

# BALANCING BUDGETS

**Political Explanations of Central Government's Budget Balance**



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MASTER THESIS  
JUNE 2010

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## **ABSTRACT**

This thesis tries to identify which political and societal factors influence central governments' fiscal balance. It conducts the analysis using the statistical technique longitudinal multilevel models. 46 electoral democracies are covered between 1980 and 2006. The research method used makes it possible to reliably study whether permanent features influence the countries fiscal balance. Such features were likely to affect outcomes as permanent differences in deficit levels have existed between countries, and in the empirical analysis they are found to have a significant influence.

In previous research time-varying political factors have been found to influence the budgetary balance of countries, and in recent years some scholars have claimed that permanent political institutions might also influence deficit levels. The paper follows in this tradition but finds that the quality of governance (strength of rule of law, levels of corruption and the strength of the bureaucracy) has a more decisive impact on deficit levels than the choice of institutions. The choice of political leadership, e.g. the number or ideology of parties in government, that have dominated much previous research into the political effect on fiscal behaviour are not found to significantly explain the phenomenon.

## ACKNOWLEDGEMENTS

First and foremost I must thank my supervisor, Tor Midtbø. He has been helpful throughout the year it took to write this paper. He has consistently answered my questions and often given me answers to questions I did not know I had to ask. Before I even started writing he gave me the training that opened my eyes to the possibilities of quantitative analytical models.

However, there have been other people who have made this possible as well. A special thank has to be given to Asle Høgestøl. His critical eye helped make my draft into what has hopefully become a coherent paper. Erla Løvseth and Christopher Tønnessen have also given me feedback that has made the paper better than it would have been without them.

Finally, a general thank you has to be sent to everyone who has helped me throughout this year, both family and friends, either by hearing my thoughts on the subject of this paper or by giving me something else to think about. You are all immensely appreciated.

Mathias Killengreen Revold

Bergen, June 2<sup>nd</sup> 2010

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# 1 INTRODUCTION

## 1.1 *Research question*

This paper investigates central government deficits in electoral democracies. It aims at exploring which political and societal factors affect the government fiscal balance. In recent years there has been an effort to include permanent institutional features in the explanation of the fiscal balance. This paper follows in this tradition and builds on it. It especially investigates whether the quality of government institutions, as well as the type, might affect electoral democracies' budget balance. This is an explanation that has been underexplored in previous research.

The research question is:

*Which political and societal factors influence central government's budgetary balance in electoral democracies?*

King, Keohane and Verba (1994) and Skocpol (2003) have different views of many aspects of social science, but all agree that research within the field need to both answer real-world problems and engage in existing scientific discussions. This research question clearly does both. It will first be shortly outlined how government deficits is a question of high importance and saliency for current political. How it fits into the scientific discussion will be discussed in part 1.2.

The period of analysis ends in 2006 at a time when there had been global growth for a continuous and extended period. In 2006 “the number of countries in recession was at a historic low” (IMF 2009: 14). This period of growth was followed by a sharp downturn in the world's economic fortunes which was accompanied by stark increases in government deficits. This situation was problematic for many governments. “Not since the second world war have so many governments borrowed so much so quickly or, collectively, been so heavily in hock” (Economist 2009: 11). The debt-to-GDP ratio in advanced economies is expected to reach 100 percent by 2014, 35 percentage points higher than before the recession (IMF 2010: 6). The situation has made government deficits a salient political issue. Following a British parliamentary election where the budgetary balance had been one of the central issues, conservative party leader and future Prime Minister David Cameron called the high deficit

levels in the UK “the biggest threat to our national interest” (Reuters 2010). At the same time demonstrations over cuts in public expenditure to reduce the deficit were ravaging Greece (Economist 2010).

The countries included in this analysis have very different average deficit levels. In Greece government spending has on average exceeded government incomes by 10.4 percent of the GDP, while incomes on average have exceeded spending by 8.7 percent in Botswana. There are also substantial variations within the countries. The differences within and between the countries might partly be caused by economic fluctuations. The period covered, 1980 to 2006, saw two global recessions, in 1982 and 1991, and a mild recession in the advanced economies in 2001 (IMF 2009: 11-12). It also saw extended periods of economic growth. However, the sustained differences in average deficit levels between countries indicate that deficits will be affected by more than just the international economic climate. This can either be time-varying economic or political factors, or permanent features of the countries. This paper will try to identify both. Identifying which factors are likely to affect fiscal policy is likely to be of high interest in policy formation at a time when deficit levels have become one of the foremost political issues in many countries.

## **1.2 Scientific contribution**

For a long time academic views on fiscal policy adhered to Adam Smith’s claim from 1776 that “what is prudence in the conduct of every private family, can scarce be folly in that of a great kingdom” (referred to in Buchanan and Wagner 1977: 3). In other words, this view espoused that governments should not spend more money than it earned. As a Keynesian view of the economy became more prevalent in the 20<sup>th</sup> century, the view that government deficits were always something negative is no longer universally accepted. On the contrary, it has become a consensus in both economic and practical political circles that the government has to lead a countercyclical economic policy to ameliorate the adverse consequences of economic downturns. Empirical studies have shown that economic fluctuations can not be the only determinant of fiscal balances however. It can neither explain why there seem to have been a tendency for countries to have different fiscal policy at different times with similar economic conditions, nor why different countries have led consistently different fiscal policies (Alesina and Perotti 1995). Other explanations have therefore been advanced to explain these differences.

Roubini and Sachs (1989a) argued that because economic fluctuations could not explain fiscal policy alone: “*differing institutional arrangements* in the political process of the various ... economies also help to explain the markedly different patterns of budget deficits”. Various scholars have theoretically and empirically argued about which political and societal differences might create these differences. Roubini and Sachs (1989a ; 1989b) argued that the number of parties in government would affect fiscal policy. Hibbs (1986 ; 1987) and Persson and Svensson (1989) claimed that the ideology of the parties in government affected fiscal balances and several authors have claimed that deficits tends to be higher in election years than non-election years (e.g. Buchanan and Wagner 1977). These and several newer explanations of how politics might affect deficits will be further explored in the theory chapter of the thesis.

Early and later inquiries into the effect of policy and politicians on fiscal policy have been dominated by time-varying phenomenon. These phenomena might explain the variance in deficit levels within countries over time, but are unlikely to entirely explain the permanent differences that seem to exist between countries however. In recent research some scholars have investigated whether countries with different political institutions lead different fiscal policies. This paper re-tests some of these claims. However, it also takes the research further by investigating if the quality of government institutions, and not just the type, might affect governments’ budgetary behaviour. This is an explanation that, as far as I know, has not been included in tested in previous research and its inclusion might therefore strengthen the understanding of governments’ budgetary behaviour.

The analysis is conducted using a statistical method that is well adept at including both time-varying and time-constant explanatory variables: longitudinal two-level analysis. The method also allows the researcher to find out whether the effects of time-varying variables are affected by permanent features in the countries’ political systems to find possible links between the time-varying and time-constant phenomenon.

### **1.3 Structure of thesis**

In *chapter two* previous research will be presented and hypotheses generated. First the economic explanations that have traditionally dominated the field will be reviewed. Secondly

political theories will be presented. Some of these vary over time within the countries while other are permanent or close to permanent features of the different countries' political systems. Finally, societal factors that might influence fiscal policy are presented. All of these vary very little over time.

The method is presented in *chapter three*. It is argued that longitudinal two-level analysis is well suited to examine this research question. Afterwards the method and calculations are shortly presented, and statistical preconditions for the analysis are addressed. In *chapter four* the operationalization of the variables are presented. The criterion for electoral democracy is also identified. The countries were excluded in the years when they did not fulfil this criterion. Afterwards the operationalization of the dependent variable and the economic, political and societal explanatory variables are presented.

The empirical analysis is carried out in *chapter five*. The analysis is conducted using several models that become increasingly complex and increasing explanatory power. The findings are interpreted in light of the hypothesis generated in chapter two.

In *chapter six* the paper is concluded. Some implications of the findings for the theory on budgetary balance are drawn.

## **2 THEORY**

### ***2.1 Introduction***

The theory chapter will present previous explanations of fiscal policy behaviour. It is argued for including some aspects that have been underexplored in previous research. First economic factors that have been used to explain the phenomenon are outlined as these are the ones that have traditionally dominated the field. The economic explanations included are: economic growth, the openness of the economy and the inflation levels. Secondly political explanations of fiscal policy are shown. The explanations placed within this group are: the number of parties in government and parliament, whether the government has a majority in parliament, the ideology of government, the electoral system and size of constituencies, if the country is parliamentary or presidential, the countries membership in the European Monetary Fund, elections and finally the quality of government which has been little studied previously. Finally societal explanations are explored. The phenomena placed in this group are political instability, economic and social inequality and the age distribution of the population. Before these explanations are discussed a short presentation of the general views on government deficits is given.

By exploring how permanent features influence fiscal policy the paper enters into a recent tradition in political science and economics where institutional explanations have become ever more central in the explanations of social phenomena (Ostrom 1986 ; North 1990). It is argued that one can not only look at the choice of institutions, but also how well the governance of the state is.

### ***2.2 Are deficits political?***

Neo-classical economics saw public deficits as an evil that should always be avoided. The view was later challenged by Keynesian economists who said that markets do not regulate themselves and that the state therefore has a role in preventing, at the very least, a breakdown of the economic system similar to the one that happened in the 30's (Keech 1995: 26-27). There is however broad agreement that no government can have permanently high deficits without negative consequences. At the very least high government loans will mean that future government will have to prioritize interest payments ahead of other expenses. If the debts become uncontrollable the results may be even more damaging. Increased risk of default will

result in even higher interests and greater difficulty for the state in finding willing loaners which can reduce its ability to respond to future crises. Governments therefore have to find a balance between using loan financed expansionary policy to prevent excessive recessions and not putting too heavy debt burdens on future generations.

Given these hard choices on which fiscal policy should be led it is likely that different politicians in different political and societal circumstances might reach different conclusions on what fiscal policy to lead. These choices are likely to be influenced by the political and societal climate the politicians operate within. But before looking at what these political influences might be, the economic factors that have traditionally been dominant in the explanations of fiscal deficits will be explored. Previous research into political and societal influences on fiscal policy will be presented. It will also be argued for looking at some possible explanations that has been overlooked in previous research, especially the quality of government institutions.

## **2.3 *Economic explanations***

The economic explanations that will be gone through in this part are: the growth rate of the economy, the openness to trade and the inflation levels.

### **2.3.1 *Growth rate of the economy***

In the neoclassical economic tradition public debt is seen as a transitional phenomenon which will increase temporarily under adverse economic conditions, such as during recessions or wars, and decrease when the economy is growing. The long term equilibrium is therefore expected to be a balanced budget, and deviations from this long term trend will be rational as they are the only possible consequence for a social planner who wants a constant tax level (Barro 1979). These theories therefore assume that taxes are set at a level where they just covers, the exogenously given, level of spending (Alesina and Perotti 1995: 5).

Barro (1979: 954-969) finds that the economic growth rate explains debt levels in the US well. However, economic fluctuations can not explain how it is possible to have permanently high debt levels and why there seems to be differences between countries. Rather than reacting in the same way to similar external shocks to the economy, some countries have seemed much

more willing to take up new debt than other (Woo 2001: 388). It is possible that this can explain the significant changes in net government debt over time within every country better than it explains differences between countries. During adverse economic times it is likely that there will always be a higher risk of deficits because incomes will be reduced and the government will face pressures to lead expansionary fiscal policy, but some governments might be more susceptible to this pressure than other and some might be more able to reduce the deficits when the economic climate improves.

Woo (2001: 391) also claims that the relationship might work in the opposite direction “if the successful pressures for higher public expenditures accompany the growing tax revenue due to higher economic growth”. This is obviously a theoretical possibility, but the overwhelming majority of previous theory and empirical results indicate that it is likely that the tax incomes will increase more than the expenditure during periods of economic growth, and vice versa during economic contractions. It is therefore assumed that economic growth leads to a decrease in government deficits.

*Hypothesis 1: Central government deficits will decrease during periods of economic growth.*

### **2.3.2 Openness of the economy**

Variation in different countries' dependence on imports and exports might also affect their fiscal policy. It is possible that more open economies are more affected by changes in other countries than closed economies. The fiscal policy of open economies could be affected both positively and negatively by this openness since they will draw more benefits from growth in other countries and be more vulnerable when there is a recession in their trading partners. Nevertheless, Woo (2001: 394) thinks the vulnerability to outside shocks makes open economies harder to govern and that this might lead to higher public deficits. The increased vulnerability to outside shocks might make recessions and the pressure for expansionary fiscal policy more frequent. During these periods government debt can be expected to increase, and according to Buchanan and Wagner (1977) once a government has started leading a loan financed fiscal policy it is hard to reduce welfare spending and return to surpluses when the economic climate improves. Woo (2001) does not find strong empirical evidence for this claim however. It is nevertheless a strong theoretical argument and worth testing empirically.

*Hypothesis 2a: Open economies have higher deficits.*

Midtbø (1999: 204-205), on the other hand, claims it is possible that more open economies have less of a possibility to make radical fiscal changes than countries with more closed economies. It is therefore more important for them to have stability and confidence from trading partners and investors. This is especially the case for small countries. Midtbø (1999: 204) quotes Katzenstein who claims that: “Political laissez-faire is a luxury of large industrial countries, a luxury which the small European states cannot indulge”. This might therefore prevent the governments in these economies from leading a populist fiscal policy and they might instead have stricter fiscal discipline and smaller deficits. Since they are more susceptible to outside influences, an activist government might also have fewer abilities to influence their own economies the more dependent the country is on trade. This gives rise to a second hypothesis on the effect of the openness on the countries’ budgetary balance.

*Hypothesis 2b: Open economies have lower deficits.*

### **2.3.3 Inflation**

Inflation might also affect government deficits. Rapid inflation can lead to higher nominal interest payments and thereby higher expenditure and larger deficits. Inflation can also lead to lower real tax revenue for several reasons. It can decrease the real tax collections, savings and in other ways decrease the value of the tax base or the taxes collected. Secondly, inflation can affect the measurement of taxable income. And thirdly: “it changes the real value of deductions, exemptions, credits, ceilings and floors, bracket widths, and all other tax provisions legally fixed in nominal terms” (Aaron 1976: 193). “If, however, income taxes are not indexed to inflation, the above effects of inflation on deficits can be at least partly offset by the positive effect of bracket creep on income tax revenue” (Woo 2001: 392). Woo (2001) tests the effects of inflation on fiscal policy, and finds limited support for that it might be negatively correlated with surpluses. This is therefore the hypothesis that is tested in this paper.

*Hypothesis 3: High inflation lead to larger deficits.*

## **2.4 Political explanations**

Much of the arguments around which types of political institutions are most able to limit deficits follow the same arguments as the general discussion within political science about which government forms are most efficient. Arend Lijphart (1999) claims that there are two democratic government archetypes: majoritarian and consensual. In majoritarian systems the focus is on getting a strong government supported by a majority of the population and in consensual systems on getting as many groups in society as possible represented and working out compromises between these groups. It has been claimed that majoritarian systems create stronger governments. They centralise power in the hands of one group that is supported by a small majority, or even plurality, of the population. In consensual systems on the other hand decisions have to be chiselled out between all involved parties. This happens through cooperation and compromise which supposedly makes the government less able to create coherent political results (Norris 1997 ; Lijphart 1999: 64).

A. Lawrence Lowell claimed in 1896 that coalition governments could not produce good results (referred to in Lijphart 1999: 64), and this is a view that has been echoed by authors until this day. Pippa Norris (1997: 6) claims that more majoritarian systems, where power sharing not is necessary, gives governments “enough freedom to carry out unpopular policies”. They might therefore also be less able to resist pressure for an expansionary fiscal policy. If majoritarian governments are more able than consensual governments at making autonomous decisions they might also be more able to resist demands for populist economic policies. By being able to make decisions that are unpopular in the short term they might be more able to follow policies in which are in the long-term interests of the country.

In two articles Roubini and Sachs (1989a ; 1989b) started a discussion about whether different types of governments had a tendency to take up different levels of debt. They claimed that previous research on government debt had been too theoretical and wanted an empirical study on which factors actually influenced this phenomenon (Roubini and Sachs 1989a: 903-904). Specifically, they claimed that when power is centralised and placed with fewer actors it was easier to lead a strict fiscal policy than when more actors participate in the decision making process.

“When power is dispersed, either across branches of the government (as in the U.S.), or across many political parties in a coalition government (as is typical in Italy), or

across parties through the alteration of political control over time, the likelihood of intertemporally inefficient budget policy is heightened” (Roubini and Sachs 1989a: 905).

This view follows clearly from the argument, mentioned above, that when decision making is more majoritarian you get a more efficient government, which in fiscal policy is usually seen as synonymous with reduced deficits.

In this part the reasons for the following explanations of budgetary behaviour will be investigated: the number of parties involved in governing, the majority status of the government, the government’s ideology, the electoral system, the form of executive (presidential or parliamentary), the effect of the stability and growth pact and the European Monetary Fund, the effect of elections and the quality of government.

#### **2.4.1 Number of parties**

One of the political factors that has been most explored as a possible explanation of fiscal policy is the number of parties involved in governing. Alesina and Drazen (1991) argue that a higher number of parties lead to higher deficits in their “war of attrition model”. The name alludes to their claim that the political parties in a coalition will try to wear the other ones out so that they will get concessions on policy. The model says that all fiscal adjustments in democracies involve a battle between different political actors who do not want the majority of the burden to be put on their constituency. This can lead to delays in passing measures necessary to prevent growing deficits, for instance higher taxes, as different parties argue over their distribution. Even though this situation can arise in all countries, “countries with political institutions that make it relatively more difficult for opposing groups to ‘veto’ stabilization programs not to their liking will stabilize sooner” (Alesina and Drazen 1991: 1183). This means that the fewer parties that have an influence on governing, the easier it will be to return to an equilibrium after a crisis and therefore these countries will have lower deficits. Similarly, Roubini and Sachs (1989a) claims that countries where power is dispersed find it hard to make necessary adjustments after external shocks.

“Coalition governments are not inherently prone towards larger deficits ... Rather, it appears that coalition governments are prone to large deficits in circumstances of highly adverse macroeconomic shocks” (Roubini and Sachs 1989a: 923).

Other authors have defended a view that coalition governments systematically take up higher deficits than one party cabinets regardless of the economic conditions, and found some empirical support for the claim (Borrelli and Royed 1995 ; Volkerink and Haan 2001 ; Woo 2001). The basis of this claim is the view that: “the larger the number of decision makers, the less each will internalize the costs that a certain policy will impose on others” (Volkerink and Haan 2001: 222). When several parties are involved in governing, they have a hard time internalizing the interests of broader groups than their own constituencies. Coalition governments are therefore seen as leading a less responsible fiscal policy than multi-party governments.

Another reason for why coalition governments are claimed to lead a less strict fiscal policy than one party governments is that their time horizon is shorter. Borrelli and Royed (1995: 234) claim that coalition governments last shorter than one party governments, and that this reduces the incentives for repeated play. All the parties will try to get their core demands through at the same time as they do not think they will have many chances to influence policy. There will therefore be fewer incentives for compromise than there is between the fractions of a catch-all party that expects a long spell in government. Consequentially, all participating parties might get what they want at once, and leave it to the predecessors to make the difficult cuts in spending or increases in taxes to pay for their excess.

It is also claimed to be harder to build up trust between the partners when the turnover rate is higher, making it even harder to reach difficult compromises and give concessions to each other.

“Effective budgeting requires long-range planning and implementation, which is difficult to do when the identity of the planners, at least at the highest (political) levels of government, keeps shifting with each new reshuffling of the Cabinet” (Borrelli and Royed 1995: 234).

Furthermore, it is harder for the electorate to punish the politicians for enacting policies that are against the interest of the majority because responsibility for the cabinets’ actions is divided between the participating parties (Roubini and Sachs 1989a: 925-926). Voters not satisfied with the government’s performance therefore find it harder to know which rascals to kick out. Parties can therefore give their core constituencies what they want without fearing increased unpopularity among the wider public which has to contribute equally in paying for it.

Finally, coalition governments might lead less coherent politics since policy areas often are divided between the coalition partners, and because each partner often is given veto power (Roubini and Sachs 1989a: 924). The individual parties might therefore not accept reductions in their core demands or increased demands on their core constituents. The result might be a system where it is impossible to make difficult choices since each major group has a defender in government who will not accept that they increase their contribution to the state or reduce the benefits they receive from the state.

The hypothesis tested is therefore that when more parties participate in governing deficits increase, while deficits can be expected to be lower when power is more concentrated. This is tested for using two variables, as shown later, and two hypotheses are therefore created for this phenomenon.

*Hypothesis 4a: The higher the number of parties in government, the larger the deficits.*

*Hypothesis 4b: The higher the number of parties in parliament, the larger the deficits.*

#### **2.4.2 Minority or majority government**

Some theorists have claimed that similar mechanisms to the ones that are expected to make coalition governments more prone to budget deficit than one party governments makes minority governments more likely to have greater deficits than majority governments. Roubini and Sachs (1989a ; 1989b) characterize minority governments as the least majoritarian of all government forms and see it as an extreme and weak form of coalition governing. They therefore expect even higher deficits under minority governments than under multiparty majority governments. Unlike coalition governments where consensus has to be sought between the governing parties, minority governments have to cooperate with parties outside of government to get a majority in parliament. Volkerink and de Haan (2001) claim that when more parties are involved in the decision making process responsibility is more diluted. This clearly happens in minority governments where responsibility is divided between the government and parliament. A “war of attrition” situation (Alesina and Drazen 1991) might therefore arise where no group is willing to reduce their demands because they hope the other participating parties will concede before they do. The conditions under minority government might lead to greater deficits.

*Hypothesis 5a: Minority governments produce higher deficits than majority governments*

There are however reasons to believe that minority governments might act differently than majority governments. Like coalition governments influence over how decisions are made is spread among several actors, but unlike coalition governments, minority governments can find different partners to secure a majority on different legislation. Strøm (1990) claims that this feature might make minority governments more efficient in pushing through their agenda than coalition governments. Since they do not need to cooperate with the same party in all areas the party (or parties) in government can partner up with parties that agree with them on individual legislation. The result is that they have a bigger chance of creating coherent policy. Furthermore, it might be easier to know who to punish for bad policies since there are usually (although not always) relatively few parties in minority government. The temptation to reward your core constituents might therefore be counterweight by the fear of sanctions in the next election.

Minority governments have also been seen as shorter lasting than majority governments. They might therefore produce the negative results Borrelli and Royed (1995: 234) claimed to plague short-lasting governments: no possibilities for repeated play and lack of trust between the partners. Strøm (1990) argues against this view, and say that minority governments are short lasting. He finds that: “coalition status (coalition vs. single party) is much more strongly correlated with duration than numerical status (majority vs. minority)” (Strøm 1990: 116). Unless co-operation in itself creates suboptimal outcomes the theoretical argument for why minority governments will produce deficits might therefore be weak. Instead these governments can instead have more freedom in the formulation of their fiscal policy. This allow them to lead a more consistent and stringent fiscal policy and produce lower deficits. Borelli and Royed (1995) finds some empirical support for the view that minority governments have lower deficits than other government types.

