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Fiscal Consolidation in Parliamentary Democracies: Influence of Political and Budgetary Institutions under Economic Control[¶]

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Abstract

One would expect a parliamentary democracy to make responsible choices when it comes to important economic issues. Fiscal consolidation is one of such issues. In fact, the quality of a parliamentary democracy can be measured by the elements of the political economy (such as political and budgetary institutions) that influence implementation and success of fiscal adjustment. However, earlier studies in this area, which appeared before the World Financial Crisis, have received a lot of criticism, in particular due to being too optimistic in terms of their vision and premises. The current paper shows the importance of political and budgetary institutions in implementation and success of fiscal consolidation, rigorously controlling for various economic and financial conditions and accommodative policies that have been largely overlooked in the previous studies.

Key Words: Fiscal consolidation; CAPB; Political economy; Political Institutions; Budgetary Institutions.

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Introduction

The reader may be aware that already for some time, even before the World Financial Crisis of 2007-2008, four Southern European countries (SE-4; Italy, Greece, Spain, Portugal) and Ireland have been under a particularly zealous scrutiny for their fiscal fragility (Blavoukos & Pagoulatos(2008)). The Crisis has further destabilized public finance of these countries, and reaction of the market to the sovereign debt crisis of these countries triggered the crisis of Euro currency. At the same time, it should be noted that these four European countries (SE-4) have a history of transition from authoritarian rule (O'Donnell et al.(1986)). Although this history is not recent, some deficiencies or institutional immaturity might have remained since those times, and this implies a risk for responsible fiscal governance required for democratic countries.

This list of such fiscally fragile countries might further be expanded by adding Japan, because it also has a history of authoritarian rule spanning until the end of World War II (along with Italy and Germany), and at present has over 240 % of debt to GDP ratio, which is the worst among industrialized nations. We could also mention newly integrated European countries that had been under Communist regime, another type of authoritarian rule. These countries are clearly characterized by a certain institutional immaturity, so they also are at a risk in terms of fiscal governance, although so far this risk has not been considerable compared to the already mentioned countries with serious fiscal problems (SE-4 and Japan). As for other industrialized nations, their way towards robust fiscal governance had also often been rather long. For example, the Fourth Republic in France was famous for frequent government changes and fiscal extravagance, so the Fifth Republic had to deal with this problem by giving more power to the government rather than to the parliament and by improving budget institutions. Thus, we have to conclude that responsible governance of a democratic country is a hard won attribute, and not something easily obtained by one-shot "democratization".

Fiscal consolidation is a responsible act of a democratic country. It is needed to reestablish fiscal discipline in case the latter worsened, thus showing that popular will is credible and capable of "determining their own fate". Of course, a democratic country capable of responsibly deciding its own fate is ideally supposed not to need any fiscal consolidation. Rather it should be a second-best solution for such a country, because such a country is supposed to maintain fiscal discipline either by keeping tight fiscal management or avoiding any fiscal adjustments. An eloquent example of this "Noblesse Oblige" concept is the fact that newly integrated EU member countries have been required to show their ability to implement necessary fiscal adjustment to meet the Maastricht eligibility criteria. In reality, the aptitude for fiscal adjustment is dependent not only on the economic structure and sensitivity to a financial boom, but also on constitutional structure which could limit populist demand and facilitate the necessary radical and possibly painful decision making.

This paper discusses the influence of political economy factors (political and budgetary institutions) on implementation and success (sustainability) of fiscal consolidation. Industrialized democratic countries have different configurations of governance structure, which could facilitate or hinder fiscal consolidation. Even though a country could consider a project of fiscal consolidation, it might be unable to proceed with it because of opposition on the part of the stakeholders, and such opposition might be facilitated by the constitutional structure, which might be excessively dependent on separation of power. A fiscal consolidation project might not be sustainable because the country's institutional structure would lead to dissipation of the scarce resources according to various demands of the stakeholders, if there are no preventive measures that could protect the country from the pork barrel politics. If we knew any political economy factors that would lead to realization and success of fiscal consolidation, we could conceive of some preliminary institutional reforms facilitating fiscal adjustment or at least ponder the institutional risk when we consider a consolidation project.

Although a responsible democratic government should voluntarily reestablish its public finance once it worsens and exceeds a certain limit, it should not necessarily have to force the reform when economic environment is seriously damaged, as is currently the case after the World Financial Crisis of 2008. After the Crisis, many have started to cast doubts on the legitimacy of proceeding with fiscal consolidation according to recommendations based on studies undertaken before the Crisis, because the Crisis highlighted a possibility that some of the conclusions of these studies might have been wrong. For example, some episodes may have been wrongly defined as successes of fiscal consolidation because they might have been the results of unusual financial boom that is a part of the cyclical adjustment of fiscal balance, but has not been properly recognized as such. Other apparently successful fiscal consolidation episodes might be merely the results of accommodative monetary policy, and not a contribution of a fiscal adjustment project itself. Our study of fiscal consolidation is based on the notion that such misconceptions should not be treated lightly or considered irrelevant taking into account the seriousness of the task of fiscal consolidation in these hard times.

In this paper, after rigorously controlling for economic environment and accommoda-

tive policies, we are going to show that we can still confirm in the influence of political economy factors on decision making and success of fiscal consolidation. Although due to the harshness of the recent economic climate, fiscal consolidation is difficult to implement in many democratic countries, some of them have particularly suffered from persistent demand and opposition of a populist kind, which must be overcome by fine-tuning institutional settings through adequate balance of competition and concentration of power.

Political economy factors discussed in this paper are expected to have a certain predictive power when the country in question follows a fiscal adjustment project and in this paper we measure the outcome of such a project. In this way, we will also be able to determine the normative power of political economy factors to guide the reform agenda when a country has to overcome some particular institutional barriers that kept hindering implementation or success of fiscal consolidation in that country in the past.

To tackle the above mentioned task, we chose the strategy of limiting the sample of countries to parliamentary democracies. Parliamentary democracies are fundamentally different from presidential democracies in the way the political economy factors influence the institutional apparatus. Our sample is sufficiently large for a general parliamentary democracy study. It is composed of 29 parliamentary democracies, including West European countries, East European countries, Westminster countries outside Europe (Australia, Canada, New Zealand), and Japan. Thus, our study could provide a relevant degree of generalization, which is often lacking in the studies that focus only on (West) European countries, or inversely on OECD countries so that presidential and parliamentary democracies are improperly mixed despite their fundamental differences from the point of view of political economy.

Our objectives, represented by the corresponding sections of this paper, are as follows. First, reviewing the previous studies, we intend to configure various foundations of our study. These comprise, (1) improved cyclical adjustment integrating asset value movements and avoiding business cycle influence, (2) problems of controlling for initial conditions of consolidation and related research strategy that is particularly important for the success of a fiscal consolidation, (3) relationship between political economy factors and fiscal consolidation concept, which is characterized by a radical change of public finance, and (4) related time dimension of research. Second, we suggest a definition of a fiscal consolidation and its success and describe the data variables and empirical strategies adopted in this study. We then discuss the results of our study with respect to implementation of fiscal consolidation and success of fiscal adjustment. The final section mentions conclusions reached in this paper.

1 Configuration of Research Foundations

After the World Financial Crisis, when economic situation in many countries is rather bad, research in the field of political economy of fiscal consolidation is difficult, because one has to adjust the methods of political economy research to the specific concept of fiscal consolidation and integrate many studies that have highlighted and analyzed

the problems of research undertaken before the World Financial Crisis. Reviewing the previous studies permits us to establish the foundation blocks of our research.

1.1 Revised Method of Cyclical Adjustment

As the social background after the World Financial Crisis was changing, the tone of the studies on fiscal consolidation has also changed. Before the crisis, the majority of studies had focused on the necessity and positive effects of fiscal adjustment. The most representative authors of the studies along this line are Alberto Alesina, Silvia Ardagna & Roberto Perotti (so called AAP)(Alesina & Perotti (1995), Alesina & Ardagna (2010), Alesina & Ardagna (2012)). They maintained that one of the major factors that contributed to the success of fiscal consolidation was the expenditure cut rather than tax hike, and that this success also accompanies the expansionary effect (Expansionary Austerity hypothesis or "non-Keynesian Effect"). However, IMF (2010) rejected their argument, criticizing their insufficient control for economic performance (business cycle). IMF (2010) warns against inconsiderate implementation of fiscal adjustment in a difficult economic situation.

Fiscal consolidation was often defined by using CAPB (Cyclically Adjusted Primary Balance), which takes care of excluding business cycle elements in the definition of fiscal adjustment. The data of CAPB has been published by the organizations such as IMF, OECD, and EU. However, published CAPB data is not available for all countries for all necessary years. Thus, researchers often had to make their own data sets of CAPB to use in consolidation studies. Among others, Blanchard Fiscal Impulse (BFI) (Blanchard(1993)) is the most convenient method to calculate CAPB and is used by many researchers. This method allows to easily neutralize the influence of business cycles using unemployment rate. An indicator of discretionary fiscal policy in this method is calculated by subtraction of the preceding year's BFI (per GDP) from current year's BFI, which is supposed to be realized if the level of the unemployment rate is the same for both years. This approach is used in the studies of AAP and other studies belonging to the same current of thought.

The first point of IMF's criticism regarding AAP's approach is the measurement error, which occurs because AAP do not consider the movements of asset value, resulting in a wrong recognition of discretionary fiscal consolidation or expansion without neutralizing such movements. The second point of IMF's criticism is that AAP's approach fails to capture the true motivation of governments behind the superficial movements of economic / fiscal figures. A country might intentionally plan and implement a fiscal adjustment project, but a negative economic shock encountered right after the fiscal adjustment would not allow to observe the economic and fiscal record of consolidation. To highlight the motivation hidden behind the record, IMF (2010) reexamined the governmental documents to figure out the governments' intentional consolidation efforts to be defined as fiscal consolidation episodes (Pescatori et al.(2011)). Using this approach, IMF (2010) reports that fiscal consolidation lowers economic growth.

