, it may not by coalition or minority governments as such that lead to greater lack

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2 A recent analysis of war-of-attrition in budgeting and fiscal stabilization is Andersen et al.'s (2010a) analysis of late budgets in the American states.

of fiscal discipline, but rather the underlying electoral system. Such arguments have been put forward by Persson and Tabellini (2003), who argue, both theoretically and empirically, that countries with plurality (also called majoritarian systems) are more fiscally responsible.

As noted by Hallerberg et al. (2009), however, the empirical support for this line of the fiscal policy literature, sometimes called type-of-government (Kontopoulos and Perotti, 2002) is, at best, uneven. For example, basing their analysis on the Roubini-Sachs data, Edin and Ohlsson (1991) find that minority governments, but not coalition governments, are more likely to run a deficit; on the other hand, Alesina and Perotti find minority governments to be more, rather than less, fiscally responsible. The results in general depend on the sample of countries, on the period under study and on the empirical approach.[3]

3.3 Political polarization and fiscal transparency

The war-of-attrition framework can also be used to analyze the effects of political polarization and fiscal transparency on fiscal consolidation efforts.

Political polarization is most easily conceptualized as simply the distance between political parties or factions on a uni-dimensional political scale, typically construed as the standard left-right policy space. As such, political polarization typically refers to elite, or party, polarization, rather than mass, or voter, polarization. In the fiscal stabilization model, polarization can be construed as the degree to which costs are borne unilaterally, or similarly, as modeled in Andersen, Lassen and Nielsen (2010a), the degree of congruence in preferences among political factions. In this sense, when political polarization is high it is more valuable to be able to decide on the allocation of costs, leading to further delays in stabilization efforts.

Fiscal transparency concerns the availability of information about the government budget, as well as justification and independent verification of assumptions made. Conceptually, fiscal transparency captures the degree to which it is possible to attain a complete and accurate picture of government finances, both in the short and in the long run. In analytical work, this is typically modeled by assuming that the true fiscal stance of the government is unobservable to voters and fiscal transparency is then construed as the probability of observing the true fiscal position (Shi and Svensson, 2006; Alt and Lassen, 2006a,b; Andersen and Nielsen, 2010). Empirically, fiscal transparency has been argued to lead to lower debt (Alt and Lassen, 2006a), less pronounced electoral cycles (Alt and Lassen, 2006b), less pro-cyclical fiscal policy (Andersen and Nielsen, 2010) and lower borrowing costs (Glennerster and Shin, 2007). In the context of the delayed stabilization model, interpreting increasing transparency as a reduction in private signals about economic costs implies that greater transparency should be associated with swifter responses to fiscal crises.

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[3] Kontopoulos and Perotti (2002) argue for an alternative approach, based on measures of government fragmentation, enveloping both coalition governments and the number of cabinet ministries. They find that more fragmentation, in particular a larger cabinet, are associated more higher government transfers.

4 Data and Empirical specification

There exists are large literature examining the causes of both the supply of and demand for fiscal consolidations. While the early cross-country literature on politics and fiscal policy, e.g. Roubini and Sachs (1989), focused on the OECD-area, more recent work emphasizes, in part due to greater data availability, large cross-country samples ranging from 1960 and onto the present (Persson and Tabellini, 2003; Alesina, Ardagna and Trebbi, 2006). In themselves, larger samples, by providing more data points, facilitate more precise estimation of political and economic relationships, and at the same time such larger samples allow for an evaluation of 'deeper' causes of differences in fiscal policy such as electoral systems and rules. It is also true, however, that extending samples to include countries that may be fundamentally different in a number of dimensions, some of which are even unobservable, may make the basis of comparison worse, rather than better; if extending the sample to countries that cannot be used as basis for counterfactuals, internal validity of the estimates decreases.

A similar argument can be made for not extending the sample period too far back in time: Again, while it is true that more periods of observation can lead to sharper conclusions about empirical relationships, the conduct of economic policy changes over time, and in response to particular experiences in particular countries, in ways that can be difficult to capture in an econometric model even allowing for country and year fixed effects.

Finally, as discussed at length above, a large part of the more recent literature on fiscal policy determination has focused on fiscal governance, a concept almost non-existent until the late 1980s. Except in cases where fiscal rules were constitutionally set long ago, as is the case for the much studied balanced-budget requirements in American state governments, the data collection on fiscal governance indicators did not begin until the early 1990s (e.g. von Hagen, 1992) and it has been possible only in a few cases to reconstruct measures back in time; Hallerberg, Strauch and von Hagen (2009) construct measures of fiscal rules in the EU from 1985 onwards, based on surveys in 1991, 2000 and 2004, and Alt, Lassen and Rose (2006) construct a database of fiscal transparency indicators in American state governments from 1972 onwards, based on surveys of state budget officials.

For these reasons, I restrict myself to a sample consisting of established OECD countries, excluding more recent members such as South Korea and Mexico, in the period from 1989-2005, with the endpoint being dictated by data availability. The countries includes are listed in figure 5 below.

4.1 Measuring fiscal transparency

The empirical analysis uses a variant of the fiscal transparency index constructed by Alt and Lassen (2006a), which is based on self-reported measures of fiscal transparency for 19 countries taken from a 1999 OECD questionnaire sent to all Budget Directors of OECD member countries

(OECD 1999). Independently, nine out of these ten variables became part of OECD's Best Practices for Budget Transparency (OECD, 2001).

There exists a number of measures of fiscal transparency, and relative to many such measures, this survey data has the advantage that it focuses directly on transparency, and is comprehensive. However, relying on survey responses does have two drawbacks. First, they are self-reported and some countries are likely to rate themselves too highly. Second, the questions focus on formal rules and procedures that may differ from actual practice. Alt and Lassen (2006a) reports that their index correlates well with the subjective assessment of fiscal transparency in eight European countries reported by von Hagen (1992), and this is true also for a recent update of that index; Hallerberg et al. (2009) report that the Alt and Lassen-index is correlated at .81 with their most recent subjective transparency index. Thus, overall we believe this to be good source of fiscal transparency data that captures the main characteristics of transparency identified in the literature. In practice, we use a slightly different version of the Alt-Lassen index, suggested by Andersen and Nielsen (2010), that drops one indicator (for whether in-year financial reports are audited) in order to increase the coverage of countries.

We also compare this index against more subjective estimates of fiscal transparency. Case-study evidence is supportive of the rankings at the extremes. For example, Campos and Pradhan (1999) report on the transparent New Zealand system. The most obvious difference between von Hagen's (1992) subjective assessment and our index is that France and Germany receive high subjective assessments but receive relatively low scores on our index. Also, Germany's budget process deteriorated in the 1990s (Hallerberg et al. 2001), as more recent analyses stress (von Hagen and Wolff 2004). Note therefore that any errors we made in our index would bias the results against supporting our predictions, given that both of these countries have relatively good fiscal records in the period studied. Finally, Alesina and Perotti (1996) argue that Italy has a highly non-transparent system of fiscal reporting, and uses special accounts and off budget items extensively, which is a more negative assessment than is provided by our coding. Again, this discrepancy would bias the results against our predictions.