*Hypothesis 5b: Minority governments produce lower deficits than majority governments.*

### **2.4.3 Ideology of government**

The type of party or parties in government might influence their fiscal policy just as much as the number of parties. There have been disagreements on which ideological leanings will be

most likely to increase the deficits however. Writing from an American perspective, Hibbs (1986 ; 1987) argued that left-wing governments would create higher deficits than governments with other ideological complexions.

“[T]he core constituency of the Democratic Party consists of the down-scale classes, who primarily hold human capital and bear a disproportional share of the economic and broader social costs of extra employment. Up-scale groups form the core constituency of the Republican Party; they hold financial capital and absorb the greatest losses from extra inflation” (Hibbs 1986: 66).

He claimed that this led to more expansive fiscal policy under Democratic administrations to ensure low unemployment, while Republican administrations would be more concerned about inflation and hence lead a less expansionary fiscal policy (Hibbs 1987: 251).

*Hypothesis 6a: Left-wing governments produce higher deficits than other governments.*

Others have claimed that the relationship between ideology and fiscal policy is opposite to the one argued by Hibbs. Persson and Svensson (1989) have argued that right wing governments will act strategically to secure that their ideological preferences prevail after they leave office. These strategic actions will lead to higher deficits under right-wing than under left-wing governments. They claim that when a conservative government knows it will be followed by a more expansionist government it will lower taxes more than it lowers social spending, take up national debt and in that way limit the next government's ability to expand social services because it has to dedicate large portions of the budget to debt service payments. When more left wing parties enter governments they will be willing to raise taxes, but not able to expand the welfare provisions as much as they would have preferred. Midtbø's (1999: 210-211) findings supports this view. He finds that under left-wing governments revenues are increased even more than expenditure and the result is lower net state debt. Therefore a second hypothesis, that contradicts 6a, also has to be made for the effect of ideology on fiscal policy

*Hypothesis 6b: Right-wing governments produce higher deficits in governments than other governments.*

#### **2.4.4 Geography of representation**

A basic assumption of several of the previous theories is that politicians will set the interests of their core constituencies ahead of the interests of the country as a whole. It has been claimed that multi-party governments take up higher deficits because all the parties will prioritize the interests of their core constituents over the interests of the population as a whole (Roubini and Sachs 1989a ; 1989b), or that left-wing governments will give the voters of working class background what they demand even if it means higher deficits (Hibbs 1987). If this assumption is correct it is therefore not hard to imagine that politicians will prioritize the interests of their constituents even if that contradicts the economic interests of the country as a whole (Weingast, Shepsle and Johnsen 1981). “Representatives with a geographically based constituency overestimate the benefits of public projects in their districts relative to the financing costs, which are distributed nationwide” (Alesina and Perotti 1995: 20). Politicians in all democratic countries have constituencies, but the size of these constituencies varies and if the above mentioned assumption is correct then countries with small constituencies can be expected to produce higher deficits. In these countries politicians are dependent on supporting many interests that have marginal importance for the country, but dominating importance in the small constituencies that elect them. Bigger constituencies on the other hand can be expected to have more complex economies and therefore the interests of their inhabitants might be expected to be more similar to the general interests of the national economy. The incentives for pork-barrel spending could therefore increase the smaller the constituencies are.

Persson and Tabellini (1999) similarly claim that majoritarian elections with one-man constituencies will lead to higher spending because “those regimes that promote more intense competition imply policy choices that internalize the benefits and costs of fewer voters”. This leads them to conclude that countries with majoritarian electoral systems “bring about less public good provisions” (Persson and Tabellini 1999: 703). In proportional systems politicians have almost equal possibilities to gain seats throughout the entire country, but the more majoritarian the system becomes the more they have to rely on a few marginal seats to make gains as most of the constituencies usually has a clear majority for one of the parties.

“Electoral competition is stiffer under majoritarian elections, as politicians try to please ‘swing voters’ in the marginal districts rather than the voters in the population as a whole. Among other things, this leads to more targeted redistribution, at the expense of public good provisions” (Persson and Tabellini 1999: 703).

These authors only investigate determinants of government expenditure and find some empirical support for the claim that countries with proportional electoral systems have higher public spending than other countries. It is nevertheless interesting to see whether this increase in spending is compensated for by increased incomes. This would mean that countries with majoritarian electoral systems have higher deficits than countries with more proportional systems, a claim that finds some empirical support in Woo (2001). This gives rise to two similar, but slightly different claims: that deficits will be higher in countries with small electoral districts in general and that deficits will be higher in countries with majoritarian electoral systems than in countries with more proportional systems. As will be shown in the operationalization chapter these nuances in the theories were accounted for in the analysis.

*Hypothesis 7: Deficits will be higher in countries with small constituencies/majoritarian electoral systems.*

There can be an overlap between the electoral system and the number of parties in a country. Single member plurality constituencies have a tendency of producing two dominant parties and one-party governments (Duverger 1972). The effect mentioned above might therefore be outweighed by the smaller deficits one-party governments are said to produce. This effect can be controlled for however, and the relationship is not deterministic which makes it interesting to explore different combinations of electoral systems and the number of parties in parliament and government.

#### **2.4.5 Presidential and parliamentary regimes**

Presidential systems, like majoritarian electoral systems, lead to higher competition among politicians. However, Persson and Tabellini (1999) claims that the heightened competition will make the government under presidential systems smaller than they are under parliamentary, which is the opposite inference from the one used for electoral systems. The major difference is that while a majoritarian electoral system creates high levels of competitions before elections it creates a relatively stable political climate between elections as it usually produces big parliamentary majorities for one party. A presidential system on the other hand creates heightened competition between elections in addition to the competitive presidential elections. Politicians are held separately accountable by voters which makes the

competition between the branches of government more intense and gives the politicians fewer incentives to accept a compromise if it goes against the wishes of its voters.

“As coalitions among politicians are more unstable, voters end up competing more fiercely for the redistributive transfers than in a parliamentary regime. These features imply less spending on every budget item in a presidential regime and, hence, a smaller size of government” (Persson and Tabellini 1999)

The authors find that government is ten percentage points smaller in presidential regimes than in parliamentary. Again, they only focus on spending, but Woo (2001) finds some support for the claim that deficits might also be smaller in presidential regimes.

*Hypothesis 8: Deficits are lower in presidential countries than in parliamentary countries.*

#### **2.4.6 The stability and growth pact and the European Monetary Union**

In 1997 The European Council passed the stability and growth pact (SGP) which was aimed at reducing the central government deficits in the countries that were members of the European Monetary Union (EMU). It stated that member countries should avoid “excessive deficits” (which was defined as three percent of GDP) in the short term and that they should achieve budgets “close to balance or in surplus” in the medium term (de Haan, Berger and Jansen 2004: 236). The pact includes few mechanism to sanction countries that diverge from these goals, but there are several ways in which the member countries fiscal situations are supervised and if the deficits become to large they are given advise on how to reduce them and might loose the confidence of the markets (von Hagen 2006: 31).

There have been discussions on how efficient the SGP has been in achieving this goal. De Haan, Berger and Jansen (2004) claims that the enforcement mechanisms in the pact are too weak for it to work efficiently and that to the degree it can affect the deficit levels of the countries it has a bigger impact on the small member states than the big ones. Big countries are able to withstand possible consequences of breaking the agreement (such as a less international confidence in their fiscal discipline) but for small countries this can be a greater liability. They therefore find that in some relatively small member countries, e.g. Belgium, the SGP has contributed in reducing the deficits. They argue that smaller countries are susceptible to peer pressure because their influence in the EU relies on them being seen as an active participant in the project. Larger countries on the other hand are “less susceptible to peer

pressure than smaller ones, as they are unlikely to lose their influence on EU policies anyway” (de Haan, Berger and Jansen 2004: 9). The view that the EMU might have had some effect on fiscal policy, but that this effect is very limited is supported by other scholars (Buti and van den Noord 2003 ; Von Hagen 2003).

Others have found that fiscal agreements can reduce the deficits however. Debrun et.al. (2008) for instance finds that the European Monetary Union might have had some effect on the limitation of EU countries’ deficits after controlling for other factors, although this effect was even stronger in the years leading up to EMU than it was after the introduction of the stability and growth pact. In these years the countries had to show fiscal discipline to be allowed as members in the Euro. This gives rise to two hypotheses. First, one should test whether deficits are lower for members of the stability and growth pact and whether there is a difference between large and small members. Secondly, one should test whether countries lead different fiscal policies in the period when they tried to obtain membership in the European monetary fund.

*Hypothesis 9a: Deficits will be lower for countries in the stability and growth pact, and the effect of membership is especially high for small countries.*

*Hypothesis 9b: Deficits will be lower for countries that are in the accession process to the European Monetary Union.*

#### **2.4.7 Fiscal illusions**

An assumption in several of the previous models is that politician can mislead the electorate. Many theories assume that politicians are able to lead an economic policy that favours their core constituencies, but are against the interests of the general public or the long-term interests of the country, without being punished for it at the next election. This implies a view of the general public in democracies as both inattentive and short-sighted. This has led some theorists to claim that the need for popular supports leads to consistently populist policies and makes democracies generally less fiscally responsible than non-democracies (Buchanan, Tollison and Rowley 1987). This paper only looks at democracies and can therefore not test possible differences between democracies and non-democracies, but a similar argument has been used to argue that deficits will be higher in election years than at other times. In these years politicians need the support of voters which do not completely understand how the

economy of the state works, but reward incumbents that provides economic growth. Tufte (1978: 143) therefore argued that the “electoral-economic cycle breeds a lurching stop-and-go economy the world over,” and “a bias towards policies with immediate, highly visible benefits and deferred, hidden costs – myopic policies for myopic voters”. This is the theory of fiscal illusions.

The theories of fiscal illusions have a long history. Already in 1903 the Italian economist Amilcare Puviani claimed that citizens found it hard to estimate the exact connection between their tax levels and the levels of government spending. This led to a situation where: “the taxpayer’s perception of the equilibrium between utility and sacrifice [is distorted]” (Fausto 2006: 82). Several later theorists have claimed that politicians try to fool the public by increasing welfare spending without increasing taxes whenever they need the citizens support, for instance before elections. When elections are not looming the public is less attentive and the politicians are less in need of high public popularity so they are more able to focus on the long term economic interests of the country and lead a prudent fiscal policy, but when elections approach they need popular support and they gain this by spending a lot on popular initiatives without demanding higher taxes to pay for this extra spending.

“In a nutshell, the idea of fiscal illusions is that voters do not understand the intertemporal budget constraints of the government. When offered a deficit-financed expenditure program, they overestimate the benefits of current expenditures and underestimate the future tax burden. Opportunistic politicians who want to be reelected take advantage of this confusion by increase spending more than taxes in order to please the ‘fiscally illuded’ voters” (Alesina and Perotti 1995: 9).

This finding is for instance supported by Nordhaus, Alesina and Schultze (1989: 43-44) who find that in the USA taxes tends to be raised shortly after elections while benefits tend to be increased shortly before elections. The finding is supported by several other scholars and with different explanations. One explanation that has been dominant in recent research is that voters want to elect the most economically competent politician. Politicians therefore increase public spending before elections politicians hope that voters will credit the increased welfare to the politicians’ competence and overlook the increased spending (Persson and Tabellini 2000 ; Shi and Svensson 2002 ; De Haan and Mink 2005).

The increased chance of a future change in government can also prevent the incumbent government from internalizing the costs of additional debt as it might be born by their

successor (Woo 2001: 394). After the election the government can return to more prudent policies.

*Hypothesis 10: Deficits are higher before elections than at other times.*

#### **2.4.8 Quality of Government**

As has been showed earlier, some previous research has tested whether countries with different political institutions lead different fiscal policies. One possibility that has been overlooked in much previous research is that how well those institutions function might also influence fiscal policy. It has previously been claimed that better quality of government improves economic policy outputs in other areas, for instance by: increasing per capita income (Kaufmann, Kraay and Zoido-Lobaton 1999) and reducing inequality (Chong and Calderón 2000). Government quality has been less explored as a possible explanation of fiscal policy. How well the political institutions function might for instance affect government debt. In systems where rule of law is weak the endemic corruption that often follows acts “like an illegal tax that distorts decision-making and economic processes” (Holmberg, Rothstein and Nasiritousi 2008: 15). This gives the government less control over the countries’ economy and might make it harder to lead a strict fiscal policy. These problems might be enhanced by other effects corruption have been shown to have. High corruption levels correlates with decreasing state incomes (Ghura 1998 ; Tanzi and Davoodi 2000) and increased military spending (Gupta, de Mello and Sharan 2001), both of which can be expected to increase government deficits.

The strength of rule of law might also serve as an indicator of the general belief in the political system, and the participants’ willingness to follow rules put down for the general good even when they go against individual interests. Some scholars claim to have found strong causal evidence for a positive effect of strong government institutions on economic growth (Kaufmann and Kraay 2002). Even though the strength and direction of causality has been questioned by others (Holmberg, Rothstein and Nasiritousi 2008: 16-17) it is not hard to imagine that it is easier to lead a strict fiscal policy in a country where laws and the judiciary is respected.

The strength of a country's bureaucracy might have a similar effect, by instilling a system where rules and not personal interests are the guiding principle. Bureaucracy quality has therefore gotten an ever more central position as an explanation of social phenomena (Dahlstöm, Lapuente and Torell 2009: 6). A strong bureaucracy might also temper the effects of political change by offering high levels of expertise and thereby both reduce the turbulence that arises with government changes and the impact of the government parties' ideology. There are therefore reasons to believe that the quality of government has high importance for the climate within which fiscal policy is made, and that it is easier to lead a strict fiscal policy when the quality of government is high.

*Hypothesis 11: Deficits decrease as the quality of democratic institutions increase in a country.*

## **2.5 Societal explanations**

There has been an increased focus on how the different political choices in different countries can help explain fiscal policies. This has improved previous models which only focused on economic explanations, and made them better at explaining both permanent differences between countries and intertemporal variation within countries. Some permanent features of the political system are also expected to influence fiscal policy, as shown above. One should also control whether permanent features of the society, which determine the climate within which fiscal policy is made, might also influence its results. The explanations discussed in this part are: political instability, economic and societal inequality and the proportion of the population which is elderly.

### **2.5.1 Political instability**

Political instability reduces the possibility for politicians to make long-term considerations because their immediate concerns are more pressing. If they do not address them their political survival might be in danger. By reducing the time horizon that politicians consider when they make decisions those decisions can be expected to be more geared towards immediate popular approval and the incentives for trying to get through all their wishes at once are increased (Roubini and Sachs 1989a ; Woo 2001: 394-397).

“Faced with the uncertainty over re-election, the incumbent government may fail to internalize the costs of additional debt because these costs are borne by the succeeding

government that may be controlled by the opposition party with different preferences” (Woo 2001: 395).

Woo (2001: 394-397) claims that this dynamic might be permanent in societies where the political life constantly is turbulent. In these societies the stakes in the political game is often higher and political lives are often shorter. Politicians therefore have to think more about how popular their policies are in the short term, and have less to lose if they enact policies that have unbeneficial consequences in the long run, as they are more likely to be out of office when they hit.

Alesina and Tabellini (1990) has a further argument for why greater political polarization will lead to greater fiscal deficits. They rightly claim that one of the few ways in which governments can bind the policies of its successor is by taking up government debt and that this tool will be used more actively if there is a greater turnover of governments. By spending above the optimal level and taking up state debt the current government can oblige future governments to service the debt they take up and thereby limit their ability to invest in the policy-areas where they disagree.

*Hypothesis 12: Deficits are higher in countries with much political instability than in other countries.*

It is possible that the relationship between political instability and fiscal policy is really reverse. It has been claimed by many that difficult economic conditions can create social instability. Huntington (1968: 39-40) for instance said that: “clearly countries which have high levels of both social mobilization and economic development are more stable politically. Modernity goes with stability”. Furthermore, “to the extent that public deficits can cause serious macroeconomic instability such as hyperinflation or poor economic growth, they may foster violent behaviours of both political and non-political motives” (Woo 2001: 397). In most cases the fiscal policy will be part of the reasons for these situations and in all cases a possible relationship between deficits and political instability will be indirect. I therefore think it is unproblematic to assume that political instability might cause deficits while a possible relationship in the opposite direction is at most minor and indirect.

### **2.5.2 Economic and social inequality**

Both economic (Lichbach 1989 ; Alesina and Perotti 1996 ; Gasiorowski 1998) and social and ethnic (Alesina et al. 2003) polarization has for long been identified as important determinants of conflict. High polarization can therefore be expected to influence fiscal policy in a similar way to the influence of political instability explained above, and lead to “populist fiscal policies and poor macroeconomic performance” (Woo 2001: 402). In democracies with high ethnic and social inequality it is also likely that a more fractionalized party system will be created as the interests of the different groups are further apart than in other countries. This might increase an existing situation under a “war of attrition” situation (Alesina and Drazen 1991) and paralyze the political system as different parties find it harder to cooperate and are less willing to compromise. Several previous researchers have made the link between heightened ideological fractionalization and increased deficits and found some empirical support for it (Franzese Jr. 2001 ; Huber, Kocher and Sutter 2003). Woo (2001) also finds economic inequality to be a highly significant predictor of fiscal deficits.

*Hypothesis 13a: Deficits are higher the higher in economically unequal countries.*

*Hypothesis 13b: Deficits are higher the higher in socially fractionalized countries.*

### **2.5.3 Age distribution of population**

It is also possible that deficits will be larger in countries where large portions of the population are old than in countries where they constitute a smaller part of the population. Most elderly persons are pensioners and might therefore weight unproportionally on the government budget both because they are not part of the tax base and because they receive a disproportionately large portion of public expenditure, especially in health care. Woo (2001: 394) tests whether the portion of the population over 65 can contribute in explaining countries’ fiscal policy but only finds statically significant support for that claim in the developing countries he includes in his research. It is nevertheless an intuitive claim and should therefore be controlled for.

*Hypothesis 14: Deficits increase as the elderly share of the population increase.*

## **3 METHOD**

### ***3.1 Introduction***

This chapter will explain longitudinal multilevel models. It will argue for why it is well suited to explore my research question, explain how the model is built up and show how it was used in the research for this paper.

It has previously been claimed that quantitative methods are ill-adept at explaining complex phenomenon or finding intricate explanatory models. Pierson for instance warns that often in quantitative research: “the priority on generating high correlations privileges “‘shallow’ (temporally proximate but often near-tautological) accounts over ‘deep’ ones” (Pierson 2003: 199). Similar arguments are presented by Skocpol (2003: 414) and McKeown (1999: 170-171) who claim that qualitative research is better at incorporating context in its explanations. The goal of this research project is partly to address these criticisms within a quantitative framework by incorporating contextual factors and causal heterogeneity in the explanation of fiscal policy. Longitudinal multilevel analysis is a statistical technique is well suited for this since it allows the researcher to control for time-constant contextual factors as well as including time-varying explanations.

In this chapter the reasons for using the longitudinal multilevel analysis will first be presented. Afterwards it will be shortly outlined how the model function before it is shown how some preconditions for a reliable analysis were tested for.

### ***3.2 Longitudinal multilevel analysis***

Multilevel analysis was originally developed to explain social processes which happened at several levels at the same time. It did, for example, make it possible to explain pupils’ school results with variables at both the class and at the school level, and to see which of these two levels explained most of the variation. The research theme in this thesis, central government deficit, is a phenomenon that only exists at one level however, that of the central government. Several observations are therefore nested within each country and it is both possible to introduce time-constant and time-varying variables. The time varying variables are introduced on level-1 and the time constant on level-2. Instead of having several pupils nested within each class several observations at different time points are nested within each country. By

using the variance between countries as one level and the variance over time within the countries as the other level it becomes possible to distinguish between the variables that create variance within each country over time and the variables that create permanent differences between the countries. It is also possible to see whether there are different growth trajectories in the different countries and to look at the interaction between time constant and time varying variables. One can find out whether the time-varying variables have different effect on countries with different institutional arrangements and societal compositions. It is also possible to see what may cause these differences in effect. These are exactly the questions that have been unanswered in previous research and that this paper hopes to contribute in answering.

### ***3.3 Why use a longitudinal multilevel method?***

In this part it will be argued for why longitudinal two-level models are well suited for this research project. The substantive advantages will be shown first and the statistical afterwards.

#### **3.3.1 Substantive advantages:**

Multilevel analysis has a number of advantages over other quantitative methods and is well suited to investigate my research question: what political and societal factors explain government's fiscal balances? It is especially well suited to find out which time-constant factors might explain the phenomenon. The model offers possibilities in the study of comparative politics and political economy that can compliment and strengthen previous research. Przeworski and Teune (1970: 74) claimed that the goal of comparative research is to study "the influence of larger systems upon the characteristics of units within them". Multilevel research can take account of both these levels in a better way than traditional one-level quantitative methods. The method therefore "provides a closer fit between ... theory and model specification" (Western 1998: 1234) and makes it less likely that the model suffers from model misspecification as many theories imply a connection between several layers (Steenbergen and Jones 2002: 219). This can either be by showing how persons or countries are affected by the groups they are members of or, as in my case, how constant characteristics of a country influences the effect of time-varying variables.

In this paper it is possible to see how economic growth influences deficits while controlling for permanent institutional and societal factors that are likely to differ between countries. By introducing time-constant and time-varying effects in two different levels while allowing for interaction between them the research becomes more complex and describes better the political climate within which policy is made. Schumpeter (1954: 34) stated in his explanation of political economy that: “‘economic laws’ are much less stable than are the ‘laws’ of any physical science ... [T]hey work out differently in different institutional conditions, and ... the neglect of this fact is responsibility of many an aberration”. Multilevel models allows the researcher to not only control for these different institutional arrangement, but also see which factors might increase or limit their influence on the dependent variable. This has been called “causal heterogeneity” (Western 1998). Since causal relationships are likely to be different in countries with different institutional and societal characteristics such heterogeneity is needed for an accurate understanding of the phenomenon that is studied. Longitudinal two-level analysis allows the researcher to control for this. It is therefore exceptionally well suited to study how permanent political and societal factors might influence fiscal policy.

Specifically longitudinal multilevel analysis allows the researcher to create different growth curves for each country (Hox 2002: 93), and it is therefore consistent with: “the basic insight of comparative politics... [that] political processes play out differently in different settings” (Western 1998: 1233-1234). It also allows causal heterogeneity, both by separating between variables that determines constant differences and variables that determine differences within the countries over time. It also makes it possible to find connections between these levels. “[I]t is possible to determine whether the causal effect of lower-level predictors is conditioned or moderated by higher level predictors” (Steenbergen and Jones 2002: 219). King, Keohane and Verba (1994: 8) identifies the ability to generalize as the main characteristic of scientific research. Longitudinal multilevel analysis can lead to reliable generalizations because it can be tested whether theories that originate in one condition apply equally under different circumstances (Steenbergen and Jones 2002: 219).