Nonetheless, IMF's descriptive approach has its own weaknesses. One of them is the measurement error. As Perotti (2011) pointed out, a government can initially plan fiscal

consolidation, in the budgetary or planning documents, but give it up in mid-year and reverse the already-decided policy using supplementary budgets. It is also difficult to determine the true intention of policy change by reading only governmental documents. For example, even if a consolidation is correctly considered to be motivated by a desire to reduce debt, it is not clear that it would have actually been undertaken if the economy went into a recession (Holden & Midthjell (2013)). Ultimately, such a policy document is similar to an electoral program, a famous example being Georges H.W. Bush's manifesto "Read my lips: No new taxes." It is dangerous to believe in manifestos on their face value.

The idea behind our political economy study is to observe behaviors of governments without blindly believing in the "face value" of governmental statements. In our definition of fiscal consolidation we follow an approach based on data rather than governmental statements. In any case, we cannot use IMF's database because it is based on "Action-Based Approach," which limits their sample of countries, because in this paper we study 29 parliamentary democracies, including Central and East European countries. BFI is still useful for its simplicity to make data, but in order to be able to use it one needs to resolve its inherent problems already discussed above.

In this paper we integrate the recent improvement of CAPB calculation using the concept of BFI. First of all, we integrate asset value movements, which is one of the measurement errors found in traditional BFI and which is integrated into CAPB calculation in the study of Yang et al.(2015). Second, we integrate the criticism of Holden & Midthjell (2013) on "Reverse Causality" found in the AAP approach. To solve this problem, the latter recalculate BFI using fiscal figures without dividing them by GDP.

AAP's BFI is calculated based on fiscal figures divided by GDP. In this case, the change of denominator (GDP) can change fiscal balance per GDP even if the numerator (fiscal figures) remain unchanged. Thus, this approach cannot correctly neutralize the influence of business cycles. The "Reverse Causality"¹ that they mention implies the following. A successful fiscal consolidation episode might not be due to the expenditure cut. It can result from (consistently) high economic growth, which lowers government expenditure per GDP (mainly by increasing GDP-denominator of the ratio), and simultaneously assures lower debt to GDP ratio after a couple of years of fiscal consolidation. This problem is important in considering the success or more generally the effects (including expansionary effect) of fiscal consolidation. But even for the implementation of fiscal consolidation, we can add another reason to avoid this approach as figures per GDP bring us wrong regression results².

¹Before Holden & Midthjell(2013), Heylen & Everaert(2000) had already remarked the same problem. The latter defined fiscal consolidation using CAPB per "potential" GDP. However, they showed neither their method of estimating the CAPB measure, nor the link between their remark and estimation method.

²For example, two cases of GDP decrease without expenditure change, and expenditure increase without GDP change may lead to the same result, although the output gap may turn negative in the former, while it may not change in the latter. Usually negative output gap accompanies worsened unemployment rate, implying changes related to business cycles. If government expenditure tends to increase when unemployment rate worsens, automatic expenditure increase is to be expected in the former case. However, since expenditure does not actually change, discretionary expenditure above the

Thus we modify the method of CAPB calculation or BFI, integrating the recommendations of Yang, Fidrmuc & Sugata(2015) as well as Holden & Midthjell(2013). The revised CAPB calculation is as follows. We run the following regressions on differences, because these variables are non-stationary when they are not measured as ratios to GDP.

$$\Delta T_t = \alpha_0 + \alpha_1 Trend_t + \alpha_2 \Delta U_t + \alpha_3 \Delta A_t + \epsilon_t \quad (1)$$

$$\Delta E_t = \beta_0 + \beta_1 Trend_t + \beta_2 \Delta U_t + \beta_3 \Delta A_t + \epsilon_t \quad (2)$$

where T_t and E_t are revenue and primary expenditure, $Trend_t$ is a time trend, ΔU_t is the change in the rate of unemployment and ΔA_t is the change in asset prices. All aggregates (T, E, A) are deflated by GDP deflator here. The cyclically adjusted variables for the year of adjustment are then given by:

$$T_t^{ca} = T_t - \hat{\alpha}_2 \Delta U_t - \hat{\alpha}_3 \Delta A_t \quad (3)$$

$$E_t^{ca} = E_t - \hat{\beta}_2 \Delta U_t - \hat{\beta}_3 \Delta A_t$$

Thus, the cyclically adjusted ratios to GDP are obtained by dividing the sum of the cyclically adjusted government revenue T_t^{ca} and the cyclically adjusted government primary expenditure E_t^{ca} by the measure of predetermined real GDP, Y_t^* for the year of the fiscal adjustment episode. The predetermined trend of real GDP, Y_t^* , is calculated in this paper using Hodrick Prescott Filter³.

1.2 Control for Initial Conditions of Successful Fiscal Consolidation: From Comparative Study to Regression Method

The "Expansionary Austerity" thesis of AAP and other related studies on successful fiscal consolidation was based on a very simple approach of a comparative table. In connection with comparative tables Holden & Midthjell (2013) point out the problem of controlling for initial conditions of fiscal consolidation. Although AAP used their comparative table to argue that successful consolidation episodes are supported through

built-in-stabilizer part would turn negative. On the contrary, in the latter case, there is no change of output gap and no business cycle related changes, and all increases of expenditure are of discretionary nature. Thus we can expect negative discretionary expenditure in the former case and positive one in the latter, although both lead to the same result if we calculate using figures per GDP.

The same figures of different nature are mixed in the data used in regression analysis for each country is implemented to calculate BFI to obtain discretionary government actions. Such regression identifies between two completely different economic states from business cycle point of view, leading to an inevitable confusion between "built-in-stabilizer" part and the part of discretionary governmental actions.

There is another indication that AAP's BFI, which uses figures per GDP, is not useful for neutralizing the effects of business cycle related changes in economic performance. In fact, AAP themselves have often remarked that the results remain basically the same even when CAPB is replaced by non-cyclically adjusted fiscal balance.

³Holden & Midthjell(2013) define this as ten-year lagged moving average of real GDP.

expenditure cut, rather than tax hike, these episodes are also characterized by high initial growth rate and low initial outstanding debt. High growth rate tends to continue over rather long periods of time and can influence the probability of successful fiscal consolidation. So, in fact, such a comparative table compares apples and oranges and it would seem inappropriate to use it to draw a conclusion that, for example, expenditure cut is more advantageous for achieving expansionary austerity or successful fiscal consolidation than tax cut. This is the essence of Holden & Midthjell (2013)'s criticism of AAP's comparative table. They suggest an improved BFI calculation, which does not involve dividing the figures by GDP and which can be expected to mitigate this problem.

However, even with improved business cycle adjustment, high structural growth may result in high future growth and therefore be advantageous for attaining sustainability of a fiscal consolidation. Thus, although Holden & Midthjell(2013)'s approach could partly mitigate this problem, this solution is only partial and researchers often use multivariate regression, which allows to obtain "marginal effects of single variables by holding all other variables constant" (often at their mean values). Thus, if we want to distinguish the relative advantage of a consolidation strategy (expenditure cut/tax hike) from structural growth or initial outstanding debt, we have no choice but to rely on multivariate regression, because in this case a comparative table would offer no help.

The problems inherent in comparative tables used in the studies of AAP are not limited to controlling for "initial" conditions of consolidation. In fact, the studies on successful or expansionary fiscal consolidation have one important specific feature that is not usually found in the studies on consolidation decision making. The problem is that the outcome in the former type of studies is measured not at the time of decision making, but only "afterwards," that is, two or three years after consolidation decision making. This means that social and economic changes that occur after the consolidation episode might influence the outcome of consolidation, governmental debt sustainability ("successful" consolidation) or high growth ("expansionary" consolidation) in the future. This point has never been recognized in the previous studies as far as we know, and we can say that all the previous studies have failed to neutralize the influence of any environmental changes occurring after the implementation of consolidation.

Previous studies often use lag variables, conscious of the endogeneity problem, in order to avoid accumulating the impacts of consolidation seen in control variables. This treatment is understandable, but if only initial conditions are used as regressors and the effects of consolidation are measured two or three years later, slight changes in initial conditions would result in very poor explanatory power regarding the effects of consolidation. Therefore, it is necessary to include some elements that would take care of environmental change after the consolidation episode, although this would certainly pose a persistent endogeneity problem that would need to be solved.

As Perotti (2011)'s self-critical case study illustrates, some of the success stories of fiscal consolidation episodes could be explained by accommodative monetary or exchange policy. However, consolidation might lower the interest rate by lowering the risk premium in the government bond market or other related markets (Perotti (2011)). Thus, controlling for a change in the interest rate that occurred after the consolidation would

necessarily cause an endogeneity problem, and this is what troubles us in this research strategy. However, if we omit events occurring after consolidation from the analysis, we would end reporting that success of fiscal consolidation was due to accommodative monetary policy or interest rate fall, although these events might not be related to consolidation as such.

In order to provide some sort of a solution to this problem, we decided to adopt the following strategy. In place of using the change of interest rate as one of the regressors, we introduce a dummy variable, which returns unity if the nominal short interest rate is less than required by the Taylor Rule, and zero otherwise. We use this zero-one variable since we suppose that a possible consolidation related fall of the interest rate is going to be relatively limited in size and its influence on the value of this dummy variable is going to be weak. Thus, although we cannot completely exclude the endogeneity problem by taking an interest rate related variable measured after the consolidation, we expect to largely mitigate this problem.

There is another aspect that should be treated with caution, and it is related to the state of the business cycle after the fiscal consolidation. Even though expenditure cut might appear more advantageous than tax cut in achieving sustainability of fiscal consolidation, this might be due to good business conditions in case of expenditure cut dependent fiscal consolidation. We must control for this business cycle problem, but it is a very delicate task because "Expansionary Austerity" thesis suggests that fiscal consolidation "is" the cause of good business conditions, often measured by yearly growth rate. Thus, it might be difficult to decide whether we should include any indicators related to business cycle, measured after the consolidation, into our analysis, because omitting them would mean omitting control for the case of a "fortunate" situation during a business cycle leading to successful consolidation, while including them would leave us with endogeneity problem.