While no unique definition of fiscal transparency exists, a useful description from the IMF sees "fiscal transparency … as openness toward the public at large about government structure and functions, fiscal policy intentions, public sector accounts, and projections. It involves ready access to reliable, comprehensive, timely, understandable, and internationally comparable information on government activities … so that the electorate and financial markets can accurately assess the government's financial position and the true costs and benefits of government activities, including their present and future economic and social implications" (Kopits and Craig 1998: 1).

The literature also provides specific examples of transparent budget reporting procedures: "A transparent budget process is one that provides clear information on all aspects of government fiscal policy. Budgets that include

numerous special accounts and that fail to consolidate all fiscal activity into a single 'bottom line' measure are not transparent. Budgets that are easily available to the public and to participants in the policymaking process, and that do present consolidated information, are transparent." (Poterba and von Hagen 1999: 3-4).

The Alt-Lassen measure of transparency is constructed to capture four distinct characteristics of transparency in budgeting and fiscal policy determination, synthesized from the descriptive literature on transparency, including Alesina and Perotti (1996) as well as Kopits and Craig (1998) and Poterba and von Hagen (1999) quoted above. First, more transparent procedures should process more information, and, other things equal, do so in fewer documents. This speaks to openness and ease of access and monitoring. Second, transparency depends on content as well as just the release of information, implying that there should be a commitment to non-arbitrary language: words and classifications should have clear, shared, unequivocal meanings. Third, the possibility of independent verification increases transparency. Finally, the presence of more justification increases transparency, reducing over-optimism and strategic creativity in assumptions and forecasts.

To the ten included indicators included from the survey, we added a measure of whether the financial statements are prepared using accrual accounting. These 11 measures are aggregated additively into a simple index. In terms of the four broad criteria we outlined above, the index contains:

More information, other things equal, in fewer documents

- Whether non-financial performance data is routinely included in the budget documentation presented to the legislature (yes = transparent)
- Whether special reports on the fiscal outlook are released prior to an election (yes = transparent)
- Whether the government regularly produces a report on the long term (10-40 years) outlook for public finances as a whole (yes = transparent)
- Whether the government is required to report contingent liabilities on a regular basis (yes = transparent)
- Whether the government generally presents more than one supplementary budget to the legislature in each fiscal year (no = transparent)
- Whether the government is required to make regular actuarial estimates for social security programs (yes = transparent)

Independent verification

- Whether the economic assumptions used in the budget are subject to independent review (yes = transparent)

Non-arbitrary language

- Whether the government uses accrual accounting in its financial statements (yes = transparent)

More justification

- Whether there is a legal requirement that the budget documentation contain a projection of expenditure beyond the next fiscal year (yes = transparent)
- Whether it is a legal requirement that the budget include an ex post comparison between projected expenditure in future years and the actual expenditures in those years (yes = transparent)
- Whether the budget discusses the impact that variations in the key economic assumptions would have on the budget outturn (yes = transparent)

There is considerable variation in the transparency of the fiscal reporting, ranging from an index value of 1 (Greece) to an index value of 10 (New Zealand) out of a maximum index value of 11. Individual country scores are shown in Figure 5.

As argued by Alt and Lassen (2006a), fiscal transparency is generally associated with lower deficits and debt. While they focused on results for an average of the 1990s, figure 6 shows the bivariate relationships between fiscal transparency and, respectively, deficits and debt, for the sample period used in the analysis below. For both fiscal policy measures, there is a negative correlation; if one disregards Norway, which is in a special situation due to its petroleum fund, the bivariate relationships are strongly significant, even if based only on 20 observations.

It is worth repeating that if our transparency index overstates fiscal transparency in Italy and understates it in France and Germany, this relationship is possibly even stronger than it appears here.

Figure 5 The Alt-Lassen index of fiscal transparency in OECD economies
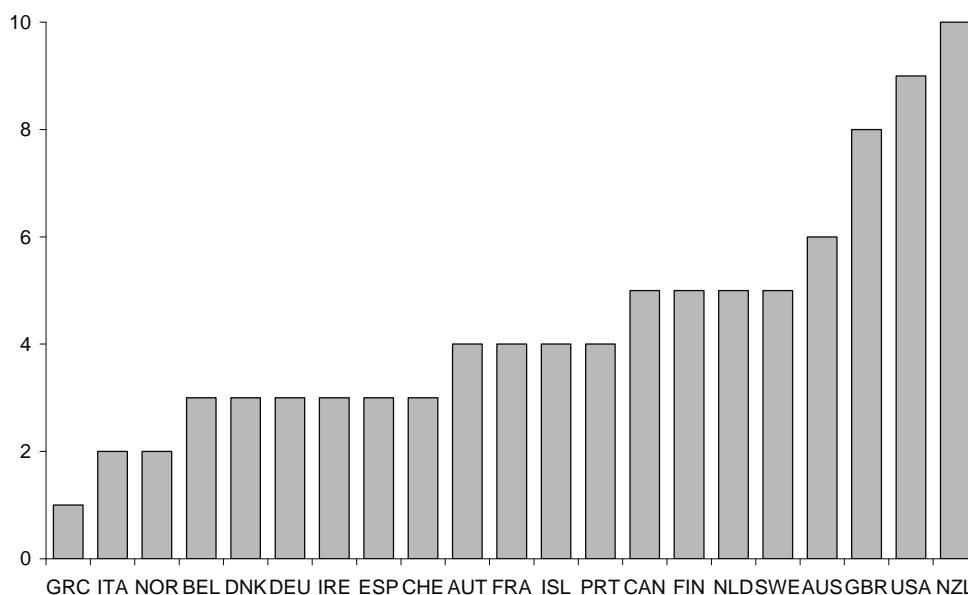
4.2 Measuring Political Polarization

Political polarization can be measured in many different ways. Our main measure of party system polarization was applied to fiscal policy by Alt and Lassen (2006b), though for a different time period and in a binary form. The measure comes from an expert survey (Benoit and Laver, 2005, who build on a methodology introduced by Laver and Hunt (1992). Country specialists were asked to assign scores on a 20-point scale representing the parties' priorities between raising taxes to increase public services and cutting public services to cut taxes. Relative to other polarization measures, this has the advantage of being focused directly on the taxation/spending-dimension. Our polarization variable is the standard deviation of party-by-party mean raw scores on this rating for each country. The index ranges from 3.5 (Finland) to 7.4 (US), with a mean of 4.9 and a standard deviation of .8. We note that there is no statistical association at all between polarization and transparency. This method does not take into account the relative size of parties when calculating the measure; such a weighted measure varies less across countries, but this does not affect results. The measure is static, i.e. unchanged over the course of the sample period, which, as is the case for fiscal transparency, obviously is a simplification but which does capture long-run differences in political polarization across countries.