This offers new possibilities in the study of government debt. Longitudinal multilevel models can help: “disentangle questions about interindividual predictors ... from intraindividual predictors” (Luke 2008: 545-546). In other words: it is possible to see which variables influences variance over time and which influence differences between countries. Most previous studies of government deficits have utilized panel models with fixed effects. They

have therefore been unable to tell whether the significant explanatory variables first and foremost determine variance in debt within the countries over time or constant differences between the countries. For instance, the number of parties in government, which has been found by several scholars to have a significant effect on fiscal policy, might change the incentives within a country over time as a country move from a one to a multi-party government or there might be a different dynamic in countries where big coalitions are the norm than in countries where one party governments dominate. These differences in political culture might persist even when a country deviates from its normal number of parties in government because a political culture of compromise or lack of willingness to compromise has been established. By being able to see whether constant features in each country affects the government's propensity to loan it is possible to explain better why there seem to be permanent differences in the level of debt between countries with different institutional arrangements. Panel analysis with random effects is able to include such permanent differences between countries, and there are also ways of explaining differences in growth rate. Such models can not find possible differences in development paths between countries and explain why these exist however. These advantages make longitudinal two-level model well suited to explore the research question in this paper.

### **3.3.2 Statistical advantages:**

Multilevel models also have some statistical advantages over regular one-level models. By better modeling the social phenomenon one wants to explain multilevel models reduces the risk of “possibly incorrect standard errors and inflated Type I error rates” (Steenbergen and Jones 2002: 219). Type I errors occur when the null-hypothesis is falsely rejected, in other words: when a variable which is really insignificant is found to be significant (Pennings, Keman and Kleinnijenhuis 2006: 60). The inclusion of dummy variables in panel analysis can control for context and constant differences between the countries, but “they do not explain why the regression regimes for subgroups are different” (Steenbergen and Jones 2002: 220). This removes the ability to explain permanent differences between countries, which is precisely what this paper aims to do. By including subgroup level predictors one can also show predictors for subgroups, but these models assume that these variables accounts for the entire variation in the subgroup because they does not have subgroup error terms. “This is a very strong assumption that will usually prove to be false” (Steenbergen and Jones 2002: 221).

Multilevel models can therefore better explain which stable political and societal factors influences fiscal policy than other quantitative methods.

Multilevel models also handle missing data well. The calculations are not biased if some groups enter the analysis later than other or if some countries have missing data for some years (Hox 2002 ; Luke 2004: 63-64) This is a great advantage in this paper as the focus is only on electoral democracies and it makes it possible to exclude the countries in the years when they are judged as undemocratic. It is for instance possible to include many of the former Warsaw pact countries that have been excluded in most previous research within the field. They became democratic long after 1980, which is the first year covered in the study. The exclusion of these countries in the years they were not deemed electoral democracies does not cause problems for the statistical calculations. Likewise, it is not problematic that there are missing data on the dependent variable.

Furthermore, the possibility of including both time varying and time constant variables means that one can model both the average group development and the development of individuals [or countries]” (Hox 2002: 93). This makes the model able to find causal relations that might have been overlooked in research using other statistical methods.

### **3.4 The longitudinal multilevel model**

The multilevel model has both statistical and substantive advantages that make it especially well suited to answer the research question in this paper. However, before operationalizing the variables it is necessary to quickly specify the underlying functioning of longitudinal multilevel models to get a proper understanding of how it works.

All two-level models contain two parts, one for each level. For longitudinal models the level-1 model, where the time varying variables are included, is:

$$Y_{it} = \beta_{0i} + \beta_{1i} T_{it} + \beta_{2i} X_{it} + \epsilon_{it}$$

Here  $Y_{it}$  is the dependent variable, the value for country  $i$  at time  $t$ , in this case the level of net deficits.  $\beta$  are the coefficients on level-1.  $\beta_{0i}$  is the initial score for country  $i$  on the dependent variable, in other words the predicted level of deficits when all explanatory variables have the value zero.  $T$  is a time variable that indicates the time point of each unit. In this analysis this is a variable that rises with one each year. It has the value zero in the mid-year, 1993, the value

-13 in 1980 and +13 in 2006.  $\beta_{1i}$  is the rate of change for country  $i$ .  $X_{it}$  is a time varying covariate, or in other words: a variable with different values over time. This can for example be the number of parties in government or a dummy for whether there is an election that year or not. The variables with constant values for all time points in each country are the level-2-variables, which will be explained further below.  $\varepsilon_{it}$  is the random error at level-1 which is made up of the unexplained variance that is not constant between the countries. This is assumed to be normally distributed with a mean of 0 and a constant variance of  $\sigma^2$  (Hox 2002 ; Raudenbush and Bryk 2002 ; Luke 2008).

The level two part of the model is sometimes called the inter-individual part of the model because it includes permanent differences between the persons or countries that are studied. The level two equations are denoted in the following ways:

$$\beta_{0i} = \gamma_{00} + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

$$\beta_{2i} = \gamma_{20} + u_{2i}$$

The initial score on the dependent variable for country  $i$  is  $\beta_{0i}$ . It is predicted by the grand mean of all the individual intercepts,  $\gamma_{00}$ , plus the variability of the individual intercepts around the grand mean,  $u_{0i}$ . In this study that is the grand mean of net government debt and the deviance from that mean. Similarly, the slopes for one country,  $\beta_{1i}$ , is predicted by the grand mean of country slopes,  $\gamma_{10}$ , and the variability of the individual slopes around that mean,  $u_{1i}$ . This is the average change in surpluses and the countries' variance around this average. The  $i$  subscript indicate that each country is allowed to have its own growth curve. The countries deficit levels can therefore change at different rates and the reasons for these differences can be found. Finally,  $\beta_{2i}$  makes it possible to explore the difference in the effect of the explanatory variables between the countries included in the analysis.  $\gamma_{10}$  is the average effect of the variable, while  $u_{2i}$  is the deviance from that average effect. This can for instance be the average effect of political instability and how the countries deviate from this average. Again the  $i$  indicates that the effect of the variable on the deficit levels can be different in the different countries and the reason for these differences can be found. This makes it possible to explain the reasons for why one model has different effects in different countries (Luke 2008: 548-555).

The combined model is therefore:

$$Y_{it} = [\gamma_{00} + \gamma_{10}T_{it} + \gamma_{20}X_{it}] + [u_{0i} + u_{1i}T_{it} + u_{2i}X_{it} + \varepsilon_{it}]$$

The first half of the equation is the fixed part of the model while the last half is the random part. The random effects are similar to error terms and multilevel models thereby have error terms at each level in addition to the traditional individual error term,  $\varepsilon_{it}$  (Luke 2004: 11).

### **3.5 Maximum likelihood estimation**

The most common estimation procedure in multilevel modeling is maximum likelihood (ML) (Hox 2002 ; Luke 2008). “[T]his type of estimation works by maximizing a likelihood function that assesses the joint probability of simultaneously observing all the sample data, assuming a certain set of fixed and random effects” (Luke 2008: 555). There are more ways of calculating the estimations, but maximum likelihood has been found to produce reliable results. When the assumptions are fulfilled maximum likelihood estimation “is consistent and asymptotically efficient” (Steenbergen and Jones 2002: 225). Furthermore, when you have large samples maximum likelihood estimations usually remain: “robust against mild violations of the assumptions, such as having non-normal errors” (Hox 2002: 37-38). This analysis has an N of over 1000 and should therefore be relatively reliable. In addition ML performs well with unbalanced designs, and its fixed effect estimates are consistent (Steenbergen and Jones 2002: 225). This is a great advantage in this study because the data is quite unbalanced. There are significant gaps in the data both because countries have been dropped in years when they are not considered electoral democracies and because there are missing data for some time points in the dependent variable.

There are two ways of producing the likelihood function in maximum likelihood estimation: full maximum likelihood (FML), where both the regression coefficients and the variance components are included in the likelihood function, and restricted maximum likelihood (RML), where only the variance components are included in the likelihood function and the regression coefficients are calculated separately. FML often has more bias in its calculation of the variance components than RML. However, the differences in results produced are usually very small. FML is therefore the most widely used method as it has two other advantages over RML estimation. Firstly, FML is generally easier to compute. Secondly, you can compare how two models differ, while with RML you can only compare how the random parts of the

model differs (Hox 2002: 38). Luke (2004: 28) therefore advises the use of FML when the two methods produce similar results. In this analysis the differences between the results using the two methods is not very large and FML is therefore utilized.

### **3.6 HLM**

The statistical model used for the analyses in this paper is HLM (hierarchical linear modeling). This program was developed to handle multilevel models, both when times are nested within units and when smaller units are nested within larger ones. It is therefore exceptionally well suited to test multilevel hypotheses (Raudenbush et al. 2004).

### **3.7 Preconditions**

Some preconditions have to be fulfilled if the results of longitudinal multilevel models are to be reliable. In this section it will be examined how well these preconditions are fulfilled. First it will be discussed whether the models are normally distributed, then whether there are problems of heteroskedastisitet or autocorrelation and finally whether the relationship is linear.

#### **3.7.1 Non-normal distribution of errors**

Non-normal distribution of errors on level-1 can “adversely influence the estimated standard errors for the estimates of the fixed effects and inferential statistics” (Raudenbush et al. 2004: 38). It can in other words introduce bias into the confidence intervals which can affect the computation of significance levels and make the researcher dismiss a hypothesis that is correct or confirm a hypothesis that is incorrect. The normal distribution of the level-1 errors can be visually inspected. This graph seems to indicate that the residuals are close to normally distributed with some outliers. Removing these outliers from the analysis does not drastically alter the results however. It is therefore concluded that non-normality of the errors on level-1 does not lead to mistakes in deeming variables significant or not significant.

Non normal errors can also be problematic on the second level of analysis where the time-constant features of the countries are tested.

“Estimation of the fixed effects will not be biased by a failure of the normality assumption at level 2. However if the level-2 random effects have heavy tails, hypothesis tests and confidence intervals based in normality may be sensitive to outliers. A failure of the normality assumption will affect the validity of the

confidence intervals and hypothesis tests for the fixed effects” (Raudenbush and Bryk 2002: 274).

The level-2 outcomes are not directly observed and this makes testing of this assumption harder, but *the Mahalanobis distance measure* can “help in assessing the degree of departure of the random effect from normality and allows detection of outliers” (Raudenbush and Bryk 2002: 274). “If the normality assumption is true, then the Mahalanobis distances should be distributed approximately  $\chi^2_{(v)}$ ”. Running a plot of the Mahalanobis distance against the expected values show the level-2 random effects are close to normal, but also that Botswana is an outlier. Removing Botswana from the analysis only leads to minimal changes in the results and these are commented on in the analysis chapter.

### **3.7.2 Heteroscedasticity**

Homo- and heteroscedasticity: “refer to the correspondence of the *spread* of residuals with the independent variables. If the residuals have a constant variance, regardless of the value of the independent variables, we call them *homoscedastic*; but if their variance is variable, we call them *heteroscedastic*” (Pennings, Keman and Kleinnijenhuis 2006: 161). In other words, heteroscedasticity occurs when the error terms do not vary randomly but correlates with the independent variables and this makes the results of the analysis less reliable. It often arises when the independent variables are related to each other. This could be a problem in this paper as some of the independent variables, e.g. the number of parties in cabinet and parliament probably has some relation to each other (Pennings, Keman and Kleinnijenhuis 2006: 161-162; Wooldridge 2009: 52-53).

HLM can compensate for heteroscedasticity (Yeh et al. 2007: 198). The program produces robust standard errors which are: “less dependent on the assumption of normality [of the residuals], at the cost of sacrificing some statistical power” (Hox 2002: 201). HLM therefore provides consistent “consistence intervals and hypothesis tests even if the HLM assumptions about the distribution and covariance structure of random effects are incorrect” (Raudenbush and Bryk 2002: 278) Because there is a possibility of heteroscedasticity in the model the robust standard errors are used in the calculations and are the only ones which are reported in the analysis. Robust standard errors only function properly when the number of level-2 units are at least moderately high (Raudenbush and Bryk 2002: 276). It is difficult to say precisely what a high enough number of level-2 units is, but the 46 included in this analysis is not very

low and the robust standard errors are therefore assumed to prevent possible problems with heteroscedasticity.

### **3.7.3 Autocorrelation**

Problems of autocorrelation can for instance arise if the unexplained variance is positive at several consecutive time points (Wooldridge 2009: 350). This can lead to either over- or underestimation of “the true variability of the coefficient estimates” (Petersen 2009: 435). HLM does account for correlation within the groups over time (Short et al. 2006). There are nevertheless some signs of autocorrelation. These can be ameliorated by introducing a lagged version of the dependent variable. This does not alter the results drastically besides making the effect of the stability and growth pact insignificant. This is not very surprising as this variable is close to constant and is therefore unlikely to be the cause of changes from one year to the next, besides the year they join. As these permanent features are one of the main interests in the study this variable was not included in the final analysis, but it is unlikely that autocorrelation has significantly alter the results.

### **3.7.4 Non-linear relationships**

The focus of this study is how deficit levels have differed between democratic countries, and how various political factors affect those deficits. These explanatory variables might affect the deficit levels in a non-linear way. As there are 26 time points in the analysis it is possible to include complex non-linear predictors (Singer and Willett 2003: 217). To test whether the change over time is linear the residuals can be plotted against the dependent variable (Sarakisian 2007). This plot does not seem to indicate non-linear relationships however and the value which indicates change over time is therefore included with a rise of one for each year.

## 4 OPERATIONALIZATION OF THE VARIABLES

In this chapter the operationalization of the variables will be presented. After presenting the dependent variable and the countries included in the study the economic, political and societal variables are presented.

### 4.1 *Net government deficits/surpluses*

There has been some controversy over the way government deficits have been defined in previous research. Volkerink and de Haan (2001: 222) criticized previous research (for instance Roubini and Sachs 1989a ; 1989b) for analyzing general government deficits while the theoretical focus is on central government deficits. In some countries there is a clear separation between the fiscal policy at the national and sub-national level and it can therefore not be expected that explanatory variables at the national level explains fiscal policy for both national and sub-national political institutions. I therefore use data for central government deficits. By denoting the value as a percentage of GDP the data becomes comparable between all the countries despite vast differences in the size and form of their economies.

IMF's data for "central government deficit/surplus" (IMF 1991 ; 1994 ; 2007) was used as the basis for the dependent variable. The variable is created by subtracting central government expenditure from central government revenue for each year and denotes the result as a percentage of the country's GDP. This data has the advantage of covering countries outside of the OECD, which have been the focus of most previous studies and of covering a longer time-period than most other data. For the OECD countries data from OECD.stat (2010) is used for the period between 1995 and 2006 because the IMF data have big gaps in their data for these countries in this period. It would be preferable to only have data from one source, but they should be comparable as both are calculated with the same method<sup>1</sup>. This analysis is therefore wider in both the number of countries and years covered than most previous research within this field. The analyses cover 47 electoral democracies in the period between 1980 and 2006, and the countries are dropped from the study in the years when they are not considered to be democratic enough. In addition to the inclusion of all the OECD countries electoral democracies in Central and Eastern Europe, Africa, Asia and North America are studied.

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<sup>1</sup> The UN System of National Accounts 1993: <http://unstats.un.org/unsd/sna1993/introduction.asp>. A visual inspection also showed that the models matched in the years when they overlapped.

## **4.2 Electoral democracies**

An electoral democracy is defined as a country with a score of three, two or one on Freedom Houses “political rights” index where 1 signifies most free and 7 signifies least free. This index focuses on whether citizens have the possibility to choose freely and run in elections and whether the candidates voted into political office has a decisive impact on policy formulation. The focus is on the institutional aspects of democracies. Having a satisfactory score on this variable does not necessarily mean that the countries are liberal democracies with all the civil liberties that entail. Followingly, some countries are included in the study in years when they are only considered partly free by Freedom House. The countries are dropped in all years when they are not deemed electoral democracies<sup>2</sup> and this gives an N of 1074.

## **4.3 Economic explanations**

In this part it will be shown how the economic explanations were operationalized. These were: the growth rate of the economy, the openness of the economy and the inflation level.

### **4.3.1 Growth rate of the economy**

I use the real GDP growth rate<sup>3</sup> as a measure of the growth rate of the economy. Unemployment levels could also have been used to measure the phenomenon, but it is hard finding sources where unemployment figures is available for all the years covered in the research. The GDP growth is also the measure used in most previous research and therefore well suited to control whether previous findings are reliable.

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<sup>2</sup> The countries covered in the study are (if they have not been electoral democracies throughout the study the years included are in parenthesis): Australia, Austria, the Bahamas, Bangladesh (1980-81, 1991-2001 and 2005-2006), Belgium, Botswana, Bulgaria (1990-2006), Canada, Cyprus, the Czech Republic (1993-2006), Denmark, Estonia (1991-2006), Finland, France, Germany (West Germany until 1990), Greece, Hungary (1990-2006), Iceland, India (1980-1992 and 1996-2006), Ireland, Israel, Italy, Jamaica, Japan, South Korea (1988-2006), Latvia (1991-2006), Lithuania (1991-2006), Luxembourg, Malta, Mexico (1980-84, 1988 and 1997-2006), Namibia (1990-2006), the Netherlands, New Zealand, Norway, Poland (1990-2006), Portugal, Romania (1996-2006), Slovakia (1993-2006), Slovenia (1991-2006), Spain, Sri Lanka (1980-1988 and 1996-2006), Sweden, Switzerland, Turkey (1984-1992 and 2002-06), the United Kingdom and the United States.

<sup>3</sup> This variable is taken from USDA (2009) which again is based on data from: the World Bank World Development Indicators, the International Financial Statistics of the IMF, Global Insight, Oxford Economic Forecasting and the Economic Research Service.

### **4.3.2 Openness of the economy**

Imports plus exports as a proportion of the GDP in constant 1990 prices is used to measure the openness of the economy<sup>4</sup>. No country has the value zero and the lowest value is 14.43, for the USA in 1982. 100 was therefore withdrawn from each value to get a natural zero value. This operationalization was chosen over other possible measures of openness of the economy, such as capital flow and foreign direct investment because it has been the most widely used in the past.

### **4.3.3 Inflation**

Inflation is operationalized as the annual percentage change in the GDP deflator<sup>5</sup>. The GDP deflator shows the difference between the nominal and real GDP (Burtini 2009), and is “the most general measure of overall price change” (WBSM 2010). It includes all the sections of the economy in the calculations and is therefore better at including new goods and services than the consumer price index.

This variable has some extremely high values however. The mean is 14, but the standard deviation is 62 and the highest value is 949 (for Bulgaria in 1997). These extreme outliers have a disproportionate influence on the effects of the variable in the analysis. The highest values were therefore recoded to make the variable more normally distributed (although it still has a tail at the right side). More precisely, the units that originally had a value of 20 or lower kept their original values, the values between 20 and 25 were given the value 20, the values between 25 and 30 the value 21, then each ten percentage increase in inflation meant an increase by one in the inflation variable up to the value 100. Then each increase by a hundred corresponds with an increase in one in the recoded variable, and all values above 500 are given the value 35. Most units then retain their original value. This new variable is therefore meant to show the difference between different levels of inflation, but at the same time not let the few outliers be the only determinant of the effect. It does however make it harder to interpret the coefficient.

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<sup>4</sup>These data are taken from the “Quality of Government” dataset (<http://www.qog.pol.gu.se/>), the variable used was `unna_otco` which is based on data from the UN statistical division

<sup>5</sup> Inflation data is taken from WBWDI (2010).

## **4.4 Political explanations**

In this part it will be shown how the political explanations were operationalized. These were: the number of parties involved in governing, the majority status of the government, the government's ideology, the electoral system, the form of executive (presidential or parliamentary), the effect of the stability and growth pact and the European Monetary Fund, the effect of elections and the quality of government.

### **4.4.1 Number of parties**

Previous research has categorized the number of parties in government in several ways. Roubini and Sachs (1989a ; 1989b), who were the first to look at what effect it might have on fiscal policy, categorized government types into four categories as the basis of their exploration of how political factor influenced fiscal policy: (1) one-party majority, (2) two-party majority, (3) three or more parties majority and (4) minority governments. This categorization is however unnecessarily imprecise both because it is possible to create a more fine grained categorization of the number of parties in cabinet and because it treats the two theoretically distinct phenomenon of the number of parties in government and the governments majority status as one. The second issue will be further commented on in the next section on minority and majority governments.

Coalition governments vary greatly, both in the number of parties participating and in the relative strength of these parties. A two-party government where one of the parties dominates should be expected to perform more like a one-party government than a government where there are two equal partners as the larger party probably will not have to compromise its program as much. Many Japanese governments have for instance formally been coalition governments as the Liberal Democratic Party (LDP) has been joined by one other party which has controlled one or two ministries. The LDP's dominance has however been overwhelming and a measurement of the number of parties in government should consequentially be able to distinguish these cabinets from e.g. the "grand coalitions" in Germany that have included two parties that are approximately equally strong. To categorize parliamentary countries a variable was created based on Laakso and Taagerpera's (1979) measure of effective number of parties. This should be able to indicate both the number of parties and their relative strength. Semi-presidential and presidential countries are somewhat more difficult to categorize in this way and how it is done is showed below. The variable was calculated from this formula:

$$ENCP = \frac{1}{\sum (p_1 + p_2 + \dots + p_i)^2}$$

ENCP is the effective number of cabinet parties and  $p_i$  is the  $i$ th party's fraction of ministers in government<sup>6</sup>. The proportion of ministers works as a proxy for the relative power of each party and should therefore indicate whether decisions has to be made by compromise among equal partners, which is claimed by many to increase the chances of deficits, or whether one (or more) party (or parties) dominate.

All governments in presidential systems are considered as one-party governments even though they at times can have members from a different party than the one the president belongs to. This makes it difficult to categorize semi-presidential systems, and these difficulties are addressed below. Parliamentary and presidential cabinets function quite differently:

“Parliamentary executives are collegial cabinets, whereas presidential executives are one-person executives; in presidential systems, executive power is concentrated in the president, and his or her cabinet consists of advisers to the president instead of more or less coequal participants” (Lijphart 1999: 105).