In this paper, we deal with this difficulty by adopting the same approach that we used with the interest rate. We introduce a zero-one dummy variable corresponding to positive or negative output gap after the consolidation. Although we admit that "Expansionary Austerity" thesis or inversely the "Keynesian Effect" (stating that consolidation chills out economy) claimed by IMF (2010) would hold, we supposed that the influence of consolidation episode on the growth rate is not total and is limited in size relative to other confounding factors, which could increase or lower growth rate measured two or three years later, thus not influencing greatly the zero-one indicator of business cycle. We know that this approach alleviates the endogeneity problem but does not get rid of it. Of course, we admit that, even though consolidation and interest rate are related only to a limited degree, the relation between consolidation episode and output might be somewhat stronger. As a precaution, we integrate a sensitivity analysis by considering a case with such output gap dummy variable and a case without it. The two cases are then compared and we expect to have relatively stable results for both cases⁴.

⁴Together with Holden & Mitdjhell (2013) and AAP, we could undertake a similar regression approach not only for successful consolidation, but also for expansionary consolidation. However, our calculations have shown that estimation results are unstable between the model with the output gap variable and

Another related problem is that the approach of AAP cannot distinguish a fiscal consolidation episode from other fiscal movements. AAP's comparative table typically compares the values of various indicators measured two years before and two years after fiscal consolidation. It also compares successful (or expansionary) consolidation cases and other cases. Integrating the figures of two years before consolidation is totally irrelevant because they are not related to consolidation episodes (such figures must be measured at the time of consolidation, or with one year lag if we hope to measure change occurring during a consolidation episode). Besides, if we measure the values of indicators two years after consolidation with "initial conditions" of fiscal consolidation, we will end up including fiscal movements that are not directly linked to the relevant fiscal consolidation episodes. Even though the values of indicators taken one year before consolidation and two years after it might differ greatly, we won't know whether this is due to a contribution of the fiscal consolidation episode itself or to some other fiscal movements that occurred at the same time.

Therefore, we believe that in order to make a relevant assessment of fiscal policies it is necessary to integrate in the analysis any fiscal movements that might have occurred after consolidation episodes. In fact, AAP's conclusion that expenditure cut is a more advantageous strategy for achieving successful or expansionary consolidation than tax cut might prove wrong if the data are analyzed using a multivariate regression approach with integration of some regressors measuring fiscal movements that occurred after consolidation episodes. This latter approach allows to measure "marginal effects" of expenditure cut strategy or of tax cut strategy, taking other variables as given and including additional variables measuring fiscal movements after the consolidation, while conclusions of AAP's comparative approach are drawn without consideration of any such late-stage fiscal movements.

1.3 Political Economy Adapted to the Specificity of Consolidation Concept

After resolving a number of intricate problems inherent in recent fiscal consolidation studies, we must turn to political economy dimension of the question, which is the main focus of this paper.

Relationship between political institutions and fiscal discipline has traditionally interested political economists. The studies in this field have been relatively abundant, including the studies, which explore how coalition government is related to the fiscal discipline (Volkerink & de Haan (2001), Mierau, Jong-A-Pin & de Haan(2007), Elgie & McMenemy (2008), de Haan, Jong-A-Pin & Mierau(2013), Wehner(2009, 2010). Studies, which analyze fiscal consolidation from the perspective of political economy, are fewer, but these are the studies that interest us the most. Among them are the following studies that discuss the link between political institutions and fiscal consolidation,

the model without. We find that expansionary consolidation cannot be analyzed with the help of either comparative tables or multivariate regression approach (probit model...etc.). One would need to use ARDL or VAR as was done in IMF (2010) and Alesina, Favero & Giavazzi (2015) studies.

namely: Guichard et al. (2007) (elections), EC (2007) (elections and parliamentary majority), Lassen (2010) (polarization, coalition, minority), Tagkalakis (2012) (Years in office, ideology, margin of majority, elections, governmental fractionalization), Molnar (2012) (election, ideology), Dell'Erba (2013) (elections, years left in current term, polarization). This type of studies have sometimes obtained interesting results, although often the results were insignificant in terms of political influence on fiscal consolidation.

For example, Mierau, Jong-A-Pin & de Haan(2007) classify all consolidation episodes into radical consolidation episodes and gradual consolidation episodes, maintaining that the decision making in case of radical fiscal consolidation is influenced only by the timing of election, while for gradual fiscal consolidation the decision making is influenced by the number of governmental parties and the ideology of the government. Mulas-Granados(2006) shows that the size of the cabinet (number of spending ministers) and elections significantly influence the probability of starting a fiscal adjustment. However, even these studies have not had good results related to other variables of political economy.

It is possible that our choice of variables does not reflect the fact that fiscal consolidation involves a radical change of the fiscal state, and this might be one of the causes that sometimes prevented us from obtaining results that would clearly describe how political institutions influence the fiscal situation. On the contrary, the concept of a veto player (Tsebelis (2002)), on which this paper focuses, reflects very well the rapid pace of change inherent in fiscal consolidation, as the separation of power is generally thought to hinder sudden social changes including fiscal consolidation. Therefore, this paper further develops the study of fiscal consolidation along the lines of the work by Pamp (2008), which uses the concept of veto players. The variable that we adopt for veto players is a composite index integrating (semi-)presidential/parliamentary democracy, bicameralism, federalism, that is, decentralized power structures that might prevent radical social changes, including fiscal consolidation, from happening.

"Government Fragility" is another factor which might slow down or accelerate institutional changes. So far, coalition government has been thought to be a sign of governmental fragility, which is likely to cause deterioration of public finance. However, in terms of institutional changes, on which this study focuses, we must specify a function of governmental fragility with respect to facilitating or slowing down social change including fiscal adjustment. Typically, government parties create an electoral program, upon which these parties could agree. After gaining a majority in the government, these parties would agree upon a new fiscal plan, often with mid-term time horizon. However, due to the difference in ideology between parties, such fiscal plan is not likely to be observed. Often, disputes concerning fiscal problems causes the coalition of government parties to break up. In this case reelections or reshuffling of government parties would be inevitable. Thus, government fragility is an important factor that has very much to do with the sustainability of institutions. We adopt a variable of government fragility from the ideological gap in coalition government.

As a matter of fact, we can also regard this variable of government fragility as "partisan" veto player concept, while the aforementioned variable of composite institutional

index can be interpreted as "institutional" veto player concept (Tsebelis (2002)). This variable can also serve as a sign of resistance of the society against new changes and can be considered to represent the power of governmental composition to resist reforms, and initiation of reforms. However, when we focus on the continuation of reforms, we should interpret this variable as a sign of instability rather than stability. This ambiguity of the variable should be kept in mind while reading our analysis.

Other political variables that we adopt for our study concerning implementation of fiscal consolidation describe the ideology of governmental parties and the seat share of governmental parties. We conjecture that conservative ideology (positive values of the corresponding variable) is likely to be linked to fiscal consolidation, implementation of which is also thought to be facilitated by the dominance of governmental parties in parliament. Seat share may also be a supplementary indicator of governmental fragility as well as of the ideological gap between governmental parties (as already mentioned). In order to reflect the situation with successful consolidation, we included a dummy variable of legislative elections. The variable is a one-year lag variable and is not supposed to illustrate facilitation of successful consolidation due to elections, but inversely to show that the elections are already over and politicians have little concern on approaching election facilitating tight fiscal management as they need less to buy the votes.

As for "Budgetary Institutions", the research of von Hagen and Hallerberg and related studies illustrate that budget institutions play an important role in keeping the fiscal discipline (for example, Hallerberg et al.(2006)). However, our focus is on fiscal consolidation, and not on fiscal performance in general. There have been some fiscal consolidation studies, which discussed the relationship between budget institutions and fiscal consolidation, and they often included balanced budget rules or numerical fiscal rules (EC (2007), Lassen (2010), Molnar (2012), Dell'Erba (2013)) to represent the so-called "budget institutions". On the contrary, budgetary "procedures" have rarely been examined, while the exceptional study by EC (2007) and Larch & Turini (2008) tested the influence of budgetary procedure index on initiation and success of fiscal adjustment. The results were significant, although they were obtained by regressions run sequentially by adding each individual additional variable to the baseline model, thus this method has limitations similar to those of univariate regression, which we avoid in this paper to obtain "marginal effects", supported by the "ceteris paribus" hypothesis. Transparency of budget institutions was examined by Lassen (2010).

This paper supposes that numerical rules do not have much influence on fiscal discipline or economic policy, as they have only a superficial role if they lack the relevant budget procedure which put some executive effectiveness for such rules (although one of the indicators in our budget procedure index is related to numerical rules). Transparency is also important, but is thought to be only one of the elements of centralization of the whole budget procedure. The reason why we focus on the budget procedure, rather than on numerical rules, is that the budget procedure is related to the centralization of power in budgetary process. Since we are interested in fiscal consolidation, radical change of fiscal management, centralization/decentralization of power accelerates/decelerates such radical change. Besides, we intend to analyze 29 parliamentary democracies including

East and Central European countries, although the database for such a large sample is only available in relation to the budget procedure (we refer mostly to the database of Fabrizio & Mody (2010), which is constructed partially based on Ylöinen (2004), on the data about East and Central European countries)⁵. Starting from the database of Fabrizio & Mody(2010), we integrated the data of Australia, Canada, New Zealand and Japan using our own documentary research and fieldwork (as for Japan we also referred to von Hagen(2008)). The data used in this paper on budget institutions is shown in Appendix A7 (refer to our working paper to know the whole database and related background research (Nakanishi(2017))).

Budget institutions have been justified as a mechanism of containing deficit and debt as they work to avoid Common Pool Resources”(CPR) problem (von Hagen & Haden (1996)). However, ”Budget Institutions” are a set of various small procedural rules that work subtly and progressively. Gathering small saving functions, ”Budget Institutions” are supposed to take time to reach the state of the fiscal discipline. Therefore, they work particularly well when continuous efforts are needed. Their working mechanism of action is contrary to that of veto players which hinders radical decision making. This difference of function between the variables of budget institutions and veto players is to be taken into account, when we consider political economy factors of starting and continuing fiscal consolidation, as well as those of a successful consolidation which needs continuous efforts of fiscal improvement measured after consolidation episode.

1.4 Time Dimension of Fiscal Consolidation: Markov Transition Model for Consolidation Implementation

This paper adopts the concept of a multi-year fiscal consolidation episode, which includes both the starting year of a consolidation episode and the years that follow, and these two can be considered to be of a completely different nature. During the starting year the government tries to radically change the previously adopted fiscal management, while in the years that follow its efforts are concentrated on preserving the newly adopted fiscal management, rather than changing it, which means that the intention of the government is opposite to what it was during the starting year. Political economy elements, including the concept of the veto player, are also sensitive to this dichotomy along the time dimension, so some of these elements would exert their influence in the beginning, affecting the stage of starting the consolidation, while other mechanisms would affect the progress of the fiscal consolidation during subsequent years.