Figure 6 Deficits, debt and fiscal transparency
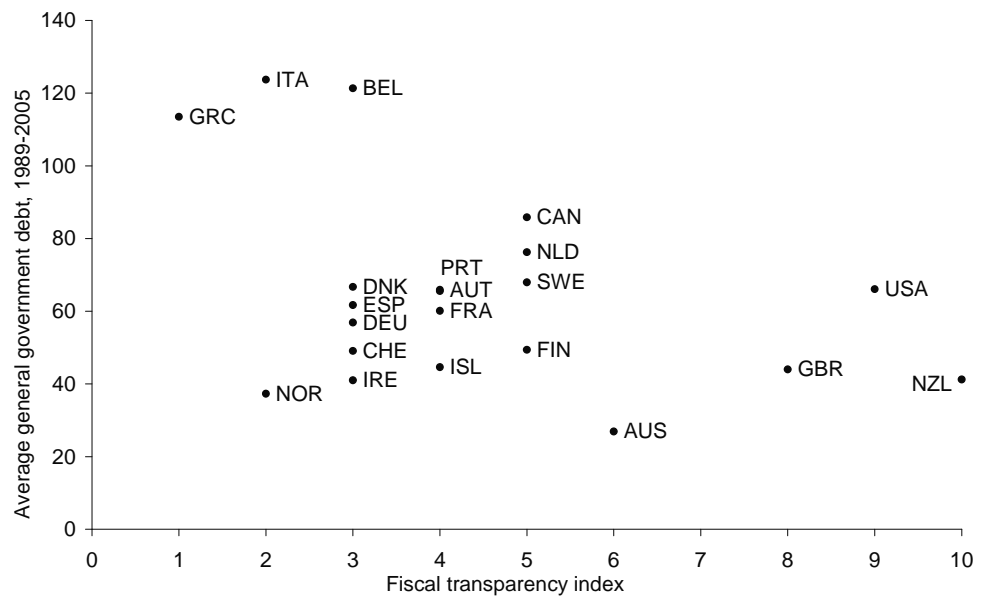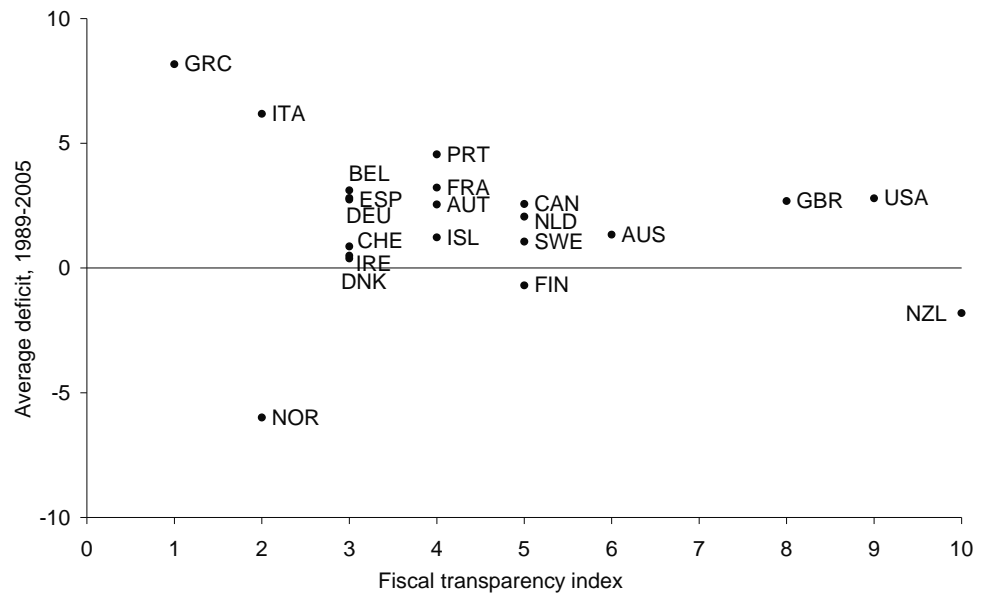
4.3 Measuring coalition government and minority government

Governments can consist of one or more political parties. We construct a measure of coalition government which equals one if more than one party is part of the government and zero otherwise. This is based on a measure of government fractionalization, which is a Herfindahl-index measuring the probability that two randomly picked government members come from different parties. Thus, if government fractionalization is zero, the government consists of a single party, if it is greater than zero, the government is a coalition.

Minority government status is based on the vote share of government parties. If this is less than 49.9 % the government is classified as a minority government.4 Minority governments make up approximately 60 % of both the full sample and the sample with a deficit > 0. Coalition governments make up 70 % of the full sample and 65 % of the samples with deficits > 0.

4.4 Empirical analysis: Definitions and empirical specification

A fiscal consolidation is defined by the OECD as "a policy aimed at reducing government deficits and debt accumulation."5 Obviously, any policy that aims at improving the (intertemporal) fiscal position of the government is by this definition a fiscal consolidation, but in practice the term is often associated with efforts aimed at reducing 'too high' deficits or 'too high' debt, with 'too high' depending on the situation; for countries observing the Stability and Growth Pact, the guidelines have been the familiar 3% and 60% rules for deficits and debt, respectively.

In the literature, most efforts have been concentrated at investigating fiscal consolidations defined as an improvement (i.e. cut) in the cyclically adjusted deficit regardless of the current fiscal position. This is consistent with the view that countries that are generally following a prudent fiscal policy path will be less exposed when being hit by a fiscal shock, but it is analytically distinct from the question of which governments are able to consolidate in bad times, or from a situation with a primary deficit greater than zero. Table 1 shows a selection of definitions of fiscal consolidation and adjustment found in the literature.

Summary statistics for all variables are provided in the appendix. Below, we conduct two different empirical analyses. We present them in turn.

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4 In practice, the seat share necessary for a majority may be slightly less than 50 % owing to integer number of members as well as special electoral rules.
5 OECD Glossary of Statistical Terms, http://stats.oecd.org/glossary/detail.asp?ID=984, accessed February 2010.

Table 1 What constitutes a fiscal consolidation episode in the literature?

OECD(2007)	A consolidation episode starts if CAPB improves by at least 1 pct-point of potential GDP in one year or in two consecutive years with at least 0.5 pct-point improvement occurring in the first year. Continues as long as CAPB improves. An interruption is allowed without terminating the episode as long as the deterioration of the CAPB does not exceed 0.3%of GDP and is more than offset in the following year (by an improvement of at least 0.5 % of GDP).
Alesina and Perotti (1995)	A reduction in the cyclically adjusted primary deficit (BFI – Blanchard fiscal impulse) by at least 1,5 % of GDP in any given year. A small reduction is 0,5% to 1,5%
Alesina and Ardagna (2009)	A period of fiscal adjustment is a year in which the cyclically adjusted primary balance improves by at least 1,5 % of GDP (to rule out small, prolonged adjustments, stimuli. Focus here: Sharp and large episodes.
Alesina and Perotti (1997)	One year in which the cyclically adjusted primary deficit falls by more than 1.5 pct. of GDP or a period of two consecutive years in which the cyclically adjusted primary deficit falls by at least 1.25 pct. in both years.
Alesina and Ardagna (1998)	Improvement of at least 2 % in one year or two consecutive years where the capb improves by at least 1.5 % in both years.
EC(2007)	A consolidation is an improvement of the CAPB of at least 1.5% of GDP, which is either achieved (i) in one single year (a cold shower consolidation) or (ii) over a period of three years where in each single year the improvement of CAPB is less than 1.5% of GDP and the CAPB does not deteriorate by more than 0.5% of GDP compared to the year before (a gradual consolidation).