This means that even though it no doubt matters what kind of advisers the president has, having ministers from different parties does not mean that there is a division of power between these parties in the same way as it does in parliamentary systems. The ultimate decision making power is only held by the president and his party can be expected to both

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<sup>6</sup> These data are taken from: Woldendorp, Keman and Budge (2000), Bille (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Carty (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), De Winter and Dumont (2006), Delgado and Nieto (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Diskin (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Dumont and Hirsch (2003), Dumont and Poirier (2004 ; 2005 ; 2006 ; 2007), Dumont and Winter (2002), Fallend (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Faustmann and Kaymak (2007), Fenech (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Fink-Hafner (2003 ; 2004 ; 2005 ; 2006 ; 2007), Fisher (2001 ; 2002 ; 2003 ; 2004), Fisher (2006 ; 2007), Fisher and Smith (2005), Hardarson and Kristinnsson (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Hardmeier (2001 ; 2002 ; 2003 ; 2004), Ignazi (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Ikstens (2002 ; 2003 ; 2004 ; 2005 ; 2007), Ilonszki and Kurtán (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Jānis (2006), Jasiewicz and Jasiewicz-Betkiewicz (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Kato (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006), Katz (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Ker-Lindsay and Webb (2004 ; 2005 ; 2006), Krupavicius (2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Linek (2005 ; 2006 ; 2007), Lucardie (2001 ; 2003 ; 2007), Lucardie and Voerman (2002 ; 2004 ; 2005 ; 2006), Lukáš (2002 ; 2003), Lukáš and Mansfeldová (2004), Milic (2005 ; 2006), O'Malley (2006 ; 2007), O'Malley and Marsh (2001 ; 2002 ; 2003 ; 2004 ; 2005), Pettai (2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Poguntke (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Rihoux et al. (2005), Rihoux et al. (2003 ; 2004), Rihoux, Dumont and Dandoy (2001), Rihoux et al. (2002), Sidler (2007), Spirova (2007), Stan and Zaharia (2007), Sundberg (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Učeň (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006), Vowles (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Widfeldt (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Ysmal (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2006 ; 2007), Aalberg (2001 ; 2002 ; 2003 ; 2004 ; 2005 ; 2007), Aalberg and Brekken (2006)

reap the awards of popular policies and be punished for unpopular ones. Followingly, the incentives that have been claimed to produce higher debt in multiparty cabinets, such as pressures from different social groups that form the core-constituencies of the participating parties, function differently in presidential systems. The three presidential systems covered in the analysis, Cyprus, Mexico and the USA, are therefore coded as having one party in government throughout the period covered.

Most other countries covered in the study are clearly parliamentary, with a ceremonial king, queen or president and power vested in a government elected by parliament. There are however some semi-presidential countries in the sample which have similarities to both presidential and parliamentarian systems in the way they function and are therefore harder to place. Some countries are formally semi-presidential, but with presidents that are little more than figureheads or at least much less powerful than the prime-minister. In these countries “political practice is parliamentary” (Duverger 1980: 167), and they are therefore treated as any other parliamentary country. In this study Austria, Botswana<sup>7</sup>, Bulgaria, Iceland, Ireland, Lithuania, Slovakia and Slovenia falls in this group (Lijphart 1999: 121-122; Siaroff 2003 ; Elgie 2005: 105-107). They are therefore treated as parliamentary in the analysis<sup>8</sup>. Four countries have gone from systems where the president has some co-decision powers over important legislation to being largely ceremonial in the period covered by the study: Finland (where presidential powers were first reduced in 1994 and then reduced further in 2000), Poland (in 1997) and Portugal (in 1982) (Siaroff 2003: 299-300). I treat these countries as parliamentary for the entire period both for simplicity and because presidential powers was strongest in foreign policy which has a smaller impact on fiscal policy than domestic policy. On the other end of the scale are semi-presidential countries where the presidency is clearly the dominant political institution. Namibia, South Korea and Sri Lanka fall into this category. In these countries the prime minister and the government are not accountable to the parliament and executive power is therefore concentrated in the presidency (Siaroff 2003 ; Elgie 2005: 102-105). These countries are therefore treated as presidential and denoted as having one government party through the entire period covered.

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<sup>7</sup> In Botswana the head of government is also head of state and holds the title president. His government needs the support of parliament however and the political system functions like parliamentary systems (Lijphart 1999: 117).

<sup>8</sup> Countries where the president does not have significant powers and is not directly elected, such as Germany, are also treated as parliamentary.

The most difficult countries to categorize are France and Romania. France and Romania have independently elected presidents with significant powers, but also an influential government that needs the support of parliament. In France's case Duverger (1980) therefore claimed that the system would function as a presidential systems when the same party held the presidency and had a majority in parliament and as a parliamentary system under cohabitation when the presidents party did not have a majority in parliament. I nonetheless treat these countries as parliamentary for the entire period because the possibility of a threat of no-confidence makes it important for the government to have a majority in parliament. The ability to threaten no-confidence should give all participating parties more power than they have in presidential systems. There the ministers just function as advisers to the president, and support of their party is not vital for the survival of the government.

Finally, Switzerland is in some ways neither parliamentary nor presidential. The system functioning is however similar to that of parliamentary systems (Siaroff 2003: 306) and it is consequentially treated as parliamentary.

It was also tested whether the effective number of parties in parliament (ENPP)<sup>9</sup> influences fiscal policy. This makes it possible to see if it affects fiscal policy whether the government has to work with many or few parties in government. The variable was calculated based on the same formula as the effective number of cabinet parties, but instead of using the proportion of cabinet ministers belonging to each party as the basis for the calculations the fractions of seats in parliament controlled by each party was used. This measure is preferable to just counting the number of parties in parliament because it focuses on the parties that are big enough to influence policy, and limits the effect of small parties which are likely to have a more limited effect on policy formation.

Democracies can necessarily not have less than one party in government or parliament (except during technocratic transitional governments). This makes the value zero meaningless, and it is consequentially harder to interpret the results of the analysis. To compensate for this one was subtracted from each value of ENCP and ENPP. The countries with one effective party in government got the value zero, countries with 2.5 effective parties 1.5 etc. This does not affect the results or the significance levels of the variables.

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<sup>9</sup> Data for ENPP are taken from Gallagher and Mitchell (2005), and calculated based on data from IPU (2010) for the countries and years not covered by them.

#### **4.4.2 Minority or majority government**

As mentioned above, some previous studies have incorporated the governments' majority status and the number of participating parties in cabinet in the same variable. This is misleading both because it treats two theoretically distinct concepts as one and because it might prevent the researcher from identifying which phenomenon that determines the value of the dependent variable. According to Strøm (1990) minority governments is a different phenomenon than coalition governments, arise under different circumstances and have different consequences. He furthermore claims that it might be easier for them to push through a coherent program than for majority coalition governments because the governing party or parties are free to create different legislative majority at different times. This might make them able to lead a more stringent fiscal policy and reduce the deficits. Finally, by registering the effective number of parties and the majority status of the government in two different variables it is possible to distinguish between one-party and multiparty minority governments. This is not an uncommon phenomenon. In the data used in this analysis 26 percent of the units had minority governments and 72 percent of these minority governments had more than one participating party.

The status of the government vis-à-vis parliament is measured as the proportion of seats the government party or parties has in the legislature<sup>10</sup>. All parties with at least one minister in cabinet were considered government members. This might be slightly misleading as some government might have formal support agreements with parties without ministries. This would offer the government almost certain parliamentary majorities and thereby make it function very much like a majority government (Strøm 1990: 61-62). It is however difficult to determine which parties fall into this category as there is a blurry line between this phenomenon and the natural operational behavior where minority governments cooperate more with some ideologically familiar parties than with other parties. In countries that are considered presidential the proportion of parliamentarians belonging to the presidential party was measured. This is consistent with the operationalization of the number of parties in government in presidential systems.

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<sup>10</sup> Data on the composition of parliaments is from IPU (2010)

The influence of the government's majority status on fiscal policy is tested for using two variables. The first variable used has values between  $-0.5$  and  $0.5$  where  $-0.5$  signifies that the governing parties have no seats in parliament,  $0.5$  that all the representatives in parliament belong to the governing parties. Zero indicates that they control exactly half the seats in parliament. This variable was used because it was expected to be easier for governments to get their agenda through the bigger their majority is, and harder the larger their minority. The second variable was used to find out whether the main difference is between majority and minority status and the size of those minorities and majorities is less influential on fiscal policy. In this variable all governments with 50 percent or less of the parliamentarians is given the value zero and all governments with 50 percent plus one or more is given the value one. It was afterwards tested which model explained the dependent variable best to find out which variable would be kept in the final explanatory model.

#### **4.4.3 Ideology of government**

The ideology of the government is measured in two variables based on three categorizations of parties: left, centre and right. Categorizing parties into ideologies across time and in different countries is complicated and demands a certain degree of personal judgment. Categorization was primarily based the parties' affiliation to an international party group. Most major European parties are members of pan-European parties in the European Parliament. The parties that belong to the Party of European Socialists or Party of the European Left were coded as left-wing and parties that are members of the European Peoples Party or parties further to the right, such as Union for a Europe of the Nations, as right-wing. Liberals and Greens were considered centre-parties and neither categorized as right- or left-wing. Non-European parties also often belong to international party-groups such as the conservative International Democrat Union and the social democratic Socialist International and were following coded based on these affiliations. These affiliations might in some cases say more about the history of the parties than their current views, but in most cases they indicate where they stand in the political spectrum, at least within their national political systems. Parties without international affiliations were placed in the ideological group that seemed most in line with their policy views as judged by the researcher. In coalition governments the value on the variable was based on each party's fraction of ministers. Two variables were created, one for the proportion of ministers belonging to left-wing or centre parties and one for the proportion belonging to right-wing or centre parties. The centre-left

variable varies between zero, if no ministers belong to left-wing or centre parties, and one, if all the ministers belong to these parties. The opposite is the case for the centre-right variable. These variables were entered in separate models to see if there was something about either right-wing or left-wing parties that made them take up higher debts than other types of parties when they were in government.

#### **4.4.4 Fiscal illusions**

To test whether governments increase spending without increasing taxes in election years to increase their support among voters a dummy-variable was made that has the value one in election years and the value zero in non-election years<sup>11</sup>.

#### **4.4.5 EU stability and growth pact and the European Monetary Union**

A dummy variable was introduced for membership in the stability and growth pact (SGP), which gives the countries the value one for the years they were members and zero for the years they were not. All countries that are members of the European Monetary Union (EMU) are registered as members of the SGP from 1999, which is the year the treaty pact entered into force, or the year they joined the SGP until the end of the dataset.

Debrun et al. (2008) does however find that the countries were more affected by the fiscal stringency required for entering the EMU than by the SGP which was supposed to prevent large deficits after they were allowed as members. A different variable is therefore created for the accession period to the European Monetary Union. This has the value one during this period and zero afterwards. Countries that were members of the EU in 1992, except the United Kingdom and Denmark, are defined as in the accession period from 1992, when the EMU accession criteria was stipulated as part of the Maastricht treaty, until the SGP entered into force in 1999. Countries that joined the EU later are included in this variable from the year they joined until they joined the euro or until the end of the dataset (Ayuso-i-Casals et al. 2007: 7-8). Denmark and the UK are excluded from this variable because they opted out of this part of the Maastricht Treaty. Greece is included in this variable until 2000 because they were only accepted as euro and SGP-members in 2001. Sweden did sign this part of the treaty, but did not join the euro when the other countries did. It is however obliged to try to join the monetary union and is formally not a member because it has not met the entry criteria, even

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<sup>11</sup>Data on elections is taken from IPU (2010).

though the real reason is probably opposition from the electorate (Holden 2009). It is nevertheless coded as being in the lead-up to membership from 1992 until the end of the dataset as that is the country's formal status and it is likely that the political elites tries not to diverge to far from the entry demands as they are in general very favorable to EMU-membership (Lindahl and Naurin 2005).

To control for the claim that the stability and growth pact has more of an influence on small than large members a measure of country size was needed. This measure was based on the population size<sup>12</sup>, but since there are some extreme outliers (India is more than three times as large as the second largest country, the USA) the natural logarithm of the population number in 100,000's was used. These values are thereby relatively normally distributed and the outliers do not influence the results unproportionally. As the result needed to be introduced at level-2 the mean was the logarithms for each country was used. Finally the lowest value, 12.48, was withdrawn from each value to get a minimum of zero and an easily interpretable intercept.

#### **4.4.6 Geography of representation**

To test for whether countries with smaller constituencies have higher deficits than countries with multi-member constituencies two variables were created. The first variable's values were calculated from this equation:

$$N = \frac{\text{parliamentarians}}{\text{constituencies}} - 1$$

The value therefore indicates the average number of parliamentarians elected in each constituency<sup>13</sup>. As all constituencies will at least elect one member to the legislature one was subtracted from each value to get a meaningful base point. Countries with single member constituencies will therefore get the value one and countries with one constituency for the whole country and 150 parliamentary seats will get the value 149. The size of constituencies in each country varies to a very limited degree and the variable was therefore calculated as a constant based on the last election before 2006, which is the last year covered in the study. It is therefore included in the level-2 of the two-level model.

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<sup>12</sup> Population size data are taken from the "Quality of government" dataset (<http://www.qog.pol.gu.se/>) and based on data from the UN statistical divisions national accounts.

<sup>13</sup> Data on constituencies and the size of the parliaments is taken from IPU (2010).

The same phenomenon was also tested using a dummy for majoritarian electoral systems. This is because the important difference might be between proportional and majoritarian or plurality electoral systems and it might therefore be unreasonable that there is a major difference between proportional systems with large and small electoral districts. Most countries included are clearly either proportional or plurality/majority systems which were considered as majoritarian electoral systems.

Some mixed electoral systems with similarities to both of these major groups are also included in the analysis however and these are harder to categorize. Some authors have just seen these systems as a subgroup of proportional systems (Lakeman and Lambert 1955 ; Reynolds and Reilly 1997). This is an unnecessarily imprecise generalization however as there are great differences between mixed systems and some are closest to proportional systems while other are more alike majoritarian or plurality systems. The evaluation of where to put individual countries therefore has to be made on a case-to case basis.

The countries included in the study that has legislators elected by some combination of proportional and majoritarian or plurality methods are: Finland, Germany, Hungary, Italy, Japan, South-Korea, Lithuania, Mexico, New Zealand, Romania and Switzerland (IPU 2010). Finland and Switzerland can clearly be designated as proportional and South-Korea as majoritarian as 15 percent or less of deputies were elected under the alternative rules in these countries (Massicotte and Blais 1999: 345, 351). Germany, Italy, Mexico and New Zealand are what Massicotte and Blais (1999: 353) calls corrective mixed systems meaning that the “PR seats are distributed so as to correct the distortions created by plurality or majority rule”. These systems are therefore expected to create more proportional results than what is expected in strict majoritarian systems, but they are nevertheless systems where most legislators are elected in one-man constituencies. It was exactly this characteristic that was expected to make fiscal deficits higher in majoritarian than in proportional systems because politicians overestimated the benefits to their constituencies ahead of the benefits to the country as a whole (Alesina and Perotti 1995 ; Persson and Tabellini 1999). These countries are therefore coded as majoritarian. This is a bit problematic for Italy which adopted this system in 1993 and had a proportional system before that, but they are nevertheless placed in this group because they had a mixed system for the greatest portion of the time covered. In Japan most deputies are elected under majoritarian rules and hence the country is coded as such. In Hungary a majority is elected under PR and that country is therefore coded as

proportional. Lithuania is very hard to code as it has an equal number of parliamentarians elected under proportional and majoritarian rules. A choice had to be made however and it was coded as proportional since mixed systems usually have been seen as having more in common with proportional than majoritarian systems (Massicotte and Blais 1999).

#### **4.4.7 Presidential vs. parliamentary systems**

Presidential regimes are controlled for using a dummy that has the value one in presidential countries and the value zero in parliamentary countries. For semi-presidential countries that have some of the characteristics of both of these systems the same categorization argued for in the categorization of effective number of cabinet parties is used (see part 4.4.1 Number of parties). Cyprus, Mexico, Namibia, South Korea, Sri Lanka and the USA are therefore considered presidential, while all other countries included in the analysis are coded as parliamentary. This variable is constant over time for the countries.

#### **4.4.8 Quality of Government**

To measure the quality of government a variable created by the Quality of Government institute<sup>14</sup> and based on data from the International Country Risk Guide<sup>15</sup> was used. The basis for their definition of quality of government is taken from Kaufman Kraay and Zoido-Lebatón (1999) who defines it as “the traditions and institutions by which authority in a country is exercised”. This concept includes: “(1) the process by which governments are selected, monitored and replaced, (2) the capacity of governments to effectively formulate and implement sound policies, and (3) the respect of citizens and the state for the institutions that govern economic and social interactions among them” (Kaufmann, Kraay and Zoido-Lobatón 1999: 1). This makes the concept similar to, but distinct from, measures of democratic quality (Holmberg, Rothstein and Nasiritousi 2008). All the countries included in the analysis have a minimum of democratic institutions and how democratic the countries are is therefore less interesting as an explanatory variable.

The variable is created from measures of (1) corruption levels, (2) the strength of law and order and (3) the bureaucracy quality. The corruption variable includes evaluations of low scale corruption in civil society, but is primarily meant to measure: “actual or potential

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<sup>14</sup> [www.qog.pol.gu.se](http://www.qog.pol.gu.se)

<sup>15</sup> <http://www.prsgroup.com/ICRG.aspx>

corruption in the form of excessive patronage, nepotism, job reservations, ‘favor-for-favors’, secret party funding, and suspiciously close ties between politics and business” (Teorell et al. 2009b: 50). The law and order part of the law and order variable are assessed separately. “The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law” (Teorell et al. 2009b: 51). Bureaucracies are seen as institutions that can cushion the political changes at the top, and countries are therefore considered to have high bureaucracy quality when: “the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services” (Teorell et al. 2009b: 51). Corruption and “Law and order” each account for 3/8 of the combined variable and bureaucracy quality for the last 2/8. The variable is measured between one and zero where one indicates the highest possible government quality.

Again countries are given their average value for the years when they were judged as electoral democracies as their constant value on this variable. For most countries variation over time is quite limited and the results are usually not very different from their time varying value. The original variable only covers the years between 1984 and 2006 and the calculations are therefore based on these years. In the study Finland has the highest value at .998 and is therefore judged as having the highest government quality and Bangladesh has the lowest value at .343. Again the variable does not have any real possibility of reaching the value zero and 0.5 was therefore withdrawn from each value to get such values.

## **4.5 Societal explanations**

The current economic and political condition of a country can affect the fiscal policy, but it might be that these affects are modified by more permanent societal factors in society. Several variables that could be expected to have such an influence were therefore included in the level-2 of the model. In this part operationalizations of political instability, economic and social inequality and the proportion the population which is elderly is presented.

### **4.5.1 Political instability**

Political instability is a phenomenon that is difficult to measure quantitatively, and in this analysis the variable must measure both violent and non-violent challenges to the government that might affect the political climate which fiscal policy is made within. The variable used is

therefore based on a count of the number of political assassinations, general strikes, instances of guerrilla warfare, government crisis, riots, revolutions and anti-government demonstrations in each year<sup>16</sup>. Assassinations are defined as politically motivated murders or attempted murders of high government official or politicians; General strikes are defined as politically motivated strikes with more than 1000 participants; Guerrilla warfare is defined as violent activity by independent groups aimed at the overthrow of government; Government crisis' are situations that risk overthrowing the current regime; Riots are violent clashes of more than 100 citizens; revolutions attempted or successful forced changes to the government elite or rebellions for independence from the central government and anti-government demonstrations are peaceful protests against the government with more than 100 participants (Banks 2004). This variable is problematic because it counts anti-government protest and guerrilla warfare as if they were equally damaging to political stability. The alternatives are however not any better. When you are trying to measure both violent and non-violent opposition to the government in the same variable it is very difficult to weight the different components against each other. The variable indicates whether the country has a stable political climate where governments are only challenged through elections and in the legislature or whether they face more constant challenges from outside the parliament.

The number of these instances can be expected to be influenced by the size of the country however. This was controlled for using a measure of population size. This formula was the basis of the countries' values:

$$instability = \frac{instability_i}{\ln(pop100000s)}$$

The number of instances of instability in the country is divided with the natural logarithm of the population in hundred thousands<sup>17</sup>. The variable therefore does not measure the individual instances of protest that might have short term consequences for policy formulation, but the propensity of the society to be unstable. The more unstable the countries are the shorter the perspective of politicians who fear for their survival is expected to be. This creates a variable that varies between zero for the Bahamas and Slovenia and 1.89 for Israel and 1.76 for India. The countries were given constant values throughout the study based on their average in the

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<sup>16</sup> Data are taken from Norris (2009) who based her data on Banks (2004) who has recorded instances mentioned in the New York Times.

<sup>17</sup> Population size data are taken from the "Quality of government" dataset (<http://www.qog.pol.gu.se/>) and based on data from the UN statistical divisions national accounts.

years they were deemed electoral democracies and the variable was included in the level-2 of the analysis.

#### 4.5.2 Economic and social inequality

Another permanent source of instability in a political system can be created by great social or economic differences. The measure of social fractionalization is created by Alesina, Devleeschauwer, Easterly, Kurlat and Wacziarg (2003). The variable reports the racial and linguistic fractionalization in the country and was calculated according to the following formula:

$$Fractionalization_j = 1 - \sum_{i=1}^N s_{ij}^2$$

Here  $s_{ij}$  is group  $i$ 's share of the population in country  $j$ . A country with only one ethnic and linguistic group therefore gets the value one and when one was withdrawn the lowest possible value became zero. In this study the countries values vary between .002 for South Korea and .712 for Canada<sup>18</sup>. By combining ethnic and linguistic characteristics in one variable it is easier to operationalize since these concepts are overlapping many places (Alesina et al. 2003: 159). The ethnic composition of a country changes very slowly and the countries are given constant values. The variable is included in level-2 of the study.

Data for economic inequality are based on the Gini index<sup>19</sup>. Gini levels can in theory vary between zero (if income was equally spread between all the countries inhabitants) and 100 (if one person got all the income in one country). In the study the mean levels for the included countries varies between 24.1 for Sweden and 73.9 for Namibia. The countries are given stable values based on the average of their high-quality observations for the period as defined in "the World Income Inequality Database".

The economic differences for countries vary over time and it could therefore be argued that it would have been better to let the variable vary over time. I choose not do this for two reasons however. One, there is a serious lack of reliable data, and most countries have high quality Gini data for less than half the years covered in the study. Letting the variable vary over time will therefore lead to a loss of data and consequentially weaker predictions. Furthermore, as

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<sup>18</sup> Data on ethnic fractionalization was taken from (Norris 2009) who based her data on (Alesina et al. 2003)

<sup>19</sup> Gini data are taken from Teorell et.al. (2009b) who base their data on UNU-WIDER (2008)

argued above differences in society might not affect the conflict level and political processes instantly, but rather over time by increasing the differences between political choices and making it harder to find coherent compromises. This might again increase the fiscal deficit.

As no country has the value zero, and this is a very unlikely situation to ever arise as it would mean absolute equality of income, 50 were withdrawn from each value. This gives the possibility of reaching the value zero and therefore makes it easier to interpret the intercept.