As a matter of fact, this strategy of dividing the episode of fiscal consolidation into starting years and subsequent years can help to avoid serial correlation problems that could arise in case of Time Series Cross Section data structure (i.e. long panel data). Usually, when one needs to consider Time Series Cross Section data structure for a binary model, a special approach is needed, and it is often conceptualized under the name of

⁵Famous database of von Hagen and Hallerberg is that of 15 EU countries excluding East European countries. Larch & Turini (2008) rely on OECD/World Bank Budget Practices and Procedures Database (2003), while this database has many missing values and is based on self report of governmental officers which is not necessarily credible.

BTSCS (Binary Time Series Cross Section) analysis (Beck, Katz & Tucker(1998)). In fact, there have been political economy studies of fiscal consolidation, which took this perspective into account. For example, Mierau et al.(2007) & Wagshal & Wenzelburger (2011) meticulously analyzed the problem of serial correlation in discrete choice model and adopted the BTSCS (Binary Time Series Cross Section) method mentioned in Beck, Katz & Tucker (1998). However, this method has one weakness. Although it integrates the concept of duration into discrete choice model using splines or other techniques, the analysis would be limited to the starting year, while the subsequent years will have to be dropped (Beck, Katz & Tucker (1998)), so the method cannot be used to analyze the years beyond the starting year of a fiscal consolidation episode.

Another way of dealing with the BTSCS problem has been proposed by Beck (,N.D.) et al.(2001). It is referred to as "Markov Transition Model" and allows to analyze any event, including fiscal consolidation event, by dividing it into two cases, one with the previous year assigned a value of "1" (the event occurred) and the second one with the previous year being assigned a value of 0 (the event did not occur).

This paper adopts this method not only because it is a good solution to the serial correlation problem in a discrete choice model with time series cross section data structure, but also because it is also interesting from the point of view of determining fiscal policy, because it distinguishes between the two cases as regards the starting year and the subsequent years of a consolidation event. This is a distinction especially useful in determining how the political economy factors influence the specificity of fiscal consolidation decision making. Thus, this BTSCS analysis should be applied to the study of implementation in fiscal adjustment of multi-year concept where distinguishing the starting year and the ongoing years of one event makes sense⁶.

2 Data, Variables and Fiscal Consolidation Concept

This is a political economy study of fiscal consolidation in phases of its implementation and its success (sustainability). For this objective, we must define the notions of a fiscal consolidation episode and of a successful fiscal consolidation episode. We must then introduce different variables for the decision making of consolidation and for the sustainability of consolidation. We will also describe the data sources and estimation techniques.

2.1 Redefining Fiscal Consolidation Concept

Apart from tasks related to CAPB calculation, there seems to be no unique and clear definition of fiscal consolidation based on one of CAPB measures or some other measure of fiscal balance. Any such definition is, after all, arbitrary. In this paper, we adopt the definition used by OECD-related researchers, such as Guichard et al. (2007). The

⁶We need to use the usual probit analysis in case of successful fiscal consolidation because in this case the study loses the character of time series cross section data structure. The data does not cover all years and we have only several samples of isolated consolidation episodes.

motivation behind this choice is that this paper uses the data on parliamentary democracies, so that our sample includes the majority of OECD member countries, excluding, however, industrial countries with presidential democracy. This definition also has an advantage of integrating the multi-year aspect of fiscal consolidation⁷. Thus, the following is the definition that this paper adopts for fiscal consolidation:

Definition of Fiscal Consolidation

A fiscal consolidation episode:

- Starts if the CAPB improves by at least one percentage point of potential GDP in one year or in two consecutive years with at least 1/2 percentage point improvement occurring in the first of the two years.
- Continues as long as the CAPB improves. An interruption without terminating the episode is allowed as long as the deterioration of the CAPB does not exceed 0.3 per cent of GDP and is more than offset in the following year (by an improvement of at least 0.5 per cent of GDP).
- Terminates if the CAPB stops increasing or if the CAPB improves by less than 0.2 per cent of GDP in one year and then deteriorates.

After giving a definition of fiscal consolidation as such, we must define "successful" fiscal consolidation, which Holden & Midthjell (2013) integrated in their study to compare the sustainability of fiscal consolidation resulting from different strategies of fiscal consolidation (expenditure cut or tax hike, size of consolidation, etc...). As for successful consolidation, i.e. sustainability or at least stabilization of debt decrease, Alesina & Perotti (1995) adopted a definition, according to which a consolidation episode is considered successful when the debt to GDP ratio 3 years after consolidation decreases by more than 5 % (per GDP) compared to the preceding year. We find this criterion too strict, especially under conditions of the current post-crisis economy, and even unrealistic from the point of view of a country with a huge debt, such as Japan, with no possibility of balancing primary balance in the following three or four years. Besides, economic theory requires us to stabilize the evolution of debt to GDP ratio, and not to diminish this ratio. These considerations made us relax the criterion of successful fiscal

⁷This paper adopts a multi-year concept of fiscal consolidation, employing yearly counting of each fiscal consolidation episode in a spell of multi-year fiscal consolidation. Many previous studies also adopt this approach, although there are other approaches that consider the entire spell of multi-year fiscal consolidation episodes as a single episode. We prefer the former approach because we are keen on controlling the initial state of fiscal consolidation. For example, if a spell of consolidation episodes continues for 7 years, counting the whole spell of consolidation episodes as a single episode would result in considering the economic environment of 8 years before the consolidation, which is too far from the effects of fiscal consolidation, such as sustainability or expansionary effect of consolidation measured two years after the "end" of such spell. On the other hand, if we consider annual partition of multi-year consolidation episodes as unnatural, we would have to adopt Perotti (2011)'s case study approach, which tries to consider one multi-annual episode as a band and discuss the initial condition of such episode "qualitatively."

consolidation replacing it by a condition stating that the debt to GDP ratio, calculated using real GPD, does not grow.

Definition of Successful Fiscal Consolidation

A fiscal consolidation is considered successful if the cumulative change of the debt to GDP ratio between the year of adjustment and two years afterwards is negative: $(D/Y)_{t+2} - (D/Y)_{t-1} < 0$.

Following these definitions of the implementation and the success of fiscal consolidation, all relevant episodes are counted as country/year, and their list is shown in Appendix A at the end of the paper.

2.2 Data and Variables

Based on all the above consideration, we integrated the following variables in our analysis, where the expected signs of these variables are shown at the upper right side of the variable names. As for probit estimation of consolidation decision making, we adopt the lag variables to avoid endogeneity (except the contemporary dummy variable of financial crisis). The descriptive statistics appear in Appendix A2.

Variables for Fiscal Consolidation Decision Making

Structural Growth Rate(Past 5 Years Average)⁺, Output Gap⁺, Debt Outstanding^{+/-}, Interest Rate⁻, Money Supply⁺, Effective Exchange Rate⁻, Current Account(Past 5 Years Average)⁺, Financial Crisis Dummy(Past 5 Years)⁻, Financial Crisis Dummy(During the Year)⁻, Veto Players⁻, Governmental Fragility⁻, Governmental Ideology⁺, Seat Share⁺, Budget Procedure⁻, Past Episodes of Fiscal Consolidation⁺

First, we integrate a set of initial control variables, some of which might be significant if improvement of CAPB calculation expected to neutralize initial conditions of consolidation turns out to be insufficient. Consistently high growth rate before the consolidation might facilitate consolidation decision making. The same is true for an advantageous business cycle. If the sign of the variable of government debt is positive, this means that larger government debt would lead to a greater need of fiscal consolidation. If this sign is negative, this means that smaller government debt would facilitate the implementation of fiscal adjustment because in this case the task of fiscal consolidation would be easier to be undertaken. For these 3 variables, we expect insignificant results, even though we expect to obtain the right signs.

Accommodative monetary or exchange rate policies could facilitate consolidation decision making. We measure both types of accommodative policies using alternative variables, interest rate and money supply for the former and exchange rate and current account for the latter. For the latter, for example, the fall of exchange rate might boost export boom and facilitate consolidation. However, export boom might be triggered by

other causes than exchange rate, or exchange rate might bring about a positive expectation on economy, which might facilitate consolidation without immediately leading to any export boom. Thus, we find that such alternative measures are useful and make sense in this implementation analysis. We also include financial crisis dummy variables, because countries might wish to avoid consolidation during or right after the crisis, as is pointed out by the study of Barrios et al. (2010).

As we discussed in the subsection on political economy variables, in our research we integrate the variables of institutional veto players, of governmental fragility ("partisan" veto players), of governmental ideology, of governmental seat share in parliament, and of budget procedure. As for budget procedure, if it facilitates any fiscal improvement it would have a positive sign, but if it makes it unnecessary for a country to resort to fiscal consolidation, for example, because fiscal discipline is constantly assured, we would expect to obtain a negative sign. We also include a variable for past episodes of consolidation, which are often included in BTSCS analysis to control for relative advantage of past experience on a new event.

As for analysis concerning the success or sustainability of fiscal consolidation, we have already mentioned that we decided to include variables to control for initial conditions and accommodative policies, political elements and factors of post consolidation economic and political environment. The following is the list of variables used in regression analysis on the successful outcome of fiscal consolidation.

Variables for Successful Fiscal Consolidation

Structural Growth Rate(Past 5 Years Average)⁺, Debt Outstanding^{+/-}, Veto Players⁻, Governmental Fragility⁻, Election Dummy⁺, Budget Procedure⁺, Financial Crisis Dummy(Past 5 Years)⁻ (So far one year lag variables), Financial Crisis Dummy(During the Year)⁻, Change of Expenditure at t^- , Change of Revenue at t^+ , Change of Expenditure at $t+1$ and $t+2^-$, Change of Revenue at $t+1$ and $t+2^+$, Interest Rate⁻ Dummy(after consolidation), Output Gap⁺ Dummy(after consolidation)

The first two variables of structural growth rate and outstanding debt are particularly important to control for initial conditions of consolidation in order to evaluate whether it is successful, measured two years after the consolidation episode. If these two variables return some significant results, that would mean that the problem of controlling for the initial conditions persists even after the research strategy has been radically changed (from comparative table to multivariate regression (probit)). Thus, we hope to obtain non significant results for these two variables.