General fiscal consolidation

The basic empirical specification for studying the initiation of a consolidation is

$$\Pr(consolidation_{it} = 1) = \Phi\left(\beta_0 + \beta_1 ca\_def_{it-1} + \beta_2 ca\_def_{it-1} \times POL_{it-1} + x'\beta\right),$$

$$consolidation_{it} = 1\left[ca\_def_{it} - ca\_def_{it-1} < -1.5\right] \text{ or}$$

$$consolidation_{it} = 1\left[ca\_def_{it} - ca\_def_{it-3} < -1.5 \wedge ca\_def_{it-s} - ca\_def_{it-s-1} < .5, s = 0,1,2\right]$$

This formulation states that the probability of observing a consolidation depends on the cyclically-adjusted deficit, its interaction with political and institutional variables and additional control variables. The definition of consolidation follows the European Commission (2007), shaded in the table above. However, one problem in modeling gradual consolidation efforts is how to date explanatory variables. Given that the broad consolidation definition includes a number of policy decisions over a number of years, possibly by different governments, it is not at all clear how to model the decisions that lead to gradual consolidation. For this reason, we focus on so-called *cold-shower* consolidations only, defined as reductions of at least 1.5 percent of (potential) GDP in the cyclically-adjusted deficit from one year to the next.

Obviously, the need for fiscal consolidation is not always the same; this is partly corrected for through the use of control variables, as in other studies of the causes of fiscal consolidation initiations. However, such an approach does not allow the effect of additional explanatory variables such as output gap, debt

level and political and institutional variables to vary with the overall fiscal environment; for example, the debt level can affect the need for consolidation differently depending on the fiscal balance. At the same time, fiscal institutions may be more effective in securing fiscal consolidation when the government is running a deficit. To account for such asymmetric effects, I distinguish two cases when estimating the model: the full sample and a sample defined by positive deficits, where the need for fiscal consolidation is arguably greater. I condition the sample on the actual deficit rather than the cyclically adjusted deficit is that the former is more visible and often the focal point of public debates about the need for stabilization, adjustment or consolidation, as well as the measure used for example in the criteria dictated by the Maastricht treaty.

Response to crisis

In the analysis of the policy response to a budget deficit crisis, we follow Alesina et al. (2006) who define a a country to be in a fiscal crisis if the deficit-to-GDP ratio is above the 75th percentile of the pooled empirical density of their sample, and examine whether a crisis induces a change in the deficit in the years following the crisis as well as whether such a response is conditional on political variables.

We focus on how fiscal transparency affects the fiscal consolidation following a crisis. Our analysis is similar in spirit to that of Alesina et al. (2006), but we choose to focus on a more limited pool of countries, to limit problems of comparability, and to focus on a shorter span of years, to avoid problems of parameter instability. Furthermore, in addition to the definition of a crisis considered in Alesina et al. (2006), who define a deficit to be a crisis if the deficit belongs to the top quartile of the sample distribution, we also consider two alternatives: whether the deficit belongs to the top decile of the empirical sample distribution and whether the deficit exceeds three percent of GDP. The reason for the former is that we wish to focus specifically also on major shocks, and the reason for the latter is that this accords with the deficit rule embodied first in the Maastricht Treaty and later in the SGP.

Our basic empirical specification thus is

$$\Delta_s deficit_{it} = \beta_0 + \beta_1 CRISIS_{it} + \beta_2 CRISIS_{it} transparency_i + a_i + v_t + \varepsilon_{it},$$
$$CRISIS = 1\left[ECDF\left(deficit_{it}\right) > \tau \right], \tau \in \{.75,.90\} \text{ or}$$
$$CRISIS = 1\left[deficit_{it} \geq 3\right],$$

where $\Delta_s deficit_{it} = deficit_{i,t+s} - deficit_{it}$ is the change in the deficit from the onset of the crisis until time s. The deficit is measured as net borrowing by general government relative to GDP. Since our transparency variable is time invariant for the sample we consider, there is no separate effect of the index on the deficit, as this is subsumed by the country fixed effect. Additionally, we allow for common year effects, and we estimate the model by OLS, making it a standard fixed effects panel data model, and correct the standard errors for heteroscedasticity. We further enrich the model as specified above by including

additional economics covariates and additional variables capturing political and institutional factors.

5 Results

This section reports the results. We begin by considering the sources of observed consolidation attempts and continue by assessing the responses to major crises.

5.1 What are the determinants of fiscal consolidation episodes?

Table 2 reports results for the causes of cold-shower consolidations, where the cyclically-adjusted deficit decreases by 1.5 per cent of GDP from one year to the next.6 Each pair of columns reports results from two probit analyses, differing only in the sample employed. The left column of each pair reports results for the full sample, while the right column reports results for a sample defined by the (non-adjusted) deficit being greater than zero as described above. The first pair of columns reports the basic specification, the second pair includes political polarization and its interaction with the lagged cyclically-adjusted deficit, and the final two pairs include, respectively, coalition and minority government.

In general, both economic and political variables are stronger predictors of fiscal consolidation when we restrict the sample to include only cases of actual deficits, when the demand for consolidation presumably is higher. The effect of fiscal balance is consistently positive, with significant effects for the deficit-sample. The size of the cyclically adjusted deficit is also quantitatively significant, which is consistent with all other work on the topic. In specification (4), including fiscal transparency, political polarization and their interactions in the deficit-sample, an increase in the cyclically-adjusted deficit of one percentage-point of GDP from its mean level, evaluated at the means of other variables, increases the probability of observing a fiscal consolidation by 13 percent.

Other economic variables, such as the output gap, inflation and even the level of debt, have only very limited effects. The output gap is significant only occasionally, and the quantitative effect is negligible, which is true also regarding inflation and the level of debt, despite their strong statistical significance. Elections seem to have a weakly significant negative effect, in contrast to the positive effect found in most other studies (e.g. European Commission 2007, Wurzel 2007), but in accordance with the significant negative effects observed by Mierau et al. (2007).

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[6] A naive application of the gradual consolidation definition (see discussion above) yields essentially unchanged results.