### **4.5.3 Age distribution of population**

The share of the population over the age 65 is used as a measurement of the share of old people in the population. Data for the variable is taken from the UN's World Population Prospects (UNPD 2009). The variable is constant for the countries over the period. This is both because there is very little variation in the values over time and because they are only published every fifth year. The countries are therefore given their average for the years they are included in the study as their value. Botswana, where 2.7 percent of the population is above 65 has the lowest value on this variable. 2.7 is therefore subtracted from all the values on this value to get zero as the base value and thereby make interpretation easier.

## **5 ANALYSIS**

In this chapter descriptive statistics for the dependent and independent variables is first presented. Afterwards the pre-analysis, which serves as a benchmark for the subsequent analyses, is run. Then the explanatory models are presented. These become increasingly complex and get increasing explanatory power as significant variables are kept and new added. Finally the findings are evaluated against the hypotheses.

### **5.1 Descriptive statistics**

Before the results of the two-level analysis are presented, the variables and countries included in the analysis are explored. First the variance between the countries in their values on the dependent variable, net budget surplus as a percentage of GDP, is presented and then the variance in the other variables is explored

#### **5.1.1 Dependent variable**

As can be seen in table 5-1 there is considerable variation in the mean deficit levels of the countries included in the analysis. They vary from an average deficit of 10.4 percent of GDP in Greece to an average surplus of 8.7 in Botswana, a country with a fiscal policy that has been “prudent in the extreme” (Acemoglu, Johnson and Robinson 2003), and 3.5 in Norway. These two countries become outliers in the analysis and the model can not explain satisfactorily why their surpluses are unusually high. In the analysis it is examined how this affects the results. Most countries included in the study have negative averages and some variation over time around this average.

There is also considerable variation between the countries in the number of years where there is information about net surpluses. This is partly because countries are only included in years when they were deemed electoral democracies and countries that were not stable democracies throughout the period covered are therefore excluded for some years. There is however also lacking data for years when countries fulfilled the democracy criterion. This is especially grave for the developing countries included. One therefore has to be somewhat careful in generalizing the results for developing countries. The analysis is nevertheless broader than most previous research on the topic as it includes several new democracies, especially in Eastern and Central Europe, which have not been included in most previous research.

**Table 5-1:** Net surplus in the countries included in the study in the years 1980-2006

Country	Min	Max	Mean	S.D. <sup>20</sup>	N	Country	Min	Max	Mean	S.D. <sup>20</sup>	N
Australia	-4.1	2.2	-.47	1.90	27	Japan	-5.7	1.7	-2.52	2.33	10
Austria	-6.0	-.8	-3.52	1.68	25	S. Korea	-1.6	5.1	1.13	1.67	18
Bahamas	-1.9	1.8	-4.03	1.62	15	Latvia	-4.2	1.8	-1.50	1.63	13
Bangladesh	-3.2	2.5	-.44	2.85	3	Lithuania	-5.2	.0	-1.92	1.54	10
Belgium	-13.1	.3	-5.09	4.41	27	Luxembourg	-11.7	10.4	2.07	4.04	26
Botswana	-2.3	19.9	8.67	6.78	13	Malta	-9.8	1.6	-3.74	3.04	25
Bulgaria	-15.4	3.4	-2.69	5.31	17	Mexico	-15.4	10.2	-3.62	6.59	10
Canada	-6.4	1.6	-2.13	2.74	27	Namibia	-5.4	-1.2	-3.47	1.90	4
Cyprus	-9.2	-1.0	-4.37	1.99	25	Netherlands	-7.8	2.1	-2.98	2.69	26
Czech Rep.	-6.0	2.7	-2.29	2.47	14	N. Zealand	-9.3	5.1	-1.09	4.77	20
Denmark	-8.1	5.1	-.39	3.56	27	Norway	-6.5	17.8	3.48	6.18	26
Estonia	-2.1	2.5	.20	1.38	9	Poland	-5.5	1.9	-3.47	1.42	13
Finland	-14.7	5.9	-1.63	5.52	27	Portugal	-14.8	-.0	-6.07	3.88	27
France	-6.6	-.1	-2.98	1.47	26	Romania	-4.5	.0	-2.87	1.64	10
Germany	-2.4	1.4	-1.55	.83	24	Slovakia	-9.6	-.2	-3.77	2.59	11
Greece	-28.9	1.4	-10.4	8.3	24	Slovenia	-2.7	.5	-.89	.79	14
Hungary	-8.7	.8	-5.23	2.65	17	Spain	-8.4	1.9	-3.42	2.94	26
Iceland	-5.1	6.1	-1.3	2.9	27	Sri Lanka	-18.3	-4.5	-10.0	3.63	13
India	-9.3	-2.7	-5.62	2.10	24	Sweden	-14.9	4.8	-3.97	5.49	23
Ireland	-14.8	2.7	-4.55	5.90	24	Switzerland	-2.8	2.3	-.52	1.02	20
Israel	-19.6	.7	-5.89	5.14	27	Turkey	-10.0	-3	-4.93	2.32	9
Italy	-14.9	-.5	-7.81	4.51	27	UK	-6.5	1.7	-2.31	2.44	27
Jamaica	-18.3	-1.2	-7.6	5.2	15	USA	-6.2	2.3	-2.75	2.18	27

<sup>20</sup> Standard deviation

## 5.1.2 Explanatory variables

In this part the descriptive statistics for the dependent and the independent variables will be examined. In table 5-2 the minimum and maximum values for each variable is presented, as well as their mean, standard deviation and the number of units where information was available. For the level-1 units the highest possible N was 1061, while it was 46 for the level-2 units. All the second level variables had data on all the countries.

**Table 5-2:** Explanatory statistics for the variables included in the study between 1980 and 2006

	Minimum	Maximum	Mean	S.D. <sup>21</sup>	N
<b>Dependent variable</b>					
Surplus/ Deficit	-28.91	19.90	-2.90	4.85	889
<b>Economic variables</b>					
GDP growth	-34.86	15.25	3.09	3.54	1061
Trade	-85.57	177.47	-7.58	49.92	1061
Inflation	-1.88	35.00	7.16	7.37	1053
<b>Political variables</b>					
ENCP	0	4.5	.68	.92	1049
ENPP	0	9.86	2.39	1.55	1055
Majority	-.34	.5	.07	.14	1052
Majority dummy	0	1	.74	.44	1052
Centre-left	0	1	.56	.43	1054
Centre-right	0	1	.69	.40	1054
Constituency size*	0	149	11.46	27.26	46
Majoritarian electoral system*	0	1	.37	.49	46
Presidential*	0	1	.13	.34	46
SGP	0	1	.09	.28	1061
Accession EMU	0	1	.12	.33	1061
Election	0	1	.27	.45	1061
Quality of Government*	-.16	.50	.26	.18	46
<b>Societal variables</b>					
Instability*	0	1.89	.30	.41	46
Ethnic fractionalization*	.00	.71	.27	.20	46
Gini*	-25.92	23.90	-16.12	9.00	46
Population over 65*	.00	14.63	8.77	4.06	46
<b>Slopes-as-outcomes variable</b>					
Population size*	.00	8.14	3.59	1.84	46

\* = level-2 variable

The dependent variable, the *net surplus as a proportion of the GDP*, has a minimum value of -28.91 for Greece in 1990 and a maximum value of 19.9 for Botswana in 1986. The mean is -2.91 which means that in the countries included the average budgets are in deficit. The

<sup>21</sup> Standard deviation

standard deviation is 4.82 which indicate a relatively wide distribution around the mean. Finally, the N is 889 indicated that at least 172 units are lost in each computation.

The *GDP-growth* variable varies between -34.86 for Latvia in 1992 and 15.25 for the same country in 2000 with a mean of 3.09 and a standard deviation of 3.52. Despite these outliers, a visual inspection of the variable shows that most of the values are between -10 and +10 and normally distributed. The *trade as a percentage of the GDP* variable has a minimum value of -85.57 percent and a maximum of 177.47 percent because 100 were withdrawn from each value. The average is -7.58 and the standard deviation is 49.92. All the countries have data on this variable for all the years included in the study. The recoded inflation variable (see section 4.3.3) has a minimum value of -1.88 as there in some cases has been a fall in prices and a maximum value of 35. The lowest value is Luxembourg's in 1997. The highest value is given to four units which originally had extremely high inflation, Bulgaria in 1997 and the Baltic states in 1992. The mean is 7.16 and the standard deviation is 7.37. The variable is close to being normally distributed but has a tail towards the higher values.

The *Effective Number of Cabinet Parties (ENCP)* variable has a minimum value of zero, as one is withdrawn from every value. The maximum value is 4.5, for Italy's centre-left government in 2000. The average is 0.68 and the standard deviation 0.92. There is an N of 1061 and some loss of data. The minimum *Effective Number of Parliamentary Parties (ENPP)* is 0 and the highest number 9.86. Again, one was withdrawn from each value. The extremely high maximum number was obtained by Poland's first post-communist parliament. Jamaica has the lowest possible value of zero between 1983 and 1989. The 1983 election was boycotted by one of the two major parties and the governing Jamaica Labour party ended up being the only party in government. The country was nevertheless deemed an electoral democracy according to the criteria described in the previous chapter and hence included in the dataset. The mean effective number of parliamentary parties is 2.39, the standard deviation 1.55 and the N 1055. For both ENCP and ENPP most of the missing data points are in Eastern European countries just after the fall of communism. This was a time of rapidly changing party constellations and it is therefore difficult to get precise information on the parties in parliament or government.

The *majority* variable has a minimum of -0.34, indicating that the government parties had 16 percent of the parliamentarians and a maximum of 0.5 meaning that, at times, all the

parliamentarians have belonged to the governing party or parties. The mean is 0.07, indicating a slight majority, and the standard deviation is 0.14. The *majority dummy* has a mean of .74. Accordingly, 74 percent of the units had a majority government. Both the centre-left and centre-right variable has a minimum of zero and a maximum of one. The centre-left variable has a mean of 0.56 and a standard deviation of 0.43, while the centre-right variable has a mean of 0.69 and a standard deviation of 0.4. This indicates that right-wing parties controlled a larger share of government ministers than left-wing parties. The *election* variable is a dummy with a mean of 0.27.

The *stability and growth pact (SGP)* has a mean of 0.09 indicating that nine percent of the units are registered as members of the SGP. 12 percent of the units are registered as being in the *accession process to the EMU*.

The *constituency size* variable is included in the second level of the model and the values do not vary within the countries. One is subtracted from each value and the minimum is therefore zero. The Netherlands has the highest value at 149. The average is 11.46 and the standard deviation is 27.26. The *dummy for majoritarian electoral system* has a mean of 0.37. Accordingly, 37 percent of the countries were coded as having majoritarian electoral systems. The *presidential* variable has a mean of .13 indicating that approximately thirteen percent of the units are presidential. In the *quality of government* variable Bangladesh had the lowest value at 0.34, which became -0.16 after 0.5 was withdrawn, and Finland had the highest at 0.998, which became approximately 0.5. The mean is 0.26 and the variation around this mean quite low as the standard deviation is 0.18.

All the societal variables are on the second level of the analysis. The *instability* variable has a minimum of 0 for Slovenia and the Bahamas and a maximum of 1.89 for Israel. The mean is however significantly lower than this maximum at 0.3. The standard deviation is 0.41. The *ethnic fractionalization index* has a minimum of 0.002 for South Korea and a maximum of 0.71 for Canada. Most countries are more ethnically homogenous as the mean is 0.27 and the standard deviation 0.2. Sweden originally had the lowest *Gini* value at 24.08, indicating it is the most equal, and Namibia had the highest value at 73.9. 50 were then withdrawn from all values, and their score became -25.92 and 23.90 respectively. The average value is -16.12 and the standard deviation is relatively small at 9. The minimum value for *share of population over 65* is zero and the maximum is 14.63. Botswana's 2.7 was originally the lowest value

and therefore subtracted from all values. Sweden originally had the highest value at 17.33 percent. The average is 8.77 and the standard deviation 4.06

The *population* variable is only used in the slopes-as-outcomes model (explained in section 5.4). It measures the logarithm of the countries' mean population size. The minimum level, for Iceland, is zero as the minimum level of the original variable was subtracted from all the values. India has the highest value of 8.14. The mean is 3.59 and the standard deviation 1.84.

## **5.2 Pre-analysis**

In the research question and the theoretical discussion it has been argued that permanent features of the countries included in the analysis influences their fiscal policy. Longitudinal multilevel analysis is well suited to include these permanent characteristics and might therefore be an improvement on previous explanations of the phenomenon. In this part of the paper this theoretical arguments will be tested empirically. An unconditional model without any explanatory variables will first be constructed. It can serve as a basis of comparison for the later models that includes time varying and time constant variables, and make it possible to see how much explanatory power those variables have.

### **5.2.1 The unconditional model**

A trend variable must be introduced into multi-level models that explain variance over time. This can be done in several ways, but it should start at the value zero. The most common ways to produce linear trend variables is (1) to have the value zero for the first year and increase by one for each year, (2) to have the value zero in the middle year and (3) to have the value zero in the final year. I have chosen the second option. The year 1993 is therefore the base year and given the value zero, 1980 has the value -13 and 2006 the value +13.

**Table 5-3:** The unconditional model

<b>Fixed effect</b>		<b>Coefficient</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Average deficit score in 1993 (***)		-2.743	.492	.000	
Average growth rate (***)		.215	.038	.000	
<b>Random effects</b>		<b>Variance component</b>	<b>d.f.</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation					
Level-1 error		8.808			
Level-2 (between states)					
State mean initial score (***)		10.225	45	820.59	.000
State mean trend rate (***)		.053	45	298.18	.000
<b>Model fit</b>		<b>Observations</b>			
Deviance = 4720.78		N (level-1): 1074			
Number of estimated parameters = 6		N (level-2): 47			
AIC = 4726.78					

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$  (two-tailed tests)  
Number of iterations (maximum likelihood estimation) = 6

The average deficit score in 1993 show that on average the countries had surplus that constituted -2.743 percent of the GDP in 1993, in other words: spending exceeded incomes by, 2.7 percent of GDP. On average this deficit is expected to rise by 0.215 percent each year. Over the 26 years covered in the analysis the average country would therefore be expected to reduce its yearly deficit by 5.538 percentage points from -5.547 in 1980 to 0.052 in 2006. Both of these values were strongly significant well below the .01-level. The fact that the random effect for the trend rate is also significant indicates that the different countries have different growth rates. It is therefore interesting to explore which variables might create these differences in development (Raudenbush and Bryk 2002: 165). This general decrease in deficits is interesting in itself. Change in deficit trends over time is not unprecedented however. It has for instance been shown that OECD-countries significantly increased their debt levels in the period after the 1973 oil crisis (Roubini and Sachs 1989a).

The random effect part of the results shows how the individual countries vary around the mean levels. The state initial score of 10.225 shows that the states vary greatly around the average deficit scores in 1993. The state mean trend rates of 0.053 also show some variation around the average growth rate. Both of these values are strongly significant. This indicates that countries have different mean levels of deficits and different growth curves. It is therefore warranted to explore which factors might cause these differences. Since both the starting levels and the growth levels are significant it is interesting to both look at time-constant and time varying explanatory variables (Raudenbush and Bryk 2002: 165-166).

### 5.2.2 Deviance, AIC and number of iterations

Multilevel software produces statistics in maximum likelihood-estimation to show how well the model explains the data. One such measure is the likelihood statistic which is used to estimate the deviance. It is obtained by multiplying the natural log of the likelihood by minus two and is therefore also called  $-2LL$ . The result shows the lack of fit between the model and data, and the lower the value the better the model. The deviance measure can not be interpreted individually, but can be used to compare different models and see which explains the dependent variable best (Luke 2004: 33-34). In the unconditional model the deviance is 4720.78. This value is different in full (FML) and restricted maximum likelihood (RML). As mentioned in chapter three all the calculations in this analysis are conducted with FML.

One problem with the deviance statistic is that making a more complicated model will always lead to smaller deviance and therefore be interpreted as an improvement. Measures have therefore been made that reward parsimoniousness as well as explanatory power. In this paper The Akaike Information Criterion (AIC) will be used. This is one of the measures that punish models with many parameters. It is not provided by HLM but can be easily calculated using this equation:

$$AIC = -2LL + 2p$$

Here  $p$  is the number of estimated parameters and  $-2LL$  the deviance value (Luke 2004: 34-35). In the unconditional model there are six parameters and the AIC is therefore 4726.78.

The number of iterations used by the software to reach the values is also reported. The program finds a reasonable starting value and then changes these starting values slightly several times. When the changes in estimated values become very small as a consequence of these changes the iterations stop and the program concludes that the best possible model is obtained. In the unconditional model there were nine iterations. Models do sometimes not converge under maximum likelihood estimation and consequently there could be an almost endless number of iterations. If the program can not estimate values within a reasonable number of iterations that usually means that there are problems with the model, especially if the dataset is large (Hox 2002: 38-39). Few iterations, on the other hand, is a sign that the model is good (Raudenbush and Bryk 2002: 257). The six iterations used to calculate the unconditional model is far from being ominous and the iterations will only be commented on later if they indicate problems with the model.

### **5.3 Intercept-as-outcomes model**

There are several ways to conduct multilevel analysis, but a stepwise approach is common and will be used in this paper. A model is then first built at the lowest level and higher levels are introduced afterwards (Luke 2004: 23). This paper follows Luke (2004: 23) who suggests first finding a satisfactory level-1 model and then introduce the level-2 explanations. The time-varying explanations at level-1 are therefore introduced in the first model and the time-constant variables are introduced subsequently. These should first be included in an *intercept-as-outcomes model* where the slopes are equal for all the countries. Once such a model is established a *slopes-as-outcomes model* can be tested when there is theoretical justification for it. In these models the slopes for each country varies individually. Having many random slopes does require a high number of level-1 units, and in this model there are only 27 for each country. It also risks producing falsely insignificant results as there is a limited amount of variance to be explained (Raudenbush and Bryk 2002: 256-257). Such an effect will therefore only be introduced for the effect of the stability and growth pact because there is a theoretical argument that the size of the countries is expected to affect the influence of that variable. The one level-1 variable with individual slopes for the countries in all analyses is the trend variable that increases by one for each year. This makes it possible to explain the different countries' possible difference in development paths.

#### **5.3.1 The level-1 predictors**

To get reliable multilevel models all relevant explanations should be included in the analysis (Raudenbush and Bryk 2002: 259). All the level-1 explanations will therefore be included in the first model. The ones that are far from significant in this analysis will be excluded in the subsequent models. This analysis followingly tests hypothesis 1 (lower deficits in periods of growth), hypothesis 2a and 2b (open economies have higher (2a) or lower (2b) deficits), hypothesis 3 (high inflation leads to high deficits), hypothesis 4a and 4b (more parties in government or parliament leads to higher deficits), hypothesis 5a and 5b (minority governments produce higher (5a) or lower (5b) deficits), hypothesis 6b (right-wing parties produce high deficits), hypothesis 9a (membership in the stability and growth pact will reduce deficits) hypothesis 9b (countries in the accession process to the EMU have lower deficits) and hypothesis 10 (deficits are higher in election years). The results from this analysis are presented in table 5-4.

**Table 5-4:** Effect of level-1 variables on government surpluses:

<b>Fixed effects</b>	<b>Coefficient</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Model for average deficit score in 1993				
Intercept (***)	-4.788	.837	.000	
Trend slope (***)	.213	.066	.003	
GDP growth (***)	.184	.051	.001	
Trade	-.001	.009	.938	
Inflation	.078	.063	.218	
ENCP	-.108	.511	.833	
ENPP	.180	.267	.501	
Majority	2.225	1.718	.196	
Centre-left	.428	.416	.305	
SGP	2.390	1.703	.161	
Accession EMP	.115	.719	.873	
Election (*)	-.468	.243	.054	
<b>Random effects</b>	<b>Variance component</b>	<b>d.f.</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation				
Level-1 error	8.367			
Level-2 (between states)				
State mean initial score (***)	11.359	45	973.61	.000
State mean trend rate (***)	.046	45	302.02	.000
<b>Model fit</b>	<b>Observations</b>			
Deviance = 4616.77	N (level-1): 1074			
Number of estimated parameters = 16	N (level-2): 47			
AIC = 4632.77				

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$  (two-tailed tests)

Number of iterations (maximum likelihood estimation) = 12

The intercept is -4.8. The countries then have 0 GDP growth, imports and exports are 100 percent of GDP (as 100 were withdrawn from each value on this variable), no inflation and one party in government and parliament. The government controls exactly half the members in parliament and right wing parties controls all the ministries. The country is not in the accession process to the EMU nor a member of the SGP and it does not have an election. This is much lower than in the unconditional model, meaning that some of the cause for the GDP deficit levels in 1993 can be attributed to level-1 variables. The surplus still increases each

year, and with an increase of .213 the coefficient have not changed much from the unconditional model.

The GDP-growth variable has a coefficient of .184 and is strongly significant. This strengthens the widely held view that deficits are lower during periods of economic growth than during periods of economic contraction. More precisely, if the GDP grows by 5 percent the surplus is expected to be almost one percentage point higher than if the GDP level is stable. The trade variable goes in the direction expected in hypothesis 2b and in the opposite direction of what was expected in hypothesis 2a, as open economies are expected to have higher deficits than closed ones. This effect is far from being significant however. The inflation variable also goes in the opposite direction of what is expected. The variable is not significant, but with a relatively low p-value it is worth exploring further in subsequent models.

The effective number of parties in government and parliament seems to influence government deficits in opposite directions. Higher number of parties in government is associated with higher deficits, as expected. On the other hand, a high number of parties in parliament seem to lead to lower deficits. These variables measure similar phenomenon and that might affect their coefficients. Running the analysis with only one of the variables only weakens hypothesis 4a and 4b further. An increase of parties in either government or parliament is then associated with an increase in surpluses. Both variables are however far from being significant in any of the analyses.

The influence of the majority variable was uncertain and two hypotheses was therefore created, hypothesis 5a (higher deficits under minority governments) and 5b (lower deficits under minority governments). This finding seems to support 5a as a 10 percentage point increase in the governments support in parliament is expected to increase the surplus by approximately a quarter of a percentage point, but the effect is not significant. As the p-value was close to 0.2 it was nevertheless included in subsequent models to see if its explanatory power might increase. A model was also tested were this variable was exchanged with a dummy for majority status. The findings then point in the same direction but the model has less explanatory power and the numerical measure was therefore preferred.

Right wing governments seem to be associated with higher deficits than other types of governments. A government with only right-wing parties is expected to have 0.43 percentage point higher deficits than a government with no right wing parties. This supports the view stated in hypothesis 6b, but the finding is not significant. Exchanging the centre-left variable with the centre-right variable produces a similar finding as a government only consisting of left-wing parties is then expected to have 0.49 percentage point lower deficits than a government with no left wing parties. That finding is not significant either however and the model has slightly less explanatory power. If these findings can be trusted despite their low significance levels they indicate that right-wing rather than left-wing parties increase deficits.