As for political variables, we continue to use the two variables of veto players and governmental fragility. The former is expected to hinder successful consolidation. If the success of consolidation is somewhat similar to the decision to continue with the consolidation, the variable of governmental fragility is expected to be of some importance for fiscal sustainability. To check whether there might have been elections in the preceding year, we include an elections dummy variable. In case there have indeed been elections,

we expect this variable to be positive, because if the elections are over, fiscal consolidation is easy to continue and consolidation might be successful. Budget institutions would return a different result from that obtained in the analysis related to consolidation implementation (the sign might be negative), the relevant variable is expected to have a positive sign and a statistically significant result.

The assessment of the sign of variables is particularly difficult for contemporary revenue and expenditure change. One may expect expenditure change variable to be negative and revenue change variable to be positive, but because AAP preferred expenditure cut to tax hike as a successful fiscal consolidation strategy, the latter would have a less positive or even negative marginal effect. The point here is that, in contrast to AAP's comparative table approach, we integrate the regressors of fiscal management after the consolidation episode. These are control variables that serve to obtain the correct sign and value of contemporary expenditure and revenue change variables, thus we do not have any particular expectations as regards the signs and values of these variables. After controlling for post consolidation fiscal management, contemporary fiscal movements might not return the results that have so far been often claimed by other researchers, including AAP.

We also introduce an interest rate dummy that shows whether the test is superior or inferior to what is dictated by the Taylor Rule. This variable is needed in order to include the effects of accommodative monetary policy. We also include the variables of financial crisis in the same way as we included them in implementation analysis. Finally, we control for business cycle movements after consolidation. With respect to uncertainty in terms of Keynesian/non Keynesian output effect of consolidation, we include a model containing this variable and a model without in order to perform a sensitivity analysis.

We are going to analyze the implementation and the sustainability of fiscal consolidation through probit estimation using all above-mentioned preliminary considerations. The variables used are listed in Appendix A3, while the descriptive statistics are shown in Appendix A4. Our data source is based on OECD Economic Outlook Database No.92, IMF International Financial Statistics, Worldbank World Development Indicators, Worldbank Political Institutions Database, Comparative Political Data Set 3, Manifesto Project Database.

3 Factors of the Implementation of Fiscal Consolidation

Based on considerations listed above, we analyze first the implementation of fiscal consolidation using probit estimation, distinguishing the starting years and the subsequent years of fiscal consolidation.

3.1 Factors Influencing Initiation of Fiscal Consolidation

If we consider starting years of consolidation (left hand side of Appendix A.4), we can see positive marginal effects of output gap, growth rate, debt outstanding, although none of them is statistically significant. One can see that control for business cycle influence

is no longer needed after CAPB redefinition. Positive sign for outstanding debt can be interpreted to mean that the worse the state of public finance, the more consolidation would be needed, but without statistical significance.

On the contrary, in the case of accommodative policies, negative interest rate, positive money supply, negative exchange rate, all the related variables have statistical significance. This means that accommodative monetary and exchange policies helped the consolidation to be realized a year later. Although positive current account has only 10 % significance, it might suggest that export drive has helped consolidation implementation. The signs of financial crisis, past or present, are all negative, and this might imply a tendency for consolidation decision making to be discouraged by the presence of a financial crisis, but this effect is not statistically significant.

As for two political variables of veto players and governmental fragility, both variables are negative, implying that decentralized decision making structure has hindered consolidation decision making and radical change of fiscal management. But it is interesting that the values of the variable of institutional veto players are statistically significant, while those of governmental fragility are not. We will see that this tendency is reversed for subsequent years of consolidation. This result shows that institutional structure of separation of powers, including the presence of president, upper house, and federal system (decentralization), has blocked the initiation of fiscal consolidation. As for the governmental ideology variable, the sign is negative, contrary to the expectations, although the result is not statistically significant. We can understand that starting consolidation is something not specific to conservative parties, left wing parties might also undertake consolidation, and there is no clear tendency toward fiscal consolidation that would be related to ideology. Seat share has a positive sign and is statistically significant. This means that, for example, an overwhelming victory of governmental parties would accelerate the start of a fiscal consolidation.

As for budget institutions, the variable shows a negative sign and is statistically significant. As we discussed above, this does not mean that good budgetary institutions reduce the probability of undertaking a fiscal consolidation. Budget institutions are institutions, thus it takes time until their influence on sound fiscal management becomes visible. We can understand that budget procedure is effective for gradual fiscal improvement, and that it can make a radical change of fiscal management unnecessary. This explains the negative sign of the budgetary variable. To confirm the effectiveness of budget institutions for fiscal discipline suggested by the previous studies, we add the result of one simple regression trial in our Appendix A5. This is a regression using our data with the same empirical settings as those used in Hallerberg et al. (2006) (Two way fixed effect estimation for 29 countries from 1971 to 2010 on the difference of debt to GDP ratio).

3.2 Factors Influencing the Continuation of Fiscal Consolidation

As for continuing fiscal consolidation (right hand side of Appendix A.4), all the control variables of initial economic and fiscal conditions appear to have no statistically significant influence on the process. Positive output gap and negative structural growth

might suggest the possibility of continuing consolidation when there is an expectation of prosperity and when there is a perceived structural economic problem, but this is not a reliable result. The same uncertainty exists for the outstanding debt. Our results might suggest that when the outstanding debt is high, the governments tend to stop consolidation projects, but this is only a tentative conclusion.

No clear estimation results could be obtained for accommodative policies. The interest rate variable is negative, but with only 10 % significance. Positive money supply and negative exchange rate have no statistical significance. On the contrary, the current balance turns positive and is statistically significant. This might mean that export drive can contribute to sustaining the fiscal adjustment. Financial crisis variables now turn negative and significant, both for present crisis and past crisis, implying a tendency of governments to avoid consolidation if there is a financial crisis.

As for political institutions, both veto players and government fragility variables have negative signs as they do in analysis related to starting consolidation, but contrary to the starting years of consolidation, during the ongoing consolidation the variable of institutional veto players does not have any statistical significance, while that of governmental fragility is statistically significant. This may be because the break up of a coalition government is a more important risk for continuing a fiscal consolidation, than institutional setting of separation of powers. Besides, governmental ideology and seat share variables both have a positive sign with statistical significance. The more conservative the government parties are, and the more the majority of the government parties is secured, the longer the fiscal adjustment is likely to continue.

Although the variable of budgetary institutions has a negative sign with statistical significance, as we mentioned earlier, this is not because relatively good budget procedure hinders fiscal improvement, but rather because good budget institutions are likely to need less fiscal adjustment.

As we can see, the variable of budget institutions has a negative sign in the analysis related to implementation of consolidation, while in the analysis related to success of the consolidation it must have a positive sign, as we will see in the following section.

4 Factors Influencing Success of a Fiscal Consolidation

Here we examine factors influencing the success of a fiscal consolidation using regression approach (Appendix A.6). As we already mentioned, we include an output gap dummy variable in our main estimation model (left hand side of A.6). However, we also describe estimation without the output gap dummy in view of sensitivity analysis (right hand side of A.6). We analyze the regression table A.6 mainly for the model with the output gap dummy. Then we check the difference between the model with the output gap dummy and the model without that variable, and if the estimation results are similar for the two models, we can conclude that including or excluding output gap dummy does not have much influence on the results of estimation. This check is used to know how much does the endogeneity problem influence our estimation.

First of all, we must focus on two control variables for initial conditions, growth and

debt. Typically those two variables pose problems for the method of comparative tables, because successful fiscal consolidation episodes are likely to have initial conditions of high growth and low debt. In regression, these two variables are confounding factors to be controlled for, but with comparative table such control is not possible.

From the estimation result, we find that structural growth has a very limited influence in terms of size of the marginal effect and z score. Growth rate must have a positive coefficient to be advantageous for successful consolidation. The sign of the variable turns negative, but this is probably due to obscurity in estimation and in any case this is not very important because z score is very small. Outstanding debt has a negative sign, which is not contrary to the intuition, but in any case both marginal effect and z score are very small. In total, our findings suggest that structural growth and outstanding debt have a very limited influence on sustainability of fiscal consolidation.

Analysis of the previous studies, which use comparative tables, suggests that apparent success of the fiscal consolidation may be due to the influence of initial conditions, particularly structural growth rate and initial outstanding debt (Holden & Mitdjhell(2013)). However, our analysis based on the use of regression approach rejects this hypothesis and excludes the concern. This facilitates reading of other variables and drawing some policy relevant information, such as a conclusion that expenditure cut strategy is more advantageous than tax hike etc., because the influence of initial conditions is excluded.

Next we focus on the political variables. First we test the two variables of veto players and governmental fragility that we have already used. The variable of institutional veto players returns a very small marginal effect and a very small z score. Its sign even turns positive, contrary to our expectations, which implies that the influence of this variable (institutional structure for separation of power) is very weak. We found that there is a certain degree of influence of this variable on decision making concerning consolidation, as is suggested by a background theory of veto players, which tells us that the existence of veto players hinder radical decision making. We use a sample of consolidation episodes that have already been decided upon and try to determine what leads to sustainable cases, so it is understandable that the influence of institutional factors, hindering decision making on "sustainability" is likely to be weak.

The next political variable is governmental fragility. Here the size of marginal effect and z score is still not large enough, but it is much greater than for institutional veto players. As we found in decision making analysis, governmental fragility might be particularly potent in hindering the continuation of fiscal consolidation. Although the continuation of a fiscal consolidation episode and the sustainable fiscal effort after the consolidation episode are two different things, both phenomena are related to the problem of breaking up of a coalition government, which is more probable when the ideological gap between coalition parties is wider and which is likely to interrupt the process of fiscal adjustment.

We also use the lag variable of legislative elections, not because we find that elections enhance the probability of successful fiscal consolidation, but because the fact that elections are already over might facilitate the fiscal sustainability after fiscal consolidation.

As we expected, the sign is positive, and the magnitudes of the marginal effect and z score are sufficiently large (5 % significance).