Table 2: Determinants of cold shower consolidations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged one period:								
Cyclically adjusted deficit	0,125	0,141	0,439	1,268	0,344	1,088	0,424	1,374
	[0.055]**	[0.077]*	[0.273]	[0.379]***	[0.245]	[0.330]***	[0.272]	[0.353]***
Output gap	-0,011	0,026	0,01	0,109	0,013	0,11	0,013	0,107
	[0.035]	[0.042]	[0.047]	[0.049]**	[0.050]	[0.052]**	[0.048]	[0.052]**
Public sector size	0,017	0,033	-0,006	-0,017	-0,009	-0,013	-0,005	-0,016
	[0.013]	[0.020]*	[0.015]	[0.021]	[0.016]	[0.024]	[0.016]	[0.023]
Inflation	0,083	0,146	0,047	0,12	0,014	0,079	0,057	0,122
	[0.022]***	[0.034]***	[0.027]*	[0.026]***	[0.028]	[0.032]**	[0.026]**	[0.035]***
Debt	0,007	0,011	0,012	0,028	0,014	0,027	0,013	0,032
	[0.005]	[0.006]*	[0.006]**	[0.006]***	[0.006]**	[0.006]***	[0.006]**	[0.008]***
Election	-0,195	-0,414	-0,139	-0,336	-0,099	-0,35	-0,142	-0,358
	[0.193]	[0.245]*	[0.201]	[0.282]	[0.209]	[0.302]	[0.207]	[0.292]
Fiscal transparency	0,104	0,172	0,139	0,442	0,124	0,39	0,149	0,455
	[0.068]	[0.120]	[0.057]**	[0.080]***	[0.060]**	[0.076]***	[0.055]***	[0.098]***
Fiscal transparency x ca_deficit	0,015	0,027	0,006	0,047	-0,002	0,038	0,004	0,037
	[0.008]*	[0.013]**	[0.009]	[0.021]**	[0.008]	[0.018]**	[0.009]	[0.015]**
Political polarization			-0,623	-1,1	-0,608	-1,085	-0,602	-1,154
			[0.182]***	[0.228]***	[0.207]***	[0.250]***	[0.197]***	[0.231]***
Political polarization x ca_deficit			-0,044	-0,215	-0,029	-0,183	-0,025	-0,191
			[0.050]	[0.079]***	[0.044]	[0.068]***	[0.048]	[0.063]***
Coalition government					0,103	-0,244		
					[0.204]	[0.307]		
Coalition government x ca_deficit					0,088	0,121		
					[0.054]	[0.114]		
Minority government							-0,204	0,006
							[0.208]	[0.279]
Minority government x ca_deficit							-0,072	-0,227
							[0.067]	[0.097]**
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	283	173	283	173	268	161	283	173
Sample	Full	Deficit > 0	Full	Deficit > 0	Full	Deficit > 0	Full	Deficit > 0

Clustered standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

In contrast, fiscal transparency and political polarization have statistically significant and sizeable effects: An increase from the median level of transparency to high levels of transparency (4 to 8 on the scale) is associated with a 17 (+/- 8) percentage point increase in the probability of observing a consolidation, increasing to 20 (+/- 9) percentage points when taking into account the indirect effect stemming from the interaction with the cyclically-adjusted deficit. Likewise, a one standard deviation increase in political polarization entails a reduction in the probability of observing a fiscal consolidation of 8 percent (+/-2).[7] The effect of having a minority government, while statistically significant for the interaction with the lagged cyclically-adjusted deficit, has only a modest quantitative effect. Similarly, minority coalition governments had no effects.

A number of other variables were included but did not influence results; these include government ideology, various measures of veto players and measures capturing electoral rules and systems such as indicators for plurality rule and proportional representation.[8] Finally, in results not reported, I also investigated the determinants of the size of the consolidation efforts, rather than just the presence. The results are virtually identical to those reported above, but the variables are better at explaining the choice between no consolidation and consolidation. One result stands out, however: The higher the level of fiscal transparency, the larger is also size of the adjustment.[9]

5 2 Who responds to fiscal crises ?

We next turn to the response to fiscal crises. While the first set of results did not focus on fiscal crises as such, but on overall consolidations of the budget, we now consider the equally important issue of what factors, if any, that allow countries to address, or prohibit them from addressing, a fiscal crisis.

We present the results in table 3. Each panel shows results from four panel data regressions with country and year fixed effects, differing only in their dependent variable and the timing of additional control variables; thus, 'Year 1' is the difference between the deficit one year after the fiscal crisis and the deficit in the year of the crisis, while 'Year 4' shows the difference between the deficit four year after the fiscal crisis and the deficit in the year of the crisis. The left panel shows results from a set of regressions where we consider separately crises defined by deficits in the top decile of the empirical distribution of deficits, and crises defined by observing deficits in the interval between the 75th percentile and the top decile of the same distribution. The right panel shows results where we include deficits in the top decile, as before, but as a weaker crisis criterion include deficits above 3 % of GDP but less than the value defined by the top decile. In the sample we use, the cut-off for the

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[7] Calculations based marginal effects at means of all variables, except where noted. The total direct and indirect effects calculated using non-linear prediction methods.

[8] While these electoral indicator variables, and their realiztions in parliament outcomes in the form of coalition governments, have no significant effects, the mean electoral district magnitude had a strongly significant, but quantitatively irrelevant, positive effect on the probability of observing consolidations.

[9] These results are based, respectively, on a panel-tobit regression and a regression on a sample of consolidations only.

top decile is a deficit of 6.7 % of GDP, while the cutoff for the 75th percentile is 4.1 % of GDP. The 3 % of GDP cut-off rule corresponds to the 62th percentile.

A major crisis, with a deficit in the top decile, always leads to some, significant consolidation independent of the level of fiscal transparency, and this effect increases in the years following the crisis; across the two specifications, we estimate the initial response – in the year immediately succeeding the crisis – to be the smallest. This is true for both specifications. For these serious crises, there is initially no effect of fiscal transparency on the fiscal consolidation response to the crisis. However, the effect of fiscal transparency kicks in three or four years after the crisis; countries with higher fiscal transparency consolidates significantly more, both statistically and quantitatively. For example, a country with a fiscal transparency index value of 5 (e.g. Sweden) on average increases its consolidation efforts four year after the crisis by decreasing its deficit by approximately 3 percentage points of GDP relative to a country scoring 1 on the index (e.g. Greece).

The estimated effect of the two other definitions of a fiscal crisis, deficits belonging to the top quartile and deficits in excess of three percent of GDP, are shown in the left and right panels, respectively, of table 2. For both definitions of a fiscal crisis, the response to a crisis is more influenced by fiscal transparency than was the case for the most serious fiscal crisis. While no countries respond initially to deficits in excess of 4.1 %, there is some (small) adjustment to deficits exceeding 3 % of GDP even in the first year following the crisis, driven primarily by countries attempting to comply with the 3 percent budget rule of the Maastricht treaty. From year 2 on, however, the effect of fiscal transparency becomes more pronounced. For both definitions of a fiscal crisis, there is little fiscal consolidation taking place in low transparency countries; in fact such countries tend to increase their deficits even further. Stabilization efforts increase, however, fast with levels of fiscal transparency.

Table 3: Deficit Increase from baseline year to year s, s=1,2,3,4.