Both being a member of the stability and growth pact and being in the accession period to the European monetary fund seems to reduce deficits, as expected. The coefficients indicate that countries in the SGP have 2.4 percentage point lower deficits than countries that are not members. Countries trying to gain access to the EMP have 0.11 percentage point higher surpluses than other countries when the other variables are held constant. Neither of these effects are significant, but with a p-value of 0.16 the SGP variable is kept in the other models.

Finally and as expected, deficits are half a percentage point higher in election years than at other times. This is significant at the ten-percent level and indicates that political factors might affect deficits even though the other political variables included in this model not are significant.

The random part of the model shows that the level-1 error has decreased from 8.8 in the unconditional model to 8.4 in this model. This indicates that more of the variance is explained. The reduction in level-1 error can be calculated to find a pseudo  $R^2$  using the following formula:  $\text{Pseudo } R^2 = (e_{ti}(\text{model 1}) - e_{ti}(\text{model 2})) / e_{ti}(\text{model 1})$  (Singer and Willett 2003: 103-104). The reduction for level-1 error in this model is therefore  $(8.8-8.4)/8.8 = 0.05$ . This indicates that approximately five percent of the level-1 variation in deficit levels are explained by the variables introduced in this model 5.4 compared to the unconditional model. On the second level the mean trend rate has decreased slightly from 0.053 to 0.046 indicating that some of the changes over time have been explained by the level-1 variables. The state mean initial score has increased from 10.2 to 11.4. This indicates that level-2 variables are needed to explain the average differences between the countries.

A likelihood-ratio test can be used to see if a model is significantly better than other models. The result of such a test comparing the unconditional model and the model with only level-1 variables is reported in table 4.5.

**Table 5-5: Likelihood ratio test of level-1 model and unconditional model**

Chi-square statistics (***)	104.01
Number of degrees of freedom	10
P-value	.000

Significance levels: (\*) = p<.10, (\*\*) = p<.05, (\*\*\*) = p<.01

The chi-square at 104.01 is significant well above the .01 level supporting the view that the level-1 model explains more of the variation in deficit levels than the unconditional model. This is also shown in the reduction in the AIC values from 4727 to 4633. This means that despite having just three significant variables, and using the AIC test which punishes the level-1 model for being less parsimonious than the unconditional model, there has clearly been an improvement in explanatory power.

**5.3.2 The level-2 predictors**

Level-2 predictors can be introduced into multilevel models in several ways, but one should be careful about introducing too many into the same model when the number of level-2 units is limited. A rule of thumb in regression analysis is that one needs ten units per predictor. Raudenbush and Bryk (2002: 267) argue that the same rule can be utilized in multilevel modeling. With several level-2 outcomes the rule might be a bit liberal however, especially if there is high multicollinearity between the level-2 variables. Collinearity between the level-2 variables in this analysis is not very high, but neither is the number of level-2 units at 46. Followingly all the level-2 variables can not be included in the same model. Two models with different level-2 explanations, the political and societal, were therefore tested. In the first one the political explanations: the electoral system, whether the country is presidential or parliamentary and the quality of government were tested. The second model tested the societal explanations: economic inequality, ethnic fractionalization, political instability and the share of population over 65. Finally, a model was made that included the significant variables from each model. This means that there never was more than four level-2 variables in each models and therefore above 10 level-2 units per variable. This gives enough variance to be explained and limits the possibility of both type-1 and type-2 error.

### 5.3.2.1 The political explanations

This model tests hypothesis 7 (deficits higher under majoritarian than proportional electoral systems), hypothesis 8 (deficits are lower in presidential than parliamentary countries) and hypothesis 11 (deficits decrease as the quality of government increases). The level-1 variables that were significant or relatively close to being significant in the first model were also included in this model.

**Table 5-6:** Effect of level-2 political explanations on government surpluses.

<b>Fixed effects</b>	<b>Coefficients</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Model for average deficit score in 1993				
Intercept (***)	-7.337	1.145	.000	
GDP growth (***)	.192	.049	.000	
Inflation, $\gamma_{30}$	.103	.063	.103	
Majority, $\gamma_{40}$	1.782	1.873	.342	
SGP, $\gamma_{50}$	2.055	1.320	.120	
Election, $\gamma_{60}$ (*)	-.451	.238	.058	
Majoritarian electoral system, $\gamma_{01}$ (**)	2.038	.994	.046	
Presidential, $\gamma_{02}$	-.241	.944	.800	
Quality of Government, $\gamma_{03}$ (***)	8.382	2.683	.004	
Model for deficit growth				
Intercept (***)	.267	.096	.008	
Majoritarian electoral system	-.005	.081	.948	
Presidential	.034	.072	.636	
Quality of government	-.135	.199	.501	
<b>Random effects</b>	<b>Variance component</b>	<b>d.f</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation				
Level-1 error	8.384			
Level-2 variation				
State mean initial score (***)	8.464	42	683.52	.000
State mean trend rate (***)	.047	42	312.30	.000
<b>Model fit</b>	<b>Observations</b>			
Deviance = 4625.84	N (level-1): 1074			
Number of estimated parameters = 17	N (level-2): 47			
AIC = 4642.84				

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$  (two-tailed tests)

Number of iterations (maximum likelihood estimation) = 11

The first bloc in the table shows how the different variables affect the initial separatism score. The intercept, -7.3, shows the expected separatism score in 1993 when all the explanatory variables has the value zero. For the level-2 variables this means that the country has a proportional electoral system, is parliamentary and has a quality of government score of 0.5. The constant is much lower than it has been in any of the preceding models. The level-1 variables that are still included in the model have not changed directions or significance. Both inflation and the stability and growth pact are now very close to being significant at the .10-percent level however.

The electoral system has a significant effect on the initial deficit level, but the influence goes in the opposite direction of what was expected in hypothesis 7 as countries with majoritarian electoral systems are expected to have approximately two percentage point lower deficits than countries with proportional electoral systems. The effect is barely significant at the .05-level. This variable was used instead of the constituency size variable because it produced a significantly better model, but the constituency size variable indicated the same direction of influence and was also significant at the .05-level. More precisely, for each additional person elected from each constituency the surpluses is expected to increase by 0.03 percentage points. The presidential variable is far from significant, and goes in the opposite direction of what was expected. Contrary to the claim in hypothesis 8 these findings indicate that presidential countries lead a policy with higher deficits than parliamentary countries. The measure of quality of government goes in the expected direction. The variable is furthermore highly significant, close to the .01-level. An increase by .1 in the quality of government-index is expected to decrease the deficit by 0.84 percentage points. This indicates a substantial influence.

The second block under the fixed effects show how the level-2 variables affect the growth rate of the deficits. The intercept is .267 and deficits are therefore expected to decrease by close to a quarter of a percentage points each year. This effect is still significant at the .01-level and the coefficient is slightly higher than in the two preceding models. None of the level-2 variables can significantly explain the variance over time. The coefficients indicate that the effect of presidentialism and quality of government might decrease over time while there is almost no change in the effect of electoral systems.

The random effects show that more of the unexplained variance in state mean 1993 score has now been explained. This value is now 8.5 which is a decrease from both the unconditional model (10.2) and the level-1 model (11.4). There has been less change in the mean trend rate as its random effect has remained relatively stable. It was .053 in the unconditional model, decreased to .046 in the level-1 model and increased slightly again to .047 in this model. This is not surprising as none of the included variables could significantly explain the changes over time. The level-1 error has also remained relatively stable from the model with all the level-1 variables.

The deviance value in this model is 4625.84 which is a clear reduction from the unconditional model but higher than in the model with all the level-1 variables. Similarly, the AIC-value is 4642 which is a decrease from the 4726 in the unconditional model, but an increase from the 4632 in the level-1 model. The results reported in table 4.7 shows that the model with political level-2 variables explains significantly more than the unconditional model, but significantly less than the full level-1 model.

**Table 5-7:** Model 4.6 compared with unconditional and level-1 model

Compared with unconditional model	Chi-square statistic (***)	94.94
	Degrees of freedom	11
	P-value	.000
Compared with level-1 model	Chi-square statistic (***)	9.07
	Degrees of freedom	1
	P-value	.003

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$

### 5.3.2.2 The societal explanations

The next level-2 model includes the societal explanations: political instability, economic inequality, social fractionalization and the proportion of the population over 65. Hypothesis 12 (higher deficits in politically unstable countries), hypothesis 13a (deficits higher in countries with high economic inequality), hypothesis 13b (deficits higher in countries with higher social fractionalization) and hypothesis 14 (deficits higher in countries where large shares of the population is old) is therefore tested.

**Table 5-8:** Effect of level-2 societal explanations on government surpluses.

<b>Fixed effects</b>	<b>Coefficients</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Model for average deficit score in 1993				
Intercept	-1.370	2.269	.549	
GDP growth (***)	.189	.050	.000	
Inflation	.076	.058	.187	
Majority	1.678	1.906	.379	
SGP (*)	2.293	1.314	.081	
Election (*)	-.434	.236	.066	
Political instability (***)	-3.720	1.175	.003	
Economic inequality	-.050	.062	.427	
Ethnic fractionalization	.310	2.480	.902	
Population over 65	-.274	.212	.202	
Model for deficit growth				
Intercept (***)	.439	.150	.006	
Political instability	.087	.060	.153	
Economic inequality (***)	.022	.001	.001	
Ethnic fractionalization	-.091	.197	.645	
Population over 65	.016	.011	.159	
<b>Random effects</b>	<b>Variance component</b>	<b>d.f</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation				
Level-1 error	8.336			
Level-2 variation				
State mean initial score (***)	9.169	41	804.84	.000
State mean trend rate (***)	.037	41	265.63	.000
<b>Model fit</b>	<b>Observations</b>			
Deviance = 4618.75	N (level-1): 1074			
Number of estimated parameters = 19	N (level-2): 47			
AIC = 4637.75				

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$  (two-tailed tests)

Number of iterations (maximum likelihood estimation) = 9

The intercept again shows the expected value in 1993 when all the other variables has the value zero. If this is the case there is no political instability, the country has 50 as their Gini value, everyone belongs to the same ethnic group and 2.7 percent of the population is more than 65 years old.

At -1.4 the intercept is far lower than it has been in the other analyses, but it is also far from significant. The value is therefore unreliable. The level one variables still included have not changed directions, but the stability and growth pact has become significant at the .10 percent level. Countries that are members of the pact are expected to have 2.3 percentage point lower deficits than countries that are not members.

Political instability has a strong influence on fiscal policy according to the results reported in table 5-8. The countries with the highest levels of political instability are expected to have approximately 7 percentage point higher deficits than the countries with no political instability. This is in accordance with hypothesis 12. Economic inequality also affects budgetary balance levels in the expected direction, and according to the model a ten point increase in Gini-levels (indicating higher inequality) leads to a decrease in surpluses by approximately half a percentage point. This is in accordance with hypothesis 13a, but far from significant. Ethnic fractionalization goes in the opposite direction of what was expected in hypothesis 13b as ethnically heterogeneous countries are expected to have slightly lower deficits than ethnically homogenous countries. This effect is far from being significant however. Having a high share of the population that is older than 65 affects fiscal policy in the direction predicted in hypothesis 14. If this group increases its share of the population by 10 percentage points the deficit is expected to increase by approximately 2.7 percentage points. This effect is not significant.

The surplus is still expected to decrease over time, as it has in the other models. The decrease in this model is higher than in the preceding models at 0.44 percentage points each year. Economic inequality can significantly explain this variance over time, but in an unexpected way. Countries with high economic inequality are expected to get decrease their deficits over time more than other countries. If a country increases their Gini-score by 10 it is expected to have an increase in surplus levels that is 0.22 percentage points higher than originally expected. The other variables are not significant, but their coefficients indicate that if the constant effect of the variables might decrease over time.

The random effects part of this model indicates that slightly more of the level-1 variance is explained in this model than was explained in the analysis with all the level-1 variables (and the analysis with political level-2 variables). Furthermore, more of the initial deficit score has been explained than in the model with just level-1 variables or the unconditional model. More

of the variation in deficit levels over time has been explained than in any of the preceding models. The unmodeled variance for the trend rate is now 0.037, while it was 0.053 in the unconditional model and 0.046 in the level-1 model.

Like the model with political level-2 variables, this model does not seem significantly better at explaining the deficits than the model with all the level-1 variables. The deviance value in this model is 4618.17. That gives an AIC-value of 4637.35, which is lower than in the unconditional model (4726.78) but higher than in the model with just level-1 variables which had an AIC value of 4632.77. As can be seen in the table below the improvement from the unconditional model is significant at the .01-level, while the slight change from the level-1 model is not significant. The model is therefore not significantly different in its explanatory power than the full level-1 model.

**Table 5-9:** Model 4.8 compared with unconditional and level-1 model

Compared with unconditional model	Chi-square statistic (***)	102.03
	Degrees of freedom	13
	P-value	.000
Compared with level-1 model	Chi-square statistic	1.98
	Degrees of freedom	3
	P-value	>.500

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$

### 5.3.2.3 The full level-2 model

A model was then run with all the level-2 variables that had been significant or close to significant in the two preceding models.

**Table 5-10:** Effect of all significant level-2 variables on fiscal deficits

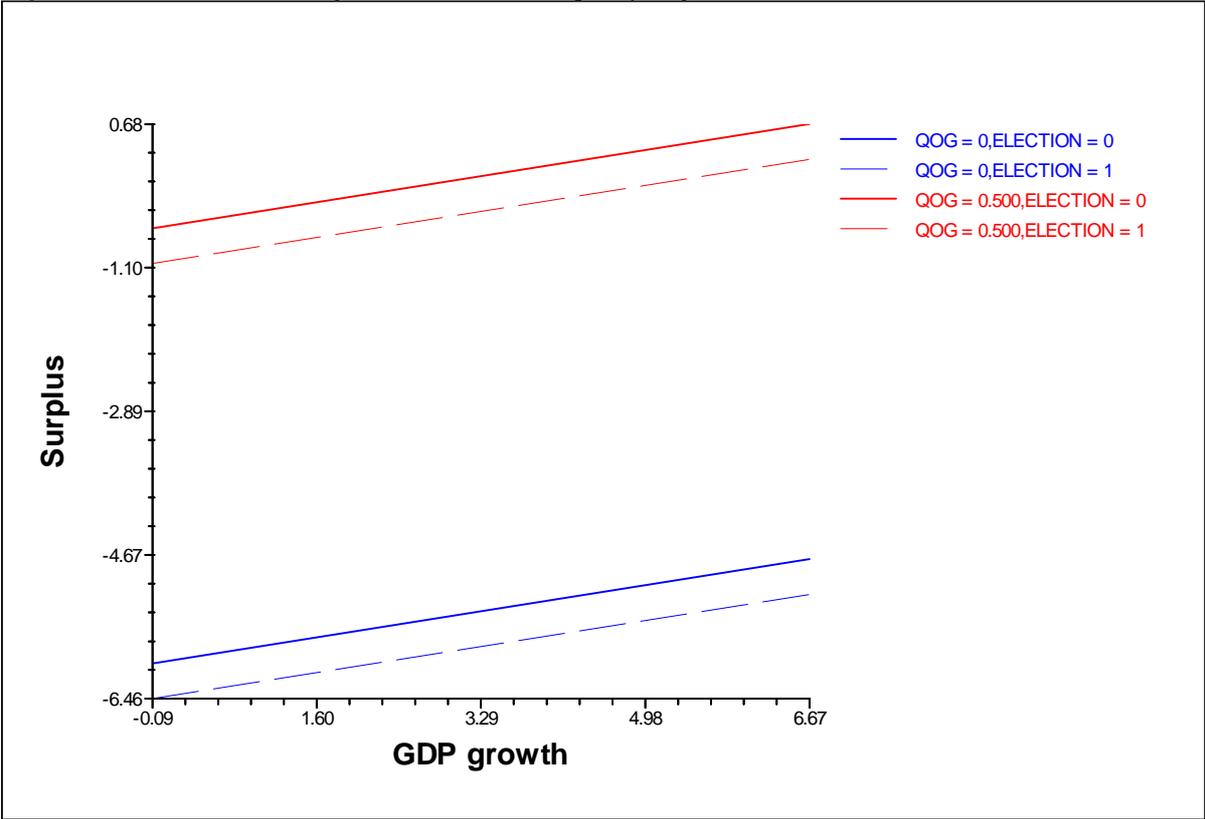
<b>Fixed effects</b>	<b>Coefficients</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Model for average deficit score in 1993				
Intercept (*)	-3.299	1.700	.059	
GDP growth (***)	.191	.050	.000	
Inflation (*)	.102	.058	.078	
Majority	1.487	1.882	.430	
SGP	2.073	1.287	.107	
Election (*)	-.439	.235	.061	
Majoritarian electoral system (**)	1.636	.700	.024	
Quality of government (***)	10.811	2.961	.001	
Political instability (***)	-3.250	.922	.001	
Population over 65 (**)	-.392	.179	.034	
Model for deficit growth				
Intercept (***)	.383	.115	.002	
Political instability	.090	.060	.141	
Economic inequality (***)	.020	.006	.003	
Population over 65	.018	.011	.122	
<b>Random effects</b>	<b>Variance component</b>	<b>d.f</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation				
Level-1 error	8.361			
Level-2 variation				
State mean initial score (***)	6.251	41	556.93	.000
State mean trend rate (***)	.037	42	268.61	.000
<b>Model fit</b>	<b>Observations</b>			
Deviance = 4604.03	N (level-1): 1074			
Number of estimated parameters = 18	N (level-2): 47			
AIC = 4622.03				
Significance levels: (*) = p<.10, (**) = p<.05, (***) = p<.01 (two-tailed tests)				
Number of iterations (maximum likelihood estimation) = 11				

The intercept in this model is -3.3 and this is significant at the .10-level. Once again, the level-1 variables go in the same direction as in the previous analyses. The inflation level is now a significant predictor at the .10-level. The stability and growth pact is not significant, but close to being significant at the .10-level.

All the level-2 variables included in the model are now significant at least at the .05-level. Majoritarian governments are expected to have 1.6 percentage point higher surpluses than

proportional systems. A .1-point increase in the quality of government scale is expected to lead to a decrease of 1.8 percentage point in deficits. An increase by one on the political instability scale leads to a decrease in deficits by 3.25 percentage points and as the proportion of the population that is older than 65 increases by one percentage point the deficits are expected to increase by 0.4 percentage points. Figure 5-1 shows how differences in the quality of government and differences between election and non-election years are expected to influence deficits. The two upper lines have government quality values of 0.5, close to the highest in the dataset. The two other lines show expected deficit levels for countries with government quality values of 0, close to for example Sri Lanka and Turkey's. The graph shows the substantial difference expected between countries with high and low qualities of government. The graph also show that the countries are expected to have close to half a percentage points higher deficits in election years compared to non-election years.

**Figure 5-1:** Influence of GDP growth, elections and quality of government on deficits.



The deficit levels are still expected to decrease over time, by .4 percentage points each year. The Gini-levels can explain some of the change over time and countries with ten Gini point higher Gini-levels are expected to increase their surpluses with an additional 0.2 percentage points per year. The coefficients also indicate that the effects of political instability and the

proportion of the population that is elderly might decrease over time. These effects are not significant however.

The level-1 error in this model is similar to the one in the full level-1 model indicating little improvement in the explanation of the variance within the countries over time. The unexplained variance in the state mean initial score is much lower than in any of the preceding models. In the model reported in table 5-10 it is 6.25 compared to 10.2 in the unconditional model and 11.4 in the full level-1 model. Much more of the permanent differences between the countries have therefore been explained. Furthermore, significantly more of the states trend rate is explained than in the two first models. Both of these facts show that the level-2 variables are needed to explain the intercept and the states' developments over time.

This model therefore explains government deficits significantly better than any of the preceding ones. The deviance of 4604 gives an AIC value 4622. This is a clear decrease from both the unconditional model (4726) and the full level-1 model (4633). The results reported in table 4.11 shows that both of these decreases are significant at the .01 level and the level-2 variables clearly improve the explanation of government deficit levels.

**Table 5-11:** Model 4.7 compared with unconditional and level-1 model

Compared with unconditional model	Chi-square statistic (***)	116.75
	Degrees of freedom	12
	P-value	.000
Compared with level-1 model	Chi-square statistic (***)	12.74
	Degrees of freedom	2
	P-value	.002

Significance levels: (\*) = p<.10, (\*\*) = p<.05, (\*\*\*) = p<.01

As noted in the methods chapter, Botswana is a deviant county at level-2 and an identical model was therefore run without that country to see if it unduly influenced the results. This did not change the outcome much besides making inflation a less significant predictor of deficits. Norway had the second highest surpluses of the countries covered in the study and is another outlier, but the exclusion of that country in addition to Botswana does not alter the results much either, besides further reducing the influence of the inflation variable and making the ideological variable more significant. The inflation variable is then completely

insignificant and that indicates that its unexpected significance was a result of the influence of these two countries. In this analysis a government with no right-wing parties is expected to have 0.65 percentage point higher surpluses than governments with only right-wing parties. The finding is significant at the .10-level<sup>22</sup>.

#### **5.4 Slopes-as-outcomes model**

In a slopes-as-outcomes model the growth line is allowed to differ for each country. We have reason to believe that the effect of the stability and growth pact is different in different countries as several scholars (Buti and van den Noord 2003 ; Von Hagen 2003 ; de Haan, Berger and Jansen 2004) have claimed that the pact has more of an effect on fiscal policy in small countries than large ones. Having first established that the effect of this variable does in fact differ between the countries, the population size was introduced as an explanation of these differences<sup>23</sup>. The results of this analysis are reported in table 5-12.

It was also possible that countries with different political and societal conditions would react differently to economic downturns. There is no evidence that the countries have different growth paths on the GDP-growth variable however and this possibility was therefore not pursued further.

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<sup>22</sup> The result for this analysis is included in the appendix (table 8-1).