The variable of budget institutions is also a political variable, although in a wider sense, and we find that this variable shows a very strong positive effect with a high z score and a large marginal effect (5 % significance). In the course of decision making analysis the results showed a negative and statistically significant result for this variable. This time the result was opposite. This time the analysis was conducted on the sample of fiscal consolidation episodes that have already been decided upon. The virtue of budget institutions is to improve fiscal situation in a continuous fashion, but this takes time. This index includes a number of various factors with small individual contributions. Besides, while a certain factor can be decisive at some point, another one becomes decisive at another moment. So this variable is apt to maintain a good state of public finance, rather than radically change the fiscal state. The result of probit analysis clearly shows the continuous character of the power of institutions.

Next we turn to the problem of consolidation strategy, when we must choose between expenditure cut and tax hike strategies. The expenditure change variable during a consolidation year returns a negative sign, which means that expenditure cut might facilitate successful consolidation. Z score is -2.54 , and the marginal effect is sufficiently large for a non indicator variable. If we rely only on this variable, we would be inclined to recommend expenditure cut as a promising consolidation policy. However, the revenue change returns a marginal positive effect of a similar magnitude (-0.0587 vs. 0.0559), even though it has only 10 % significance. Thus, although revenue change is not statistically significant, the effect of expenditure cut and that of tax hike appear similar. This goes against the conclusion of AAP that recommended the expenditure cut strategy rather than tax hike for successful and expansionary fiscal consolidation.

We must emphasize that our conclusion is based on results obtained by controlling for fiscal management after the consolidation episode, procedure missing in the previous literature including AAP. The signs or marginal effects of related variables of post consolidation fiscal management are not important, but controlling for them helps to give a neutral interpretation of the contemporary variables of expenditure and revenue. Despite this limitation as control variables, we find that the size of the marginal effect in the revenue variable is relatively large, as compared to that of the expenditure variable. Thus, we find that a mix of strategies involving expenditure and revenue changes could have a relative tendency of postponing a tax hike, which might be advantageous for achieving government debt sustainability. Of course, this is just a "tendency" and is not statistically supported.

Finally, we measure the influence of accommodative monetary policy using the Taylor Rule as a standard. We take unity if the nominal short term interest rate is less than that dictated by the Taylor Rule. Our findings show that this influence is very strong. If we compare the marginal effect of accommodative monetary policy (here, the dummy variable) with the marginal effect of the financial crisis (contemporary) dummy, we'll find that they are almost equal in magnitude, but have opposite signs. With one percent significance, accommodative monetary policy has an undeniable influence on the

success of fiscal consolidation. Thus, the recent economic decline implying that interest rates hit the ZLB (Zero Lower Bound) suggests that further interest rate cut is difficult or impossible, while recent efforts of European or Japanese monetary authorities to introduce a negative interest rate have been hitting various real hurdles and limitations. Thus, it would be reasonable to postpone consolidation until the monetary policy climate recovers.

We inserted an output gap dummy in order to find out whether the success of fiscal consolidation is dependent on the business cycle element after the consolidation episode. The sign of the output gap dummy is positive, so a good business cycle after consolidation is, of course, advantageous for successful consolidation, although the size of the marginal effect is relatively limited for a dummy variable, as well as its z score (1.10). Thus, as long as we include other control variables in our estimation, the influence of post consolidation business cycle movement is noticeable, but not as large as we feared.

We might not need to be overly careful about the influence of this variable. As a sensitivity analysis, we include a model without the output gap dummy. According to this sensitivity analysis, almost all of the variables return similar signs and similar magnitudes of marginal effects. Only the variable of structural growth changes its sign from positive to negative. However, estimation of this variable is so imprecise and its marginal effect and z score are so weak that we can consider this change of sign to be an indication of imprecision and therefore safely ignore it. Thus, we conclude that estimation is stable regardless the inclusion of the post consolidation output gap variable.

Below is an overview of our findings obtained as a result of this study on successful fiscal consolidation.

- As for political variables, the variable of governmental fragility may have a certain influence on fiscal sustainability after consolidation. The possibility of a break up of a coalition government due to ideological gap between parties may threaten continuous fiscal performance. Elections are also risky because a consensus among the stakeholders that was reached before the elections could break up after elections due to the a change in power distribution among the stakeholders after the event.
- Contrary to the results obtained for the implementation of fiscal adjustment, the variable of budget institutions has a clear influence on the success of fiscal consolidation. Institutions tend to contribute to preserving a state of economy rather than to helping with radical changes. Budget institutions are helpful when there is a need to continue good fiscal performance once it has been achieved by a radical change of fiscal state that occurs when a project of fiscal consolidation is launched.
- The claim that expenditure cut strategy is advantageous compared to a tax hike, which has been long put forward by the authors including AAP, is not supported by this study. Our empirical results show that the chance of success of expenditure cut driven consolidation is almost the same as that of a tax hike driven consolidation. This result is obtained by controlling for initial conditions and post consolidation environmental changes using regression approach, that is, under research settings difficult to obtain when using conventional comparative tables. Thus, we suspect

that the claimed supremacy of expenditure cut strategy might be the result of limitations of research methods of the previous studies.

- As for controlling for initial economic conditions and business cycle, estimation results show that we don't have to be too concerned that these factors might influence estimation quality and hinder successful consolidation. Structural growth rate and initial outstanding debt have a very limited influence on the sustainability of public finance after consolidation. Besides, the business cycle movement after consolidation has a limited influence on successful fiscal consolidation, as we saw in sensitivity analysis. Thus, we can safely ignore these elements as they are not decisive for success of the consolidation.
- On the contrary, other related policy and financial circumstances have much more influence on the outcome of the fiscal consolidation. We must avoid fiscal consolidation in the middle of a financial crisis, if we measure the success of consolidation in terms of debt stabilization after consolidation. On the other hand, the implementation of fiscal adjustment after a financial crisis is very advantageous, probably because we can exploit the economic recovery process after the financial crisis to succeed with fiscal consolidation. Accommodative monetary policy could have a strong influence on the success of fiscal consolidation, which is almost equal to the influence of consolidation implementation in the middle of a financial crisis. Thus, we cannot freely change monetary policy stance because this might seriously damage the probability of success of the fiscal consolidation.

5 Illustrative cases

This paper analyzed political factors facilitating implementation and success of fiscal adjustment, with carefully controlling for environmental economic factors and accommodative policies. We have noted some important institutional elements, which contributed either to the decision making of consolidation or to the fiscal sustainability after consolidation episodes. On the contrary, as far as we set sufficient and relevant control variables under chosen estimation techniques, "initial conditions" of fiscal consolidation have not influenced so much either implementation, or success of fiscal adjustment. However, accommodative monetary or exchange policy facilitated either initiation or continuation of consolidation, or otherwise permitted to achieve more easily fiscal sustainability more easily after consolidation.

This is an overview of our empirical results, although we also add some illustrative discussions, to make the implication of our results clearer at this moment of post crisis era when many countries are struggling to recover from World Financial Crisis.

First, let's take a look at the table A.8 in the Appendix, where we show all successful consolidation episodes and also add two facilitating factors, "Good Budget Institutions" and "Accommodative Monetary Policy". Although there are still other factors, which influence the probability of success, these two variables are representative among facilitating factors. "Good Budget Institutions" are introduced by setting budgetary index

(normalized 0 to 1) superior to 0.6 (nearly equivalent to the first quantile of the whole sample). "Accommodative Monetary Policy" is introduced by using the variable of the test whether the short term nominal interest rate in one of the two years after consolidation is inferior to what is dictated by the Taylor Rule. We mark consolidation episode years by "*" for the former factor, and "+" for the latter.

We can see that either good budget institutions or accommodative monetary policy coexist with most of the successful consolidation episodes. In view of making a consolidation episode successful, we need one of these two conditions satisfied. Cases of success without any of the two conditions are rather rare.

Next, let us turn to more recent situations. Appendix A.9 shows a couple of variables calculated for our sample countries in 2011. The first variable is CAPB change, which was used to calculate fiscal consolidation episode in this paper (with newly defined CAPB concept and real GDP trend calculated by Hodrick Prescott Filter). The second variable is a dummy variable testing whether short term nominal interest rate is inferior to the value dictated by the Taylor Rule. The third is the variable of Budget Institutions with one year lag, which we used in probit analysis for implementation and success of consolidation. Year 2011 is not covered in our sample, so we don't have all the necessary elements to judge the success of fiscal consolidation. Thus, we will see some signs of success from CAPB change (as if we change our consolidation definition from multi-year to single year), and some signs supporting monetary policy position, (although the data is only for 2011, the situation could continue further). In fact, the data of budget institutions are usually stable, thus we can safely conjecture the continuation of the related variable.

On the basis of the available information it is difficult to judge the relation between consolidation success and facilitating factors, because in order to know this we need data covering a longer period. However, we could offer here some tentative argument to show the key points of evaluating the relevance of launching fiscal consolidation during this difficult period for the world economy.

First, let us take a look at the countries known for their sovereign debt crisis after World Financial Crisis, such as: 4 Southern European Countries (SE-4: Greece, Italy, Portugal, Spain), Ireland, and Japan, where so far no similar crisis has occurred, but which has the most serious debt problem judging by the magnitude of debt to GDP ratio (over 240 %). Among these countries, in 2011, some have already launched projects of fiscal consolidation (if measured by single year definition of consolidation conventionally used, say, by CAPB improvement of over 1.5 % per GDP), while others are still lingering on. Ireland, Greece, Portugal show strong CAPB improvement, while Italy and Spain have limited improvement, and Japan's public finance has even deteriorated in 2011. Some movements appear to be merely superficial. For example, Portugal has shown strong fiscal improvement in 2011, but otherwise its public finance has deteriorated since 2008, and again in 2012 (that is, negative CAPB improvement). Greek fiscal consolidation appears to span over 2011 and 2012 (CAPB deterioration had continued in Greece before 2011), but it has reversed back again to negative CAPB improvement in 2012. Thus, one can hardly say that fiscal consolidation was implemented in these

countries around year 2011.