	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
Crisis (top 10%)	-1.860***	-3.010***	-3.323***	-2.707**	-1.621***	-2.732***	-2.975**	-2.576*
	(0,436)	(0,737)	(0,927)	(1,039)	(0,511)	(0,753)	(1,246)	(1,457)
Crisis (top 10%) x Transparency	0,004	-0,096	-0,34	-0.687**	-0,054	-0,209	-0.475*	-0.813***
	(0,064)	(0,134)	(0,208)	(0,254)	(0,078)	(0,139)	(0,236)	(0,264)
Crisis (top 25%)	-0,359	-0,063	0,709	1.649**				
	(0,402)	(0,621)	(0,590)	(0,750)				
Crisis (top 25%) x Transparency	-0,08	-0.303***	-0.615***	-0.855***				
	(0,048)	(0,088)	(0,102)	(0,190)				
Crisis (3% deficit rule)					0,196	0,849	1.871**	2.500***
					(0,329)	(0,586)	(0,683)	(0,726)
Crisis (3% deficit rule) x Transparency					-0.164**	-0.501***	-0.860***	-1.068***
					(0,069)	(0,146)	(0,168)	(0,150)
Observations	333	312	291	270	333	312	291	270
R-squared	0,337	0,441	0,538	0,617	0,34	0,467	0,577	0,662
Number of group	21	21	21	21	21	21	21	21

Clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

To get an idea of the magnitudes involved, figure 7 shows the effect of a fiscal crisis on the deficit, conditional on fiscal transparency. The figure is based on the right hand side panel of table 3. The left column of the graph shows estimated responses (the fully drawn lines) in years 1(top)-4(bottom) for the top decile definition of a fiscal crisis, while the right column shows similar responses for the 3% definition. 90 % confidence intervals are shown in dashed lines. Both columns confirm that the role of fiscal transparency in facilitating prudent responses to a fiscal crisis becomes more pronounced with time; this can be seen by the fact that the curves tilt from being the almost horizontal in year 1 towards a pronounced effect of fiscal transparency which is also statistically significant as attested by the tightness of the confidence intervals, bounding away from zero.

We also see that the effects for the major fiscal crisis are less precisely estimated than for the crisis-measure based on the 3%-rule. The likely reason for this is the small number of cases identified using the former definition.

The empirical result that countries with more transparent fiscal policy-making consolidates fiscal policy more than less transparent countries accords well with both the finding above and the findings reported by Alt and Lassen (2006a) that the overall government debt is generally higher in countries that score lower on the fiscal transparency index; if such governments do not address the causes of the deficits, or at least run surpluses (or lower deficits) in order to improve the balance on the government's intertemporal budget, it will eventually increase government debt.

5.3 Additional results : Fiscal transparenc y indicators

The basic idea behind the construction of the fiscal transparency index is to capture in one measure all factors relevant for a country's degree of fiscal policy openness. However, not all components of the index may be equally important for all dimensions of fiscal policy. Therefore, we also consider separately the effects of the individual indicator variables for fiscal consolidation efforts. This also serves as a robustness check on the entire index; if no individual indicators are quantitatively and statistically significant, the results, while interesting, are hard to convert into recommendation for fiscal governance design.

Figure 7 The effect of fiscal transparency on adjustment following fiscal crisis
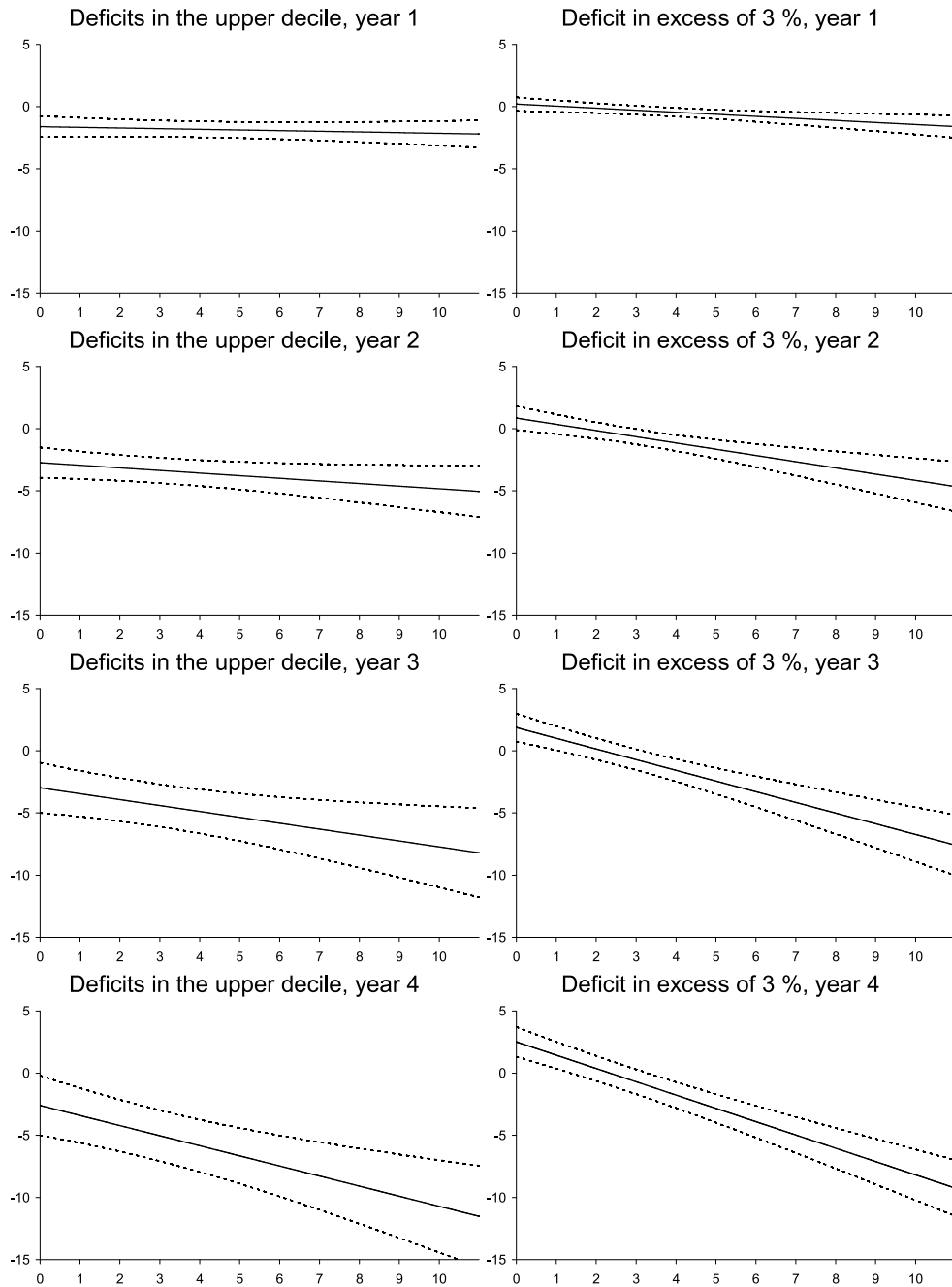
In results not shown, we find for both the 3%- and the 75th percentile-measures that large and significant effects come from indicators that there is a legal requirement that the budget documentation contains a projection of expenditure beyond the next fiscal year, that non-financial data is routinely included in the budget documentation presented to the legislature, that there is accrual accounting, whether the budget discusses the impact that variations in the key economic assumptions would have on the budget outturn and whether the government regularly produces a report on the long term outlook for public finances. We find fewer definitive results when considering the major fiscal crisis, drawn from the top decile. Here, the two first indicators mentioned affect in a significant way also the policy response to the major crises, while results for the other indicators just mentioned are less precisely estimated; the remaining indicators are far from significant, and some even have the wrong sign when considering the effect of major crises.