<sup>23</sup> The variable measures the mean of the logarithm of the countries' population sizes

**Table 5-12:** Slopes-as-outcomes model for the SGP

<b>Fixed effects</b>	<b>Coefficients</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Model for average deficit score in 1993				
Intercept (*)	-2.990	1.617	.071	
GDP growth (***)	.174	.045	.000	
Inflation (**)	.106	.054	.050	
Majority	1.290	1.911	.430	
Election (*)	-.410	.225	.068	
Majoritarian electoral system	.703	.676	.305	
Quality of government (***)	10.396	2.297	.000	
Political instability (**)	-3.340	.993	.020	
Population over 65 (**)	-.399	.158	.016	
SGP				
Intercept (*)	2.362	1.194	.054	
Population size (*)	-.449	.225	.052	
Model for deficit growth				
Intercept (***)	.352	.112	.004	
Political instability (**)	.137	.066	.044	
Economic inequality (***)	.019	.006	.003	
Population over 65	.018	.011	.109	
<b>Random effects</b>	<b>Variance component</b>	<b>d.f</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation				
Level-1 error	7.682			
Level-2 variation				
State mean initial score (***)	7.767	7	159.57	.000
State mean trend rate (***)	.052	8	91.90	.000
SGP mean growth rate (***)	21.43	10	89.25	.000
<b>Model fit</b>	<b>Observations</b>			
Deviance = 4550.56	N (level-1): 1074			
Number of estimated parameters = 22	N (level-2): 47			
AIC = 4572.56				

Significance levels: (\*) =  $p < .10$ , (\*\*) =  $p < .05$ , (\*\*\*) =  $p < .01$  (two-tailed tests)

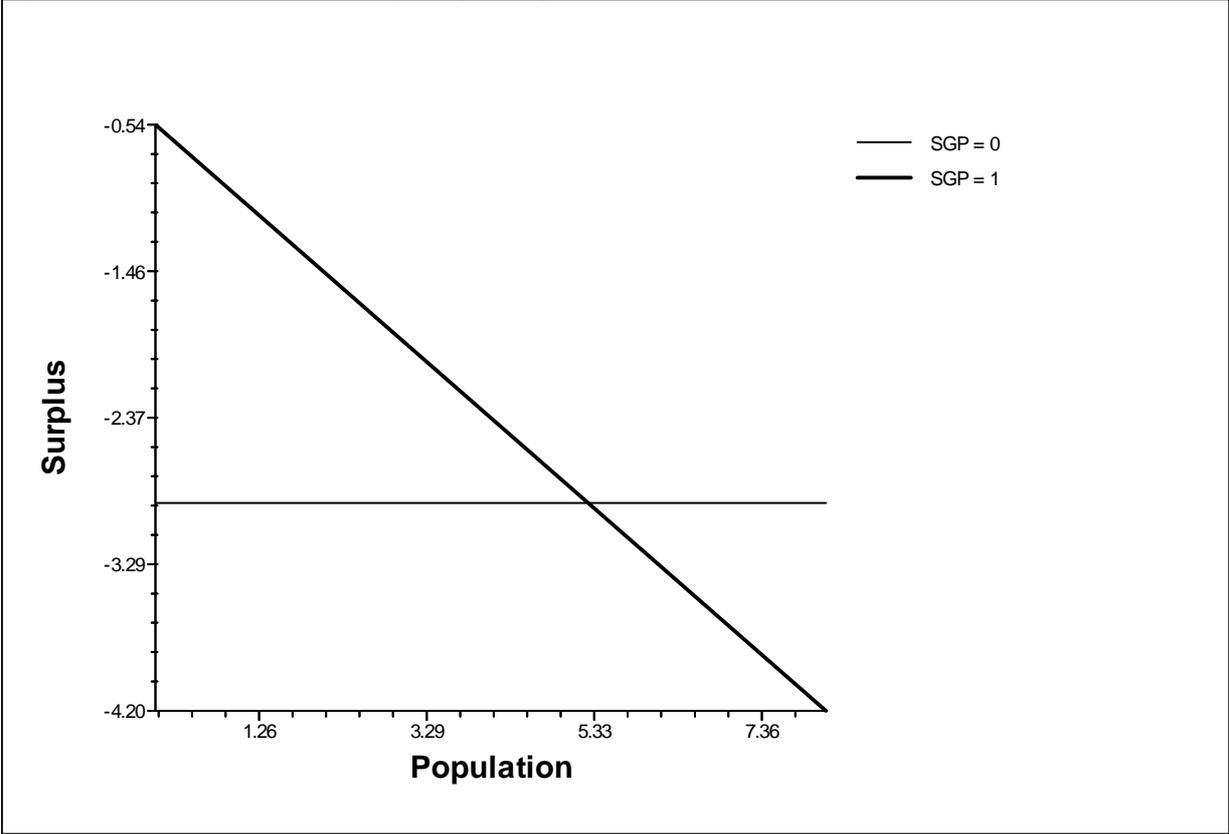
Number of iterations (maximum likelihood estimation) = 18

The effects of the variables remained relatively stable in this model compared to the preceding one, but there are some changes. At -3 the intercept level is slightly higher, but also less significant. The inflation variable has become barely significant at the .5-level, but again most of the effect of the variable disappears if Botswana is removed from the analysis (the

only other major change from removing that variable is that the SGP-variable becomes much more significant). The electoral system is no longer a significant predictor of mean deficit levels, and the political instability variable is now only significant at the .05-level.

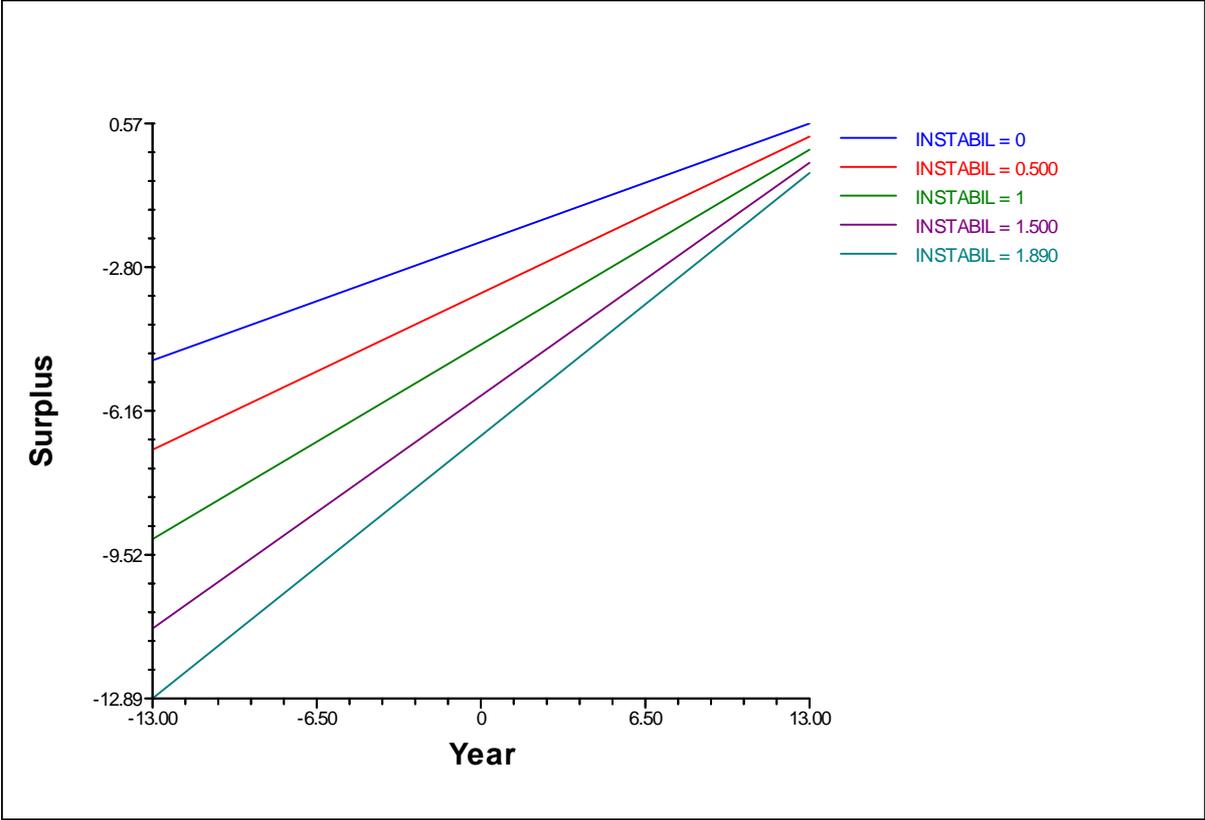
In accordance with most previous research the stability and growth pact seems to have less influence on the fiscal policy of large countries than small countries. For the smallest country (Iceland – which is not a member of the SGP) membership in the pact is expected to reduce deficits by 2.36 percentage points, but that effect is reduced drastically as countries becomes larger. The difference between the largest (Germany) and smallest (Luxembourg) SGP member is more than 5 on the population variable. An increase by one value on this variable is expected to reduce the effect by approximately .45. Membership is therefore expected to increase Luxembourg’s surpluses by close to two percentage points when the other variables are held constant. Membership for the largest countries in the European Union, on the other hand, is expected to have minimal influence on fiscal policy. This is illustrated in figure 5-2 where one can clearly see that the largest EU members, for example Germany with a population size of 5.72 and France with a population size of 5.41, are expected to have deficits close to the intercept of -3 (the thin line) even if they are members of the SGP.

**Figure 5-2:** The effect of the stability and growth pact



Deficits are still expected to decrease over time with an expected growth rate per year of .35. Political instability is now a significant determinant of that change and the initial effect of high political instability is expected to diminish over time. This effect is illustrated in figure 5-3 where all the other variables are at their mean levels. The upper line is for countries with the lowest value - zero - on this variable. The second highest line is for countries with the value .5, the third highest for countries with the value 1, the fourth the value 1.5 and the lowest for the highest value in the study, 1.89. The years vary from -13 in 1980 to +13 in 2006. One can clearly see the lines converge over time. The effect of instability on fiscal policy therefore seems to have diminished over time. The coefficient indicates that the effect of having a high proportion of elderly in the population also decreases over time. This effect is only close to being significant at the .10-level however.

**Figure 5-3:** The effect of political instability over time



The level-1 error is much lower in this model than it has been in any of the preceding ones at 7.68. The pseudo R<sup>2</sup> indicates that 13 percent of the level-1 variance has been explained in this model compared to the unconditional one. The unexplained variance for state mean levels is slightly higher than in the model with all the significant level-2 variables but no country-varying slopes. It is considerably lower than in the unconditional or full level-1 model

however. Similarly, the unexplained variance for the countries' mean trend rate is higher in this model than in the model reported in table 5-10. These levels are close to the levels in the two first models. Pseudo R<sup>2</sup> can also be run to see how much the level-2 variables have explained (Singer and Willett 2003: 104). This indicates that 24 percent of the countries average levels have been explained in the final model compared to the unconditional one.

This model seems to be the one that explains deficit levels best. The deviance value of 4551 gives an AIC value of 4573. This is considerably lower than the unconditional model (4727), the full level-1 model (4633) and the model with all the significant level-2 variables (4622). The results reported in table 4.13 indicate that all the improvements are significant at the .01-level. The number of estimation needed for calculating this model is higher than the previous ones, but they are still not high enough to indicate problems with the model.

**Table 5-13:** Model 4.12 compared with unconditional, full level-1 and full level-2 models

Compared with unconditional model	Chi-square statistic (***)	170.21
	Degrees of freedom	16
	P-value	.000
Compared with the full level-1 model	Chi-square statistic (***)	66.20
	Degrees of freedom	6
	P-value	.000
Compared with the full level-2 model	Chi-square statistic (***)	53.46
	Degrees of freedom	4
	P-value	.000

Significance levels: (\*) = p<.10, (\*\*) = p<.05, (\*\*\*) = p<.01

## 5.5 Summary of findings

This section will shortly summarize whether the findings reported earlier in the analysis chapter supported, were inconclusive or contradicted the hypotheses. The results for the economic variables will be presented first. The political and societal hypotheses, which are the main focus of this paper, will be discussed more extensively afterwards. The results are summarized in table 5-14.

In accordance with most previous research government deficit seems to be positively correlated with economic growth. GDP-growth of one percent is expected to lead to an

increase in surpluses by around than .2 percentage point in all the models. This is highly significant throughout the analysis. The effect also seems to be equal for most of the countries included. There is some evidence that there is a positive relationship between inflation and surpluses. This is a very surprising finding as most theorists that have examined possible relationships between these two variables have expected a stringent fiscal policy to be harder during periods of high inflation. This finding seems to be influenced by the outlier Botswana and must therefore be viewed with some scepticism however. Hypothesis 2 a and b are neither supported nor rejected and the openness of the economy therefore seems to have a very limited influence on fiscal policy.

The main research interest in this paper is on the influence of political and societal factors on fiscal policy however. Several of the political and societal variables seem to have a substantial influence on the fiscal balance of central governments. There are two main findings considering these suggested explanations. One, there were remarkably few of the time-varying variables that significantly predicted deficit levels. And two, several of the time-constant phenomena seemed to have a strong influence on fiscal policy. It is especially interest that quality of government, which has been given little attention in previous research, is a consistently significant predictor of deficit levels.

Hypotheses four, five and six predicted that characteristics of the parties in government or parliament would influence deficits. None of these hypotheses found strong support in the analysis. Hypothesis 4 a and b predicted that a high number of parties in parliament or government would lead to higher deficits. There were no significant effect of these variables but the coefficients indicated the possibility of an opposite relationship of what was expected. Hypothesis 5 a and b claimed that there was a relationship between the minority status of the government and its fiscal balance. Again, there were no significant influences but the coefficients indicated that hypothesis 5a, which claimed that minority governments produced higher deficits than majority governments, was most likely. Finally, hypothesis 6a and b claimed there was a relationship between the governing parties' ideology and the level of surpluses or deficits. The little evidence produced for such a link indicated that left-wing governments might produce lower deficits than other types of governments, and especially governments with right wing parties (hypothesis six b). This finding was only significant when the outliers Botswana and Norway was excluded from the analysis however.

Contrary to the expectations in hypothesis 7 countries with majoritarian electoral systems seem to produce smaller deficits than countries with more proportional electoral systems. This effect is significant in the earlier models and countries with majoritarian electoral systems are then expected to have between 1.5 and two percentage points lower deficits than other countries. Nevertheless, in the final model the coefficient is drastically reduced and the variable becomes insignificant. Hypothesis 8 finds even less support. The variable is very far from significant and the coefficient goes in the opposite direction of what was claimed in the hypotheses. Consequentially, whether the country is presidential or parliamentary does not seem to affect its deficit.

Membership in the stability and growth pact seems to reduce deficit levels, especially for small countries. This is in accordance with hypothesis 9a. The final analysis indicates that membership in the SGP is likely to reduce the deficit levels of the smallest EU-members by around two percentage points while it is expected to have very limited influence on the fiscal policy of the largest EU member states. Hypothesis 9b predicted that deficits might also be reduced during the accession period to the European Monetary Policy. As expected the coefficient for this variable indicates a positive relationship, but the effect is far from significant.

Hypothesis 10 claimed that deficits would be larger in election years than at other times. This hypothesis is supported in all the models. Deficits as a share of the GDP are expected to increase by between .4 and .5 percentage point in election years. This effect is only significant at the .10-level however.

The quality of government seems to have a strong impact on central government budgets. As was expected in hypothesis 11, countries with high qualities of government are expected to generate lower deficits than countries with lower qualities of government. In the final model the countries with the highest quality of government are expected to have approximately 6.8 percentage point higher surpluses than the countries with the lowest deficits. It has therefore been a weakness when previous research has not included this as an explanation.

Permanent socioeconomic factors also seemed to influence fiscal policy. Hypothesis 12 stated that politically instable countries would have higher deficits than more stable countries. This claim is supported in the analysis. India and Israel have much higher values on this variable

than the other countries, but even disregarding these countries this variable is expected to have a substantial impact on fiscal policy. The third most unstable country, the UK, is expected to have close to three percentage point higher deficits than the most stable countries in 1993. The final model indicates that the effect of this variable diminishes substantially over the period covered however. In 2006 the difference between the UK and the most stable countries in the analysis is expected to have narrowed drastically.

As predicted in hypothesis 13a the coefficients indicate that economically unequal countries have higher deficits than equal ones. This effect is far from significant, however. The effects of the Gini-coefficient on the change in deficit levels are consistently significant, on the other hand, and go in the opposite direction of what was expected. Unequal countries seem to have reduced their budget deficits by more than the more equal countries. In the final model countries are expected to reduce their annual deficits by close to .2 percentage points more than countries which have ten points higher Gini-value. This clearly goes against the hypothesis and is a remarkable finding. Ethnic fractionalization does not seem to have a strong impact on fiscal policy, and hypothesis 13b is therefore not strengthened.

The final hypothesis was supported. In the last model the deficit was expected to increase by .4 percentage point if the share of the population over 65 increased by one percentage point. There were also very limited indications that this effect might have diminished over time, but generally these findings were in accordance with hypothesis 14.

**Table 5-14:** The hypotheses and the empirical findings

<b>Hypothesis</b>	<b>Empirical finding</b>
H1: Economic growth increases surpluses	Supported
H2a: Open economies have higher deficits H2b: Open economies have lower deficits	No significant effects
H3: High inflation increases deficits	Limited support for opposite relationship
H4a and b: High number of parties in government or parliament connected with high deficits	No significant effects
H5a: Minority governments produce higher deficits H5b: Minority governments produce lower deficits	No significant effects
H6a: Left-wing governments produce higher deficits H6b: Right-wing governments produce higher deficits	Very limited support for H6b
H7: Higher deficits under majoritarian electoral systems	Some support for the opposite relationship, but not significant in final model.
H8: Lower deficits in presidential countries	No significant effects
H9a: Lower deficits when countries are members of the SGP.	Supported. The effect is substantial for small countries but decreases the larger the countries are. No effect for largest members.
H9b: Lower deficits in accession period to the EMU	No significant effects
H10: Deficits are higher before election.	Supported
H11: Deficits decrease as quality of government increase.	Supported
H12: Higher deficits in countries with high political instability	Supported, but effect decreases over time.
H13a: Higher deficits in economically unequal countries	Support for opposite relationship as economically unequal countries decreases the deficits over time.
H13b: Higher deficits in ethnically fractionalized countries	No significant effects
H14: Deficits decrease as the elderly share of the population increases	Supported

## 6 CONCLUSION

There are therefore two main findings of particular theoretical interest in this paper that goes against much previous research. First, the type of government in a country is not a significant predictor of the countries fiscal policy. Secondly, the quality of government has a bigger impact on the fiscal balance than what type of democratic institutions the country has. The answer to the main question of this paper, are budget balances political?, is therefore that there are no political or institutional choices that can ensure fiscal balance. Governments are constrained by the climate within which they operate and when that climate becomes more unstable, their political survival is threatened or rule of law weakens the result is more likely to be a budget in deficit.

Many of the theories of expected political influence on government budgets have been based on the view that by centralising power in few politicians or few parties you will increase fiscal stringency and reduce deficits. In this view the ideal government is a one-party majority government. It can rule unchallenged which means that it has the freedom to make unpopular policies and it does not have to compromise its program. There is little support for this view in this analysis. The form of government does not seem to be a decisive factor in the size of government deficits. Furthermore, having high deficits, when controlling for the economic climate, has often been seen as a sign of populism and weak government. These findings indicate that there is not a significant difference between governments, either in type or ideology, in their propensity to lead budgets in deficit. This might also indicate that the assumption made by many politicians and scientists that majoritarian governments are more efficient than consensual government might be a bit too simplistic. If that is the case and these findings are reliable they are welcome news for countries governed by coalition or majority governments.

Central government balances rather seem to be influenced by the time-varying economic and political factors that influence all countries and the more permanent political and societal factors within which political decisions are made. Elections is consistently a significant predictor of government budget balances and this indicates that politicians lead different politics when they need the consent of their electorate compared to other times when the citizens have less possibilities of influencing who govern them. Besides this the budget balance seems to be mostly influenced by political and societal factors through the permanent

features that determine the climate within which the policy is made. These include the quality of the democratic institutions and the degree of political instability.

The quality of democratic institutions seems to have a particularly decisive influence on fiscal policy. The method used in this paper allows the researcher to find out what influence variables with very limited variance over time have on fiscal policy. Relationships have therefore been tested that have remained underexplored in previous research and this has made it possible to strengthen the understanding of states' budgetary behaviour.

The paper does not find which mechanisms that creates this relationship, and this could be further investigated in future research. The relationship can arise for several, not mutually exclusive reasons. Lack of rule of law and high corruption might make the governments' enforcement of policy less efficient and decision making might be distorted. A high quality of bureaucracy might also reduce the effects of changes in political leadership that have been found to influence fiscal policy in much previous research. This might enable stability and reduce the possibility for the current government to run an unsustainable fiscal policy and expect its successor to pay the bill.

One possible conclusion from these findings is that fiscal balance is more determined by outside influences than active choices by politicians. No matter what kind of parties are voted into government and what constitutional choices are made, fiscal policy will always be determined by influences that only to a very limited degree can be influenced by a country's politicians or citizens. This could be the economic fluctuations over time or more permanent features such as the quality of government institution and the degree of social trust. Even the stability and growth pact only seemed to have an influence when sanctions for non-compliance could be enforced from the outside. It could however also be that there is no common pattern in which parties that leads stringent fiscal policies, but all governments are exposed to the economic, political and societal climate within which they govern.

## 7. LITERATURE

Acemoglu, Daron, Simon Johnson and James Robinson (2003). *An African Success Story: Botswana. In search of prosperity: analytical narratives on economic growth*. Dani Rodrik. Princeton, NJ, Princeton University Press.

Alesina, Alberto, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat and Romain Wacziarg (2003). "Fractionalization." *Journal of Economic Growth* **8**: 155-194.

Alesina, Alberto and Allan Drazen (1991). "Why are Stabilizations Delayed?" *The American Economic Review* **81**(5): 1170-1188.

Alesina, Alberto and Roberto Perotti (1995). "The Political Economy of Budget Deficits." *Staff Papers - International Monetary Fund* **42**(1): 1-31.

Alesina, Alberto and Roberto Perotti (1996). "Income distribution, political instability, and investment." *European Economic Review* **40**(6): 1203-1228.

Alesina, Alberto and Guido Tabellini (1990). "A Positive Theory of Fiscal Deficits and Government Debt " *The Review of Economic Studies* **57**(3): 403-414.

Ayuso-i-Casals, Joaquim, Xavier Debrun, Manmohan S. Kumar, Laurent Moulin and Alessandro Turrini (2007). "Beyond the SGP: Features and effects of EU national-level fiscal rules." **275**.

Banks, Arthur (2004). *Banks' Cross-National Time-Series Data Archive*. Bingham, NY, Databanks International.

Barro, Robert J. (1979). "On the Determination of the Public Debt." *The Journal of Political Economy* **87**(5): 940-971.

Bille, Lars (2001). "Denmark." *European Journal of Political Research* **40**(3-4): 283-290.

Bille, Lars (2002). "Denmark." *European Journal of Political Research* **41**(7-8): 941-946.

Bille, Lars (2003). "Denmark." *European Journal of Political Research* **42**(7-8): 931-934.

Bille, Lars (2004). "Denmark." *European Journal of Political Research* **43**(7-8): 989-992.

Bille, Lars (2005). "Denmark." *European Journal of Political Research* **44**(7-8): 994-1001.

Bille, Lars (2006). "Denmark." *European Journal of Political Research* **45**(7-8): 1084-1093.

Bille, Lars (2007). "Denmark." *European Journal of Political Research* **46**(7-8): 938-942.

Borrelli, Stephen A. and Terry J. Royed (1995). "Government 'strength' and budget deficits in advanced democracies." *European Journal of Political Research* **28**: 225-260.