But in any case, monetary policy position of these countries is disadvantageous, judging from a dummy variable of accommodative monetary policy (that is, on the premise that such disadvantageous position persists). The related variables for Greece, Ireland, Italy, Japan, Portugal and Spain are all zero. Surprisingly, this variable is advantageous (with a value of unity in the table) for most other countries. In terms of accommodative monetary policy this means that fiscal consolidation should be recommended for most parliamentary democracies. It is not recommended for the 6 countries mentioned above due to lack of advantageous policy environment. These countries have been widely publicized in the media because of their sovereign debt crisis or accumulated debts, and they have also had economic damage afterwards, which might suggest us the need for a prudent approach to the timing of launching a fiscal consolidation project.

However, we might be able to expect that with a good governance structure a country could overcome economic hardships and bring its public finance toward stabilization. One of such typical elements of a good governance structure is represented by the budget institutions. We can focus on the variable of budget institutions to ponder this possibility. Greece has drastically improved its budget institutions, so it has some possibilities of a positive outcome. The score of Ireland's budget institutions is also very high, so it can overcome economic hardships and achieve a successful consolidation. On the contrary, the score of budget institutions in other countries is at least mediocre (Italy, Spain) or even very low (Portugal, Japan). Governance reform must be seriously considered for these countries.

Except for these countries, most other countries have advantageous policy climate in terms of monetary policy position. Among Central and East European countries, for example, Czech, Hungary, Slovenia have disadvantageous policy climate, in terms of the monetary policy position (Hungary's fiscal improvement appeared to be large in scale, but it deteriorated a year later with CAPB deterioration of -6.15%). These countries also have mediocre budget institutions, or even very problematic ones, like in Hungary (where it scored .22). Even though most of these Central and East European countries have undertaken fiscal adjustment, it is doubtful that this attempt is sustainable without a profound reform of governance structure so far unattained during the process of transition from the communist rule. Fiscal governance reform must be seriously considered and undertaken in such countries (the score of budget institutions is mediocre for Bulgaria and Lithuania, and very bad for Slovakia (.22) even though for the moment these countries are supported by advantageous monetary position climate). Even though most of Central and East European countries have taken on fiscal consolidation, its final effect leading to fiscal sustainability depends crucially on completion of governance structure reform supposedly undertaken since the collapse of the communist regimes.

6 Conclusion

In this paper, on the basis of a review of recent critical studies on fiscal adjustments we made an attempt to introduce rigorous control for initial economic conditions and

accommodative monetary policy or (contemporary or post consolidation) fiscal management with the aim of introducing a new approach to political economy study on decision making and effects of fiscal adjustments. As a result we have obtained relatively clear results concerning implementation of fiscal consolidation. Our findings indicate that institutional veto players influenced the year of starting a fiscal consolidation, while governmental fragility had a role in determining whether consolidation continued the following year or not. Seat share also exerted a certain influence on consolidation decision making. Although the impact of budget institutions was found to be negative, possibly this is merely due to the fact that good budget institutions would need fewer fiscal consolidation. This is in contrast with the results obtained in the analysis of the effects of consolidation.

When it comes to the effects of fiscal consolidation, that is, fiscal sustainability after consolidation episodes, political economy factors are still likely to have some influence, but the results are less clear than in the analysis of consolidation implementation. Positive marginal effect found for budget institutions in probit estimation means that they contribute to a good budget process by stabilizing debt. Political variables might also influence the success of consolidation, and the variable of governmental fragility implies that a risk of breaking up of a coalition government might hinder fiscal sustainability after consolidation (although the result is non significant). As for consolidation strategy, expenditure cut is not particularly advantageous, compared to tax hike, for achieving fiscal sustainability after consolidation episode.

These results imply that we may have to ponder reforms of constitutional level, or change political culture of a parliamentary democracy, for example, by introducing reforms of political and budgetary institutions, if we hope to achieve fiscal consolidation (initiation and continuation) and its sustainable fiscal effect. For example, we have seen that institutional veto players hindered the starting of fiscal adjustments, which means that presidentialism, bicameralism, federalism or too much decentralization must be reconsidered. The variable of governmental fragility was shown to (negatively) influence continuation of a fiscal consolidation. Thus, we have more probability of continuing consolidation when we have stabilized, if possible, a non coalition government. This might also be true for achieving debt sustainability after consolidation. Budget institutions are important to achieve the success (that is, stabilizing debt after consolidation) of fiscal adjustments. Budgetary reforms would be necessary for the countries, which score low in terms of budgetary index and need fiscal consolidation.

After introducing a new CAPB calculation method, which excludes measurement error related to asset value movements and avoids reverse causality, and after replacing comparative tables that cause serious problems in terms of controlling for initial conditions, our empirical studies show that, with respect to consolidation decision making and its success, the corresponding control variables were of little statistical significance. On the contrary, some variables of accommodative monetary policies often exert a strong influence on consolidation decision making and consolidation success.

Thus, with the reservation that we must wait for good moments to start and continue fiscal consolidation when we can relatively easily manipulate monetary variables, we

might as well seriously consider reforms of political and budgetary institutions if we hope to succeed with starting a fiscal consolidation or assuring its success. This conclusion was reached after controlling for previously overlooked elements, which might, however, deteriorate some of the important empirical results in case of a successful consolidation.

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A Appendix

A.1 List of Country/Year of Consolidation Episodes

Country	Year
Australia	86*, 87*, 88*, 95, 96*, 97*, 98*, 99*, 02*, 03*
Austria	71*, 72*, 77, 78, 81, 87, 90, 91, 92, 95, 96*, 97, 00, 01*, 05*, 07, 08
Belgium	74*, 82, 85, 87, 88, 89, 90, 00*, 01*, 06*, 07, 08
Bulgaria	04*, 06*, 08*
Canada	73*, 74*, 80, 81, 82, 86, 87, 88, 89, 90, 94, 95, 96*, 97*, 98*, 99*, 00*, 01*
Czech	96, 97, 98, 04, 06, 07, 08
Denmark	85*, 86*, 87*, 95*, 96*, 98*, 99*, 05*
Estonia	00*, 01, 02, 03*, 06
Finland	71*, 75, 76, 80, 81, 84, 85, 86, 88*, 89, 90, 96*, 97*, 98*, 00*, 01*, 06*, 07, 08
France	79*, 96, 01
Germany	73, 76, 77, 87, 96, 99*, 00, 05*, 06, 07, 08
Greece	91, 92, 94, 96*, 00, 05, 10
Hungary	96*, 99*, 00*, 03, 04, 07, 08, 09
Ireland	73, 74, 75, 80, 81, 83, 84, 88*, 90*, 91*, 96*, 99*, 00*, 05*, 06
Italy	76, 77, 82*, 83*, 90, 91, 92, 93, 94, 95, 96, 97*, 06, 07
Japan	74, 75, 80, 81, 82, 83, 84, 85, 86, 89*, 90, 91, 99, 01, 05, 06, 07, 08
Latvia	
Lithuania	06*
Luxembourg	93, 94, 97*, 00*, 01*, 07, 08
Netherlands	73*, 74*, 84, 85, 88, 90, 91, 96*, 98*, 99*, 00*, 01*, 08
New Zealand	87*, 88*, 91*, 94*, 95*, 96*, 00*, 01*, 02*, 05*, 06*
Poland	
Portugal	92*, 99, 02, 06, 07
Romania	08
Slovakia	97, 98, 01*, 03*, 04*
Slovenia	05*, 08
Spain	74*, 75, 87, 88, 92, 99*, 00*, 01*, 02*
Sweden	71*, 75*, 76, 81, 84, 85*, 86*, 87*, 90, 95, 96, 97*, 98*, 01*, 05*, 07*, 08*
United Kingdom	73*, 74*, 79*, 80*, 81, 87*, 88*, 94, 95, 96, 97*, 98*, 99*, 00*
Note	***Successful Consolidation

A.2 Descriptive Statistics of Variables

Variable	Obs.	Mean	Stan.Dev.	Max	Min
1.Output Gap(-)	953	0.21	2.95	-15.62	21.41
2.Debt(-)	889	51.25	32.47	4.15	180.83
3.Growth(-)	903	3.17	2.03	-10.96	11.1
4.Current Account Change(-)	772	-0.05	0.84	-4.65	4.73
5.Interest Rate(-)	881	0.05	4.36	-58.91	26.19
6.Money Supply(-)	907	6.28	29.52	-165.72	511.86
7.Exchange Rate(-)	810	-1.04	11.62	-93.01	139.56
8.Financial Crisis(-)	1160	0.13	0.33	0	1
9.Financial Crisis(t)	1160	0.09	0.29	0	1
10.Veto Players(-)	926	1.35	1.27	0	4
11.Gov. Fragility(-)	915	13.88	15.55	0	79.98
12.Ideology(-)	915	-0.92	17.64	-58	64.53
13.Seat Share(-)	915	0.55	0.1	0	0.86
14.Election(+)	928	0.28	0.45	0	1
15.Budget(-)	1160	0.5	0.16	0.22	0.88
16.Expenditure(t)	790	1.38	2.16	-8.69	20.38
17.Revenue(t)	790	1.18	1.64	-4.6	8.7
18.Ex.(+)	806	2.44	2.96	-21.34	21.37
19.Revenue(+)	806	2.31	2.53	-7.74	13.81
20.Interest Rate Dummy(+)	909	0.70	0.46	0	1
21.Output Gap Dummy(+)	973	.60	.49	0	1

Note: "-" :One Year Lag, "t", "t + 1", "t + 2":Data of the time t , $t + 1$, $t + 2$, "+" :Change from Consolidation Year during 3 Years or Mean of these 3 Years.