5.4 Political polarization and the (lack of) response to fiscal crises

We next investigate the effect of political polarization on the response to fiscal crises. As demonstrated both above and in Alt and Lassen (2006b), political polarization can potentially affect the ability of a government to implement (costly) consolidation measures due both to disagreements about the distribution of costs as well as electoral concerns on the part of incumbent governments that disgruntled voters might prefer the ideologically distant opposition come election time.

In table 4, I report results from a set of regression analyses similar to those reported above, but extended with political polarization variables included in a way similar to that of fiscal transparency. Political polarization does not affect stabilization efforts following the most serious fiscal crises, but does affect, in a negative way, consolidation efforts following fiscal deficits in the top quartile or in excess of 3 % of GDP. This is consistent with the idea that consolidation following a serious fiscal crisis is mostly an economic problem to solve, with the saliency of the crisis being achieved automatically, while less serious, but still significant, fiscal crises are more subject to political debate and political stand-offs.

The quantitative significance of political polarization is less than that of fiscal transparency, but still substantial, and is roughly that same across the two types of crises.

Table 4: Deficit Increase from baseline year to year s, s=1,2,3,4.

	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4
Crisis (top 10%)	-0,337	-3,833	-2,517	-0,385	-0,425	-3,997	-2,299	0,338
	[2.028]	[2.201]*	[4.215]	[4.954]	[2.186]	[2.087]*	[3.972]	[4.600]
Crisis (top 10%) x Transparency	0,004	-0,126	-0,398	-0,776	-0,067	-0,252	-0,557	-0,885
	[0.061]	[0.144]	[0.213]*	[0.263]***	[0.085]	[0.174]	[0.254]**	[0.270]***
Crisis (top 10%) x Political polarization	-0,323	0,199	-0,118	-0,411	-0,241	0,307	-0,064	-0,542
	[0.470]	[0.499]	[0.954]	[1.109]	[0.496]	[0.504]	[0.930]	[1.029]
Crisis (top 25%)	-0,523	-1,425	-2,205	-2,681				
	[0.677]	[0.981]	[1.333]	[1.486]*				
Crisis (top 25%) x Transparency	-0,088	-0,376	-0,758	-1,069				
	[0.048]*	[0.093]***	[0.085]***	[0.208]***				
Crisis (top 25%) x Political polarization	0,04	0,346	0,734	1,095				
	[0.111]	[0.195]*	[0.249]***	[0.395]**				
Crisis (3% deficit rule)					-0,439	-1,017	-1,778	-0,347
					[0.710]	[1.165]	[1.253]	[1.338]
Crisis (3% deficit rule) x Transparency					-0,191	-0,578	-1,022	-1,198
					[0.096]*	[0.175]***	[0.182]***	[0.191]***
Crisis (3% deficit rule) x Pol. Polarization					0,157	0,459	0,91	0,719
					[0.198]	[0.347]	[0.355]**	[0.381]*
Observations	333	312	291	270	333	312	291	270
R-squared	0,34	0,44	0,54	0,62	0,34	0,47	0,58	0,67
Number of countries	21	21	21	21	21	21	21	21

5.5 Additional results

The results are largely unaffected by the exact configuration of control variables. Indeed, the country fixed effects capture other institutional differences (but not their interaction with crisis-measures). Measures of the business cycle, including the (filtered) output gap, does not change the results, but we note that fiscal consolidation efforts are muted by higher (cyclically adjusted) unemployment (not shown).

While we do not consider the interaction of the output gap and fiscal transparency on fiscal policy, as it does not relate directly to the focus on consolidation of interest here, we note that Andersen and Nielsen (2010) show, on the same data set with the same definitions of fiscal transparency, that higher fiscal transparency inhibits an observed tendency for fiscal policy to be pro-cyclical in good times, but that it does not affect policy in bad times, when most countries carry out counter-cyclical fiscal policy. We return to this below, in our discussion of the impact of rules and governance on intertemporal fiscal policy.

In contrast to Alesina et al. (2006), we find few effects of veto players, or checks and balances in the policy process, on fiscal consolidation efforts. The likely reason is that, compared to Alesina et al.'s sample, there are not a lot of countries in our sample with few veto players. We also note that, while not quite significant at standard levels, coalition governments, measured by the government's degree of fractionalization, tend to achieve more in terms of consolidation for all time horizons, while, conversely, single-party governments do worse.

6 Who reforms budgetary institutions?

The literature on the adoption of budgetary practices is still in its infancy, and only a few papers address the choice of fiscal rules, fiscal transparency and other budgetary institutions explicitly, thereby providing the foundations for statements about causal effects (for example, Alt and Lassen, 2006a, correct for potential endogeneity of fiscal transparency using an instrumental variables approach). Establishing fiscal rules or independent fiscal authorities and increasing dimensions of fiscal transparency by definition requires incumbent governments to relinquish discretionary power of fiscal policy instruments and to give up informational advantages regarding the planning and execution of the budget. Fiscal rules, interpreted here in the broadest sense possible, differ in their scope and legal basis, from constitutional, such as the recently implemented German stabilization fund, over statutory rules, such as the Swedish rules enacted in 1997, to statements of political intent, such as the Danish Tax Freeze announced by the then newly appointed centre-right government in 2001. In all cases, however, such rules involve some loss of policy discretion on the part of policy-makers, ranging from strict limits on fiscal balances, as in Germany, to the potential loss of political capital, as in the Danish case.

For these reasons, politicians, in particular the executive branch, are rarely the driving forces behind institutional arrangements facilitating such loss of policy discretion. The causes of the establishment of fiscal rules and independent fiscal authorities, as well as increases in budget transparency, can be grouped into three: (i) externally induced factors, typically through gentle or not so gentle pressure from supra-national institutions like the EU, the OECD and the IMF; (ii) factors related to economic crises; and (iii) internal political causes.

While many developing countries have seen pressure from international organizations such as the IMF and the large development banks to improve their fiscal governance, often from low levels to begin with, advanced industrialized democracies with reasonably sound public finances are less often subjected to direct pressure from the outside. One obvious exception is countries participating in the European Monetary Union, where the Stability and Growth pact requires member states to submit either stability programs, for members, or convergence programs, for non-members, which have resulted in medium-term budget plans in every country (Hallerberg et al., 2009, p. 56-7). However, as noted by Hallerberg et al., EMU-membership can explain directly only the development on such medium-term plans, but not the (variation in) the development along other dimensions.