Buchanan, James M., Robert D. Tollison and Charles K. Rowley (1987). *Deficits*. Oxford, Basil Blackwell.

Buchanan, James M. and Richard E. Wagner (1977). Democracy in deficit: the political legacy of Lord Keynes. New York, Academic Press.

Burtini, Giuseppe. (2009). "GDP Deflator and Measuring Inflation." from <http://www.politonomist.com/gdp-deflator-and-measuring-inflation-00491/>.

Buti, Marco and Paul van den Noord (2003). Discretionary Fiscal Policy and Election: The Experience of the Early Years of EMU. OECD Economics Department Working Papers, OECD Publishing. **351**.

Carty, R. K. (2002). "Canada." European Journal of Political Research **41**(7-8): 927-930.

Carty, R. K. (2003). "Canada." European Journal of Political Research **42**(7-8): 910-915.

Carty, R. K. (2004). "Canada." European Journal of Political Research **43**(7-8): 963-968.

Carty, R. K. (2005). "Canada." European Journal of Political Research **44**(7-8): 968-974.

Carty, R. K. (2006). "Canada." European Journal of Political Research **45**(7-8): 1065-1070.

Carty, R. K. (2007). "Canada." European Journal of Political Research **46**(7-8): 909-915.

Carty, R. K. (2001). "Canada." European Journal of Political Research **40**(3-4): 263-270.

Chong, Alberto and César Calderón (2000). "Institutional quality and poverty measures in a cross-section of countries." Economics of Governance **1**(2): 123-135.

Dahlstöm, Carl, Victor Lapuente and Jan Torell (2009). Bureaucracy, Politics and Corruption. QoG Working Paper Series, The Quality of Government Institute. **21**.

de Haan, Jakob, Helge Berger and David-Jan Jansen (2004). "Why Did the Stability and Growth Pact Fail?" International Finance **7**(2): 235-260.

De Haan, Jakob and Mark Mink (2005). Has the Stability and Growth Pact Impeded Political Budget Cycles in the European Union.

De Winter, Lieven and Patrick Dumont (2006). "Belgium." European Journal of Political Research **45**(7-8): 1055-1064.

Debrun, Xavier, Laurent Moulin, Alessandro Turrini, Joaquim Ayuso-i-Casals and Manmohan S. Kumar (2008). "Tied to the mast? National fiscal rules in the European Union." Economic Policy **23**(54): 297-362.

Delgado, Irene and Lourdes López Nieto (2001). "Spain." European Journal of Political Research **40**(3-4): 413-420.

Delgado, Irene and Lourdes López Nieto (2002). "Spain." European Journal of Political Research **41**(7-8): 1084-1088.

- Delgado, Irene and Lourdes López Nieto (2003). "Spain." European Journal of Political Research **42**(7-8): 1087-1090.
- Delgado, Irene and Lourdes López Nieto (2004). "Spain." European Journal of Political Research **43**(7-8): 1138-1143.
- Delgado, Irene and Lourdes López Nieto (2005). "Spain." European Journal of Political Research **44**(7-8): 1188-1194.
- Delgado, Irene and Lourdes López Nieto (2006). "Spain." European Journal of Political Research **45**(7-8): 1266-1269.
- Delgado, Irene and Lourdes López Nieto (2007). "Spain." European Journal of Political Research **46**(7-8): 1114-1117.
- Diskin, Abraham (2001). "Israel." European Journal of Political Research **40**(3-4): 335-339.
- Diskin, Abraham (2002). "Israel." European Journal of Political Research **41**(7-8): 984-991.
- Diskin, Abraham (2003). "Israel." European Journal of Political Research **42**(7-8): 986-989.
- Diskin, Abraham (2004). "Israel." European Journal of Political Research **43**(7-8): 1033-1040.
- Diskin, Abraham (2005). "Israel." European Journal of Political Research **44**(7-8): 1056-1062.
- Diskin, Abraham (2006). "Israel." European Journal of Political Research **45**(7-8): 1135-1142.
- Diskin, Abraham (2007). "Israel." European Journal of Political Research **46**(7-8): 984-992.
- Dumont, Patrick and Mario Hirsch (2003). "Luxembourg." European Journal of Political Research **42**(7-8): 1021-1025.
- Dumont, Patrick and Philippe Poirier (2004). "Luxembourg." European Journal of Political Research **43**(7-8): 1070-1077.
- Dumont, Patrick and Philippe Poirier (2005). "Luxembourg." European Journal of Political Research **44**(7-8): 1102-1118.
- Dumont, Patrick and Philippe Poirier (2006). "Luxembourg." European Journal of Political Research **45**(7-8): 1182-1197.
- Dumont, Patrick and Philippe Poirier (2007). "Luxembourg." European Journal of Political Research **46**(7-8): 1032-1037.
- Dumont, Patrick and Lieven Winter (2002). "Luxembourg." European Journal of Political Research **41**(7-8): 1028-1032.
- Duverger, Maurice (1972). Political parties: their organization and activity in the modern state. London, Methuen.

Duverger, Maurice (1980). "A New Political System Model: Semi-Presidential Government." European Journal of Political Research **8**(2).

Economist (2009). The biggest bill in history. The Economist. **391 (8653)**: 11.

Economist (2010). The sad end of the party. The Economist.

Elgie, Robert (2005). "A Fresh Look at Semipresidentialism - Variation on a Theme." Journal of Democracy **16**(3): 98-112.

Fallend, Franz (2001). "Austria." European Journal of Political Research **40**(3-4): 238-253.

Fallend, Franz (2002). "Austria." European Journal of Political Research **41**(7-8): 906-914.

Fallend, Franz (2003). "Austria." European Journal of Political Research **42**(7-8): 887-899.

Fallend, Franz (2004). "Austria." European Journal of Political Research **43**(7-8): 934-949.

Fallend, Franz (2005). "Austria." European Journal of Political Research **44**(7-8): 940-956.

Fallend, Franz (2006). "Austria." European Journal of Political Research **45**(7-8): 1042-1052.

Fallend, Franz (2007). "Austria." European Journal of Political Research **46**(7-8): 876-890.

Faustmann, Hubert and Erol Kaymak (2007). "Cyprus." European Journal of Political Research **46**(7-8): 916-928.

Fausto, Domenicantonio (2006). "The Italian approach to the theory of public goods." The European Journal of the History of Economic Thought **13**(1): 69-98.

Fenech, Dominic (2001). "Malta." European Journal of Political Research **40**(3-4): 361-364.

Fenech, Dominic (2002). "Malta." European Journal of Political Research **41**(7-8): 1033-1036.

Fenech, Dominic (2003). "Malta." European Journal of Political Research **42**(7-8): 1026-1028.

Fenech, Dominic (2004). "Malta." European Journal of Political Research **43**(7-8): 1078-1083.

Fenech, Dominic (2005). "Malta." European Journal of Political Research **44**(7-8): 1119-1123.

Fenech, Dominic (2006). "Malta." European Journal of Political Research **45**(7-8): 1198-1200.

Fenech, Dominic (2007). "Malta." European Journal of Political Research **46**(7-8): 1038-1040.

Fink-Hafner, Danica (2003). "Slovenia." European Journal of Political Research **42**(7-8): 1078-1086.

Fink-Hafner, Danica (2004). "Slovenia." European Journal of Political Research **43**(7-8): 1130-1137.

- Fink-Hafner, Danica (2005). "Slovenia." European Journal of Political Research **44**(7-8): 1179-1187.
- Fink-Hafner, Danica (2006). "Slovenia." European Journal of Political Research **45**(7-8): 1260-1265.
- Fink-Hafner, Danica (2007). "Slovenia." European Journal of Political Research **46**(7-8): 1107-1113.
- Fisher, Justin (2001). "United Kingdom." European Journal of Political Research **40**(3-4): 437-446.
- Fisher, Justin (2002). "United Kingdom." European Journal of Political Research **41**(7-8): 1101-1110.
- Fisher, Justin (2003). "United Kingdom." European Journal of Political Research **42**(7-8): 1108-1114.
- Fisher, Justin (2004). "United Kingdom." European Journal of Political Research **43**(7-8): 1160-1169.
- Fisher, Stephen D. (2006). "United Kingdom." European Journal of Political Research **45**(7-8): 1282-1291.
- Fisher, Stephen D. (2007). "United Kingdom." European Journal of Political Research **46**(7-8): 1134-1141.
- Fisher, Stephen D. and Shawne Smith (2005). "United Kingdom." European Journal of Political Research **44**(7-8): 1211-1220.
- Franzese Jr., Robert J. (2001). The Positive Political Economy of Public Debt: An Empirical Examination of the OECD Postwar Experience. Workshop on Political Economy. The Eitan Berglas School of Economics, Tel Aviv University.
- Gallagher, Michael and Paul Mitchell (2005). The Politics of electoral systems. Oxford, Oxford University Press.
- Gasiorowski, Mark J. (1998). "Macroeconomic conditions and political instability: An empirical analysis." Studies in Comparative International Development **33**(3): 3-17.
- Ghura, Dhaneshwar (1998). Tax Revenue in Sub-Saharan Africa - Effects of Economic Policies and Corruption. IMF Working Papers, International Monetary Fund. **98**.
- Gupta, Sanjeev, Luiz de Mello and Raju Sharan (2001). "Corruption and Military Spending." European Journal of Political Economy **17**: 749-777.
- Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2001). "Iceland." European Journal of Political Research **40**(3-4): 326-329.

Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2002). "Iceland." European Journal of Political Research **41**(7-8): 975-977.

Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2003). "Iceland." European Journal of Political Research **42**(7-8): 975-978.

Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2004). "Iceland." European Journal of Political Research **43**(7-8): 1024-1029.

Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2005). "Iceland." European Journal of Political Research **44**(7-8): 1041-1048.

Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2006). "Iceland." European Journal of Political Research **45**(7-8): 1128-1131.

Hardarson, Óladur Th. and Gunnar Helgi Kristinsson (2007). "Iceland." European Journal of Political Research **46**(7-8): 974-979.

Hardmeier, Sibylle (2001). "Switzerland." European Journal of Political Research **40**(3-4): 426-436.

Hardmeier, Sibylle (2002). "Switzerland." European Journal of Political Research **41**(7-8): 1095-1100.

Hardmeier, Sibylle (2003). "Switzerland." European Journal of Political Research **42**(7-8): 1102-1107.

Hardmeier, Sibylle (2004). "Switzerland." European Journal of Political Research **43**(7-8): 1151-1159.

Hibbs, Douglas A. (1987). The American political economy: macroeconomics and electoral politics. Cambridge, Mass., Harvard University Press.

Hibbs, Douglas A., Jr. (1986). "Political Parties and Macroeconomic Policies and Outcomes in the United States." The American Economic Review **76**(2): 66-70.

Holden, Steinar (2009). The Three Outsiders and the Monetary Union. EMU at ten. Should Denmark, Sweden and the UK join? Harry Flam.

Holmberg, Sören, Bo Rothstein and Naghmeh Nasiritousi (2008). Quality of Government: What You Get. QoG Working Paper series. Gothenburg, The Quality of Government Institute. **21**.

Hox, J. J. (2002). Multilevel analysis: techniques and applications. Mahwah, N.J., Lawrence Erlbaum Associates.

Huber, Gerald, Martin Kocher and Matthias Sutter (2003). "Government Strength. power dispersion in governments and budget deficits in OECD-countries. A voting power approach." Public Choice **116**: 333-350.

Huntington, Samuel P. (1968). Political order in changing societies. New Haven, Conn., Yale University Press.

Ignazi, Piero (2001). "Italy." European Journal of Political Research **40**(3-4): 340-347.

Ignazi, Piero (2002). "Italy." European Journal of Political Research **41**(7-8): 992-1000.

Ignazi, Piero (2003). "Italy." European Journal of Political Research **42**(7-8): 990-995.

Ignazi, Piero (2004). "Italy." European Journal of Political Research **43**(7-8): 1041-1046.

Ignazi, Piero (2005). "Italy." European Journal of Political Research **44**(7-8): 1063-1070.

Ignazi, Piero (2006). "Italy." European Journal of Political Research **45**(7-8): 1143-1151.

Ignazi, Piero (2007). "Italy." European Journal of Political Research **46**(7-8): 993-1004.

Ikstens, Jānis (2002). "Latvia." European Journal of Political Research **41**(7-8): 1010-1014.

Ikstens, Jānis (2003). "Latvia." European Journal of Political Research **42**(7-8): 1003-1009.

Ikstens, Jānis (2004). "Latvia." European Journal of Political Research **43**(7-8): 1054-1058.

Ikstens, Jānis (2005). "Latvia." European Journal of Political Research **44**(7-8): 1077-1085.

Ikstens, Jānis (2007). "Latvia." European Journal of Political Research **46**(7-8): 1012-1018.

Ilonszki, Gabriella and Sándor Kurtán (2001). "Hungary." European Journal of Political Research **40**(3-4): 320-325.

Ilonszki, Gabriella and Sándor Kurtán (2002). "Hungary." European Journal of Political Research **41**(7-8): 968-974.

Ilonszki, Gabriella and Sándor Kurtán (2003). "Hungary." European Journal of Political Research **42**(7-8): 967-974.

Ilonszki, Gabriella and Sándor Kurtán (2004). "Hungary." European Journal of Political Research **43**(7-8): 1018-1023.

Ilonszki, Gabriella and Sándor Kurtán (2005). "Hungary." European Journal of Political Research **44**(7-8): 1033-1040.

Ilonszki, Gabriella and Sándor Kurtán (2006). "Hungary." European Journal of Political Research **45**(7-8): 1120-1127.

Ilonszki, Gabriella and Sándor Kurtán (2007). "Hungary." European Journal of Political Research **46**(7-8): 966-973.

IMF (1991). Central Government: Overall Deficit/Surplus -- GDP. Government Finance Statistics. International Monetary Fund. Washington D.C. **XV**: 78-79.

IMF (1994). Central Government: Overall Deficit/Surplus -- GDP. Government Finance Statistics Yearbook. International Monetary Fund. Washington D.C. **XVIII**: 82-83.

IMF (2007). Main Balances: General and Central Government -- Central Government -- Net Lending/Borrowing. Government Finance Statistics Yearbook. International Monetary Fund. Washington D.C. **XXXI**: 4-6.

IMF (2009). World economic outlook April 2009 - Crisis and Recovery. Washington, DC, International Monetary Fund.

IMF (2010). World Economic Outlook April 2010 - Rebalancing Growth. Washington, DC, International Monetary Fund.

IPU. (2010). "Parline - database on national parliaments." from <http://www.ipu.org/parline-e/parlinesearch.asp>.

Jānis, Iktens (2006). "Latvia." European Journal of Political Research **45**(7-8): 1162-1165.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2001). "Poland." European Journal of Political Research **40**(3-4): 383-395.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2002). "Poland." European Journal of Political Research **41**(7-8): 1057-1067.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2003). "Poland." European Journal of Political Research **42**(7-8): 1052-1057.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2004). "Poland." European Journal of Political Research **43**(7-8): 1106-1115.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2005). "Poland." European Journal of Political Research **44**(7-8): 1147-1157.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2006). "Poland." European Journal of Political Research **45**(7-8): 1231-1246.

Jasiewicz, Krzysztof and Agnieszka Jasiewicz-Betkiewicz (2007). "Poland." European Journal of Political Research **46**(7-8): 1063-1074.

Kato, Junko (2001). "Japan." European Journal of Political Research **40**(3-4): 348-360.

Kato, Junko (2002). "Japan." European Journal of Political Research **41**(7-8): 1001-1009.

Kato, Junko (2003). "Japan." European Journal of Political Research **42**(7-8): 996-1002.

Kato, Junko (2004). "Japan." European Journal of Political Research **43**(7-8): 1047-1053.

Kato, Junko (2005). "Japan." European Journal of Political Research **44**(7-8): 1071-1076.

- Kato, Junko (2006). "Japan." European Journal of Political Research **45**(7-8): 1152-1161.
- Katz, Richard S. (2001). "The United States of America." European Journal of Political Research **40**(3-4): 447-457.
- Katz, Richard S. (2002). "United States of America." European Journal of Political Research **41**(7-8): 1111-1118.
- Katz, Richard S. (2003). "United States." European Journal of Political Research **42**(7-8): 1115-1123.
- Katz, Richard S. (2004). "United States." European Journal of Political Research **43**(7-8): 1170-1175.
- Katz, Richard S. (2005). "United States." European Journal of Political Research **44**(7-8): 1221-1230.
- Katz, Richard S. (2006). "United States." European Journal of Political Research **45**(7-8): 1292-1301.
- Katz, Richard S. (2007). "United States." European Journal of Political Research **46**(7-8): 1142-1152.
- Kaufmann, Daniel and Aart Kraay (2002). Growth Without Governance. World Bank Policy Research Paper, The World Bank, World Bank Institute and Development Research Group. **2928**.
- Kaufmann, Daniel, Aart Kraay and Zoido-Lobaton (1999). Governance Matters. Policy Research Working Paper, World Bank Institute. **2196**.
- Keech, William R. (1995). Economic politics: the costs of democracy. Cambridge, Cambridge University Press.
- Ker-Lindsay, James and Keith Webb (2004). "Cyprus." European Journal of Political Research **43**(7-8): 969-979.
- Ker-Lindsay, James and Keith Webb (2005). "Cyprus." European Journal of Political Research **44**(7-8): 975-982.
- Ker-Lindsay, James and Keith Webb (2006). "Cyprus." European Journal of Political Research **45**(7-8): 1071-1077.
- King, Gary, Robert O. Keohane and Sidney Verba (1994). Designing social inquiry: scientific inference in qualitative research. Princeton, N.J., Princeton University Press.
- Krupavicius, Algis (2002). "Lithuania." European Journal of Political Research **41**(7-8): 1015-1027.
- Krupavicius, Algis (2003). "Lithuania." European Journal of Political Research **42**(7-8): 1010-1020.

- Krupavicius, Algis (2004). "Lithuania." European Journal of Political Research **43**(7-8): 1059-1069.
- Krupavicius, Algis (2005). "Lithuania." European Journal of Political Research **44**(7-8): 1086-1101.
- Krupavicius, Algis (2006). "Lithuania." European Journal of Political Research **45**(7-8): 1166-1181.
- Krupavicius, Algis (2007). "Lithuania." European Journal of Political Research **46**(7-8): 1019-1031.
- Lakeman, Enid and James D. Lambert (1955). Voting in democracies: a study of majority and proportional electoral systems. London, Faber and Faber.
- Lichbach, Mark Irving (1989). "An Evaluation of "Does Economic Inequality Breed Political Conflict?" Studies." World Politics **41**(4): 431-470.
- Lijphart, Arend (1999). Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries. London, Yale University Press.
- Lindahl, Rutger and Daniel Naurin (2005). "Sweden: The Twin Faces of a Euro-Outsider." European Integration **27**(1): 65-87.
- Linek, Lukáš (2005). "Czech Republic." European Journal of Political Research **44**(7-8): 983-993.
- Linek, Lukáš (2006). "Czech Republic." European Journal of Political Research **45**(7-8): 1078-1083.
- Linek, Lukáš (2007). "Czech Republic." European Journal of Political Research **46**(7-8): 929-937.
- Lucardie, Paul (2001). "The Netherlands." The Netherlands **40**(3-4): 365-369.
- Lucardie, Paul (2003). "The Netherlands." European Journal of Political Research **42**(7-8): 1029-1036.
- Lucardie, Paul (2007). "The Netherlands." European Journal of Political Research **46**(7-8): 1041-1048.
- Lucardie, Paul and Gerrit Voerman (2002). "The Netherlands." European Journal of Political Research **41**(7-8): 1037-1040.
- Lucardie, Paul and Gerrit Voerman (2004). "The Netherlands." European Journal of Political Research **43**(7-8): 1084-1092.
- Lucardie, Paul and Gerrit Voerman (2005). "The Netherlands." European Journal of Political Research **44**(7-8): 1124-1133.

- Lucardie, Paul and Gerrit Voerman (2006). "The Netherlands." European Journal of Political Research **45**(7-8): 1201-1206.
- Lukáš, Linek (2002). "Czech Republic." European Journal of Political Research **41**(7-8): 931-940.
- Lukáš, Linek (2003). "Czech Republic." European Journal of Political Research **42**(7-8): 916-930.
- Lukáš, Linek and Zdenka Mansfeldová (2004). "Czech Republic." European Journal of Political Research **43**(7-8): 980-988.
- Luke, Douglas A. (2004). Multilevel Modeling. Thousand Oaks, CA, Sage Publications.
- Luke, Douglas A. (2008). Multilevel growth curve analysis for qualitative outcomes. Handbook of Longitudinal Research. Scott Menard. Amsterdam, Elsevier: 545-564.
- Laakso, Markku and Rein Taagepera (1979). "'Effective' Number of Parties: A Measure with Application to West Europe." Comparative Political Studies **12**(1): 3-27.
- Massicotte, Louis and André Blais (1999). "Mixed electoral systems: a conceptual and empirical survey." Electoral Studies **18**(3): 341-366.
- McKeown, Timothy J. (1999). "Case Studies and the Statistical Worldview. Review of King, Keohane, and Verbas Designing Social Inquiry: Scientific Inference in Qualitative Research." International Organization **65**(3): 682-693.
- Midtbø, Tor (1999). "The impact of parties, economic growth, and public sector expansion: A comparison of long-term dynamics in the Scandinavian and Anglo-American democracies." European Journal of Political Research **35**: 199-223.
- Milic, Thomas (2005). "Switzerland." European Journal of Political Research **44**(7-8): 1203-1210.
- Milic, Thomas (2006). "Switzerland." European Journal of Political Research **45**(7-8): 1275-1281.
- Nordhaus, William D., Alberto Alesina and Charles L. Schultze (1989). "Alternative Approaches to the Political Business Cycle." Brookings Papers on Economic Activity **1989**(2): 1-68.
- Norris, Pippa (1997). "Choosing Electoral Systems: Proportional, Majoritarian and Mixed Systems." International Political Science Review **18**(3): 297-312.
- Norris, Pippa (2009). Democracy Time-series Dataset.
- North, Douglass C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge, Cambridge University Press.

- O'Malley, Eoin (2006). "Ireland." European Journal of Political Research **45**(7-8): 1132-1134.
- O'Malley, Eoin (2007). "Ireland." European Journal of Political Research **46**(7-8): 980-983.
- O'Malley, Eoin and Michael Marsh (2001). "Ireland." European Journal of Political Research **40**(3-4): 330-334.
- O'Malley, Eoin and Michael Marsh (2002). "Ireland." European Journal of Political Research **41**(7-8): 978-983.
- O'Malley, Eoin and Michael Marsh (2003). "Ireland." European Journal of Political Research **42**(7-8): 979-985.
- O'Malley, Eoin and Michael Marsh (2004). "Ireland." European Journal of Political Research **43**(7-8): 1030-1032.
- O'Malley, Eoin and Michael Marsh (2005). "Ireland." European