A.3 Variable Definition and Data Source

- 1.Output Gap(-):Calculated from real GDP and Our trend real GDP(OECD EO92)
- 2.Debt(-):Calculated from real debt standing and Our trend real GDP(OECD EO92)
- 3.Growth(-):Mean real growth rate of past 5 years(OECD EO92)
- 4.Current Account Change(-):Mean current account change of past 5 years(Worldbank WDI & OECD EO92)
- 5.Interest Rate(-):Gap of real interest rate with US rate(IMF IFS)
- 6.Money Supply(-):Gap of growth rate of real money supply per our trend real GDP with the same value of US(IMF IFS)
- 7.Exchange Rate(-):Growth rate of nominal effective exchange rate(IMF IFS)
- 8.Financial Crisis(-):Dummy counting one if there has been at least one financial crisis year during past 5 years(IMF Systemic Banking Crises Database)
- 9.Financial Crisis(t):Dummy counting one if there is financial crisis at consolidation year(IMF Systemic Banking Crises Database)
- 10.Veto Players(-):Total of qualitative scoring (total 6 point) of presidential democracy(2), bicameralism(2), and federalism/decentralization(2)(CPDS, Wikipedia)

- 11.Gov. Fragility(-):Maximum ideology gap between governmental parties(Manifesto, Wikipedia)
- 12.Ideology(-):Ideology of the party of prime minister(Manifesto, Wikipedia)
- 13.Seat Share(-):Seat share of governmental parties in parliament(Wikipedia)
- 14.Election(+):Dummy counting one if there has been at least one legislative election, parliamentary or presidential(Worldbank Political Institutions Database)
- 15.Budget(-):0-1 normalization of 29 countries index inspired by Fabrizio & Mody (2010)
- 16.Expenditure(t):Cyclically adjusted primary expenditure per our trend real GDP(OECD EO92)
- 17.Revenue(t):Cyclically adjusted revenue per our trend real GDP(OECD EO92)
- 18.Ex.(+):Idem with 15
- 19.Revenue(+):Idem with 16
- 20.Output Gap Dummy(+):Take unity if positive output gap in one of the following 2 years(OECD EO92)
- 21.Interest Rate Change(+):Take unity if nominal short term interest rate is inferior to the dictation of Taylor Rule in one of the following 2 years(IMF IFS)

A.4 Factors for Fiscal Consolidation Implementation

Variable	Margin.	Z Score	Margin.	Z Score
<i>Dep.Var. = Consol.</i>				
Output Gap	0.0107	1.03	0.0274	1.58
Growth	0.0001	0	-0.0111	-0.41
Debt	0.0007	0.92	-0.0009	-0.86
Interest	-.0221***	-3.26	-.0191*	-1.67
Money	.0038**	2.32	0.0029	1.23
Exchange	-.0060**	-2.27	-0.0096	-1.37
Curr.Acc.	.0577*	1.88	.1711***	2.59
Crisis(past)	-0.0315	-0.49	-.2328***	-3.11
Crisis(present)	-0.1224	-1.63	-.1799**	-2
Past adjustments	.0083*	1.84	.0189***	2.63
Veto Players	-.0333**	-2.29	-0.0184	-0.71
Gov. Fragility	-0.0012	-1.06	-.0039***	-2.34
Ideology	0	-0.07	.0050***	2.94
Seat Share	.4947**	2.29	.5952**	2.18
Budget	-0.4069	-4.70***	-.5927***	-2.43
Observations	419		238	
Mc-Fadden R2	0.28		0.51	

Note: Left hand side is marginal effect, right hand side is Z score calculated by cluster standard error, for each timing(starting year/continuing year). 10% significance "**", 5% significance "***", 1% significance "****" calculated by Z score.

A.5 Regression of Debt Standing per Trend GDP(Difference) on Budget Institutions(Two Way Fixed Effect Estimation with Panel Corrected Standard Errors(PCSE))

	Coef.	PCSE
Debt(lag)	-0.03***	0.01
Growth(lag)	-0.99***	0.14
Budget(lag)	-5.53***	1.63
Observations	889	
R^2	0.10	

A.6 Probit Estimation for Successful Fiscal Consolidation

(Output Gap) <i>Dep. = Success</i>	(With)		(Without)	
	M.E.	Z	M.E.	Z
Growth(-)	-.0032	-.09	.0009	.03
Debt(-)	-.0001	-.05	-.0001	-.04
Veto Players(-)	.0026	.05	.0078	.14
Gov. Fragility(-)	-.0003	-1.13	-.0003	-1.11
Election(-)	.0967**	2.39	.0987**	2.39
Budget(-)	.6972**	2.23	.7219**	2.35
Financial Crisis(-)	.3128**	2.52	.3270***	2.70
Financial Crisis(t)	-.2954***	-2.90	-.3323***	-3.62
Expenditure(t)	-.0587**	-2.54	-.0587**	-2.48
Revenue(t)	.0559*	1.72	.0577*	1.74
Exp.(t+1,2)	-.0024	-.15	-.0075	-.49
Revenue(t+1,2)	.0257	1.48	.0310	1.79
Taylor(+)	.3454***	3.73	.2891***	3.95
Output Gap(t+1,2)	.0997	1.10		
Observations	237		237	
Mc Fadden's R^2	.21		.20	

Note: Left hand side is marginal effect, right hand side is Z score calculated by cluster standard error, for each estimation(with or without output gap dummy). 10% significance "**", 5% significance "***", 1% significance "****" calculated by Z score.

A.7 Database of Budget Institutions

The following list is the budget institutions index of Fabrizio & Mody (2010), which have developed their own database starting from von hagen's database, and integrated their own qualitative evaluation of budget institutions, and East and Central European countries as well. The budget institutions are classified by each phase of budget cycle,

governmental preparation(G), parliamentary discussion and vote(P), and administrative implementation(I). Refer to Fabrizio & Mody(2010).

Table 1: Classification of Budget Institutions

No	Index
G1	General constraint
G2	Agenda Setting
G3	Negotiation Structure
P1	Amendment to the budget bill
P2	Initial vote on the total
P3	Confidence vote
I1	Supplementary budgets
I2	Budgetary transfer
I3	Interannual rollover
I4	Freeze or Cancellation of budget items by ministry of finance

We integrated our own budgetary index based on documentary research and fieldwork into Fabrizio & Mody(2010). We referred to von Hagen(2005) when it comes to Japanese budget institutions and balanced qualitative observations with already scored indices. All the data of 29 countries are shown in Nakanishi(2017).

Table 2: Budget Institutions of Additional 4 Countries

	G1	G2	G3	P1	P2	P3	I1	I2	I3	I4
Australia (85 ~)	2 0 ^{~97}	1	2 0 ^{~82}	0	0	4	4	1.28 2.56 ^{~85}	1.33 4 ^{~85}	0
Canada	2 0 ^{~94}	4 1 ^{~94}	4 0 ^{~94}	4	0	4	4	1.28 3.2 ^{~92}	1.33 4 ^{~86}	0
Japan	0	2	0	0	0	4	0	3.2	2.66	0
New Zealand (85 ~)	3 0 ^{~93}	2 1 ^{~93}	2 0 ^{~88}	0 4 ^{~95}	0	4	4	1.92 3.2 ^{~88}	4	0

A.8 List of Country/Year of Successful Fiscal Consolidation Episodes with or without Facilitating Factors

Country	Year
Australia	86 ⁺ , 87 ⁺ , 88, 96, 97 ⁺ , 98 ⁺ , 99 ⁺ , 02 ⁺ , 03 ⁺
Austria	71 ⁺ , 72 ⁺ , 96, 01*, 05* ⁺
Belgium	74 ⁺ , 00 ⁺ , 01 ⁺ , 06* ⁺
Bulgaria	04 ⁺ , 06 ⁺ , 08 ⁺
Canada	73* ⁺ , 74* ⁺ , 96* ⁺ , 97* ⁺ , 98* ⁺ , 99* ⁺ , 00* ⁺ , 01* ⁺
Czech	
Denmark	85, 86, 87, 95 ⁺ , 96 ⁺ , 98 ⁺ , 99 ⁺ , 05 ⁺
Estonia	00* ⁺ , 03* ⁺
Finland	71 ⁺ , 88 ⁺ , 96 ⁺ , 97 ⁺ , 98 ⁺ , 00 ⁺ , 01 ⁺ , 06 ⁺
France	79* ⁺
Germany	99, 05
Greece	96 ⁺
Hungary	96 ⁺ , 99 ⁺ , 00 ⁺
Ireland	88 ⁺ , 90, 91 ⁺ , 96* ⁺ , 99* ⁺ , 00* ⁺ , 05* ⁺
Italy	82 ⁺ , 83, 97
Japan	89 ⁺
Latvia	
Lithuania	06 ⁺
Luxembourg	97* ⁺ , 00* ⁺ , 01* ⁺
Netherlands	73 ⁺ , 74 ⁺ , 96 ⁺ , 98 ⁺ , 99 ⁺ , 00 ⁺ , 01 ⁺
New Zealand	87, 88, 91, 94, 95*, 96*, 00 ⁺ , 01 ⁺ , 02 ⁺ , 05 ⁺ , 06 ⁺
Poland	
Portugal	92 ⁺
Romania	
Slovakia	01 ⁺ , 03 ⁺ , 04 ⁺
Slovenia	05 ⁺
Spain	74, 99 ⁺ , 00 ⁺ , 01 ⁺ , 02 ⁺
Sweden	71*, 75*, 85 ⁺ , 86 ⁺ , 87 ⁺ , 97 ⁺ , 98* ⁺ , 01* ⁺ , 05* ⁺ , 07* ⁺ , 08* ⁺
United Kingdom	73* ⁺ , 74* ⁺ , 79* ⁺ , 80* ⁺ , 87* ⁺ , 88* ⁺ , 97*, 98*, 99*, 00* ⁺
Note	""*"" Good Budget Institutions", "+" Accommodative Monetary Policy

A.9 List of Country/CAPB Change with Facilitating Factors in 2011

Country	CAPB Change	Monetary Policy	Budget
Australia	1.9	0	.39
Austria	2.3	1	.62
Belgium	.2	1	.60
Bulgaria	1.2	1	.51
Canada	1.4	1	.72
Czech Republic	3.0	0	.54
Denmark	.8	0	.50
Estonia	4.2	1	.76
Finland	2.2	1	.50
France	2.0	1	.77
Germany	4.0	1	.56
Greece	2.7	0	.68
Hungary	7.8	0	.22
Ireland	16.9	0	.72
Italy	.9	0	.51
Japan	-1.8	0	.30
Latvia	2.8	1	.61
Lithuania	.2	1	.49
Luxembourg	.9	1	.80
Netherlands	1.4	1	.51
New Zealand	2.1	0	.52
Poland	3.1	1	.60
Portugal	7.5	0	.38
Romania	2.2	1	.61
Slovakia	2.2	1	.24
Slovenia	.0	0	.47
Spain	.7	0	.51
Sweden	.8	1	.72
United Kingdom	3.4	1	.81