Related to (ii), an obvious starter for budgetary reform is a fiscal or budgetary crisis, for two reasons. First, crises and reform generally go hand in hand, as a country with a well-functioning budgetary process should be less likely to experience a crisis in the first place, and therefore has less need for reform. Second, a fiscal crisis increases the salience, both amongst politicians and voters, of public budgets. If the voters and the public at large can be convinced that fiscal consolidation is necessary, politicians will find it less costly to implement such consolidation measures, but support for such measures are less likely in times of economic peace. This is also the logic behind the result of Tavares (2004), explained in detail above, that fiscal consolidation efforts, in particular those based on expenditure cuts, are more likely to succeed when implemented by a left-wing government, as the consolidation in this case is taken to be a necessary fiscal strategy rather than a way of simply reducing government involvement in the economy, as it could be interpreted if carried out by a right wing government. Two recent examples of such crisis-induced institutional changes are the Danish move to a fixed currency in the early 1980s, partly as a response to an economic policy leading Denmark to "the brink of the abyss" in the words of a previous minister of finance, and the Swedish consolidation in the 1990s described above.

The "reform following crisis"-argument also has implications for the evaluation of the effect of fiscal institutions. In particular, a crisis reform often includes a number of initiatives, making it difficult to sort the relative importance of these initiatives and, furthermore, since the reform-following-crisis argument presupposes some saliency of the economic crisis to begin

with, changes in political cultures of spending, even if they may be short-lived, can also make it difficult to attribute observed changes to outcomes to particular rule changes.

Finally, reform may result from internal political causes, as noted by Alt, Lassen and Rose (2006) in the case of budget transparency. In particular, the prospect of future political competition, measured somewhat imperfectly by past levels of political competition, increases the likelihood of relinquishing discretionary power and informational advantages. The reason is simple: if the incumbent has vast discretionary powers, and the current opposition has a greater chance of being a future incumbent, current policy-makers could try to influence the room for maneuvering of successor governments by establishing or otherwise improving on independent oversight. However, if an incumbent is entirely certain to be in office in the future, independent oversight will only limit the range of policy actions with few benefits to show for it.

The endogenous choice of whether to implement instruments of fiscal governance, also addressed in detail in Hallerberg et al. (2009a), though with a different focus, is a major challenge for both the academic and policy-making communities. Skeptics, including for example McCubbins and Moule (2009), argue that almost no fiscal institutions have been demonstrated beyond a reasonable doubt to have causal effects. In their study of fiscal institutions in American state governments, they argue that for example tax and expenditure limits, similar to expenditure rules found in many European countries, have basically no effect, partly as a result of efforts to circumvent them. They do remain somewhat optimistic, though, regarding rainy-day funds, to which we return in the final section.

7 Discussion: Fiscal consolidations and Rules vs. discretion

Fiscal consolidations do not happen at random. They are more likely to take place when cyclically-adjusted deficits are high and when debt is high, suggesting that most governments respects their intertemporal budget constraint. However, deficits and debt remain high in many countries, and current debate about exit strategies is exactly focused on the trade-off between beginning fiscal consolidation too early, making economic recovery difficult, and beginning it too late, or not at all, resulting in continued deficits and, as a result, a substantial build-up of public debt? While political polarization tends to limit fiscal consolidation efforts, I found no statistically and/or quantitatively important effects of whether a government is based on a minority, consists of a coalition of parties, or a combination.

In this paper, I have surveyed (parts of) the positive, or empirical, literature on fiscal consolidation. In doing so, little attention has been paid to the other important functions served by the public budgets; for example, if one reason for having a large public sector in the first place is to carry out distributive policies, then fiscal consolidation has to be traded off against possible

distributional consequences. Similarly, as argued by Alesina et al. (2006), while few checks and balances in the political process can allow for prompt action in a fiscal crisis, the limited checks and balance may be felt elsewhere in the policy process. This holds also for institutional fixes: while balanced budgets amendments could go some of the way in reigning in budget deficits at the levels of national government, they would make stabilization policy, another key goal of government policy, very difficult to carry out.

In the empirical analysis, I have shown that fiscal transparency tends both to increase the likelihood of initiating fiscal consolidations and to increase the response to large fiscal crisis. In contrast to formal expenditure rules, fiscal transparency is focused on improving the decision-making basis for fiscal policy, as are also independent economic or fiscal councils. The results add to the literature by suggesting a way in which the lower average debt and deficits observed in more transparent countries actually materialize: through prompt action following fiscal crisis. Empirical evidence from Andersen and Nielsen (2010) suggests a different, and probably equally important, way for fiscal transparency to affect overall public finances; they show that higher levels of fiscal transparency tend to limit the tendency towards pro-cyclical fiscal policy in good times observed in many countries. In this sense, fiscal transparency tends to counteract fiscal crisis by preventing them from occurring in the first place.

Complementary ways of improving fiscal policy is an explicit focus on multi-year budgeting, as that found in Sweden, or an explicit stabilization, or rainy-day, fund, as recently implemented in the German constitution. In contrast to the Swedish rule, described briefly above and in more detail in Ljungman (2007), the German rule, described in detail in Kastrop (2009), makes explicit the conditions under which funds must be deposited or withdrawn from the fund and has a very strict escape clause. While it remains to be seen how the German rule will work in practice, existing constitutionally anchored rainy-day funds, found primarily in American state governments, do seem to facilitate intertemporal smoothing of public finances, reducing tendencies to pro-cyclical policies in good times, and thereby allowing for building up sufficient surpluses so as to limit the need for fiscal consolidations in the first place.

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Appendix

Table A.1: Summary statistics, no rule

	mean	sd	min	max	N
Cyclically adjusted deficit	-0.9438	2.92087	-7.4362	9.53656	331
Output gap	-0.7044	2.45215	-11.446	6.73591	334
Public sector size	44.4669	7.76555	28.9407	64.7543	333
Inflation	3.20252	3.08534	-1.5545	20.6932	333
Debt	65.2322	27.6386	16.4897	140.67	307
Election	0.27171	0.44546	0	1	357
Fiscal transparency	4.38095	2.2387	1	10	357
Political polarization	4.90336	0.75666	3.49947	7.40758	357
Coalition government	0.69643	0.46049	0	1	336
Minority government	0.6369	0.48161	0	1	336
Deficit	1.91829	4.11346	-15.767	15.722	354

Table A.2: Summary statistics, deficit > 0

	mean	sd	min	max	N
Cyclically adjusted deficit	-0.6625	2.56383	-7.2217	9.53656	238
Output gap	-0.9994	2.52989	-11.446	4.86388	240
Public sector size	44.3434	7.5477	28.9407	64.7543	240
Inflation	3.5	3.31621	-0.7292	20.6932	239
Debt	70.352	28.3453	16.4897	140.67	217
Election	0.27907	0.44941	0	1	258
Fiscal transparency	4.15504	2.07242	1	10	258
Political polarization	4.91715	0.75596	3.49947	7.40758	258
Coalition government	0.66529	0.47287	0	1	242
Minority government	0.6281	0.48431	0	1	242
Deficit	3.73226	2.81255	0.01255	15.722	255

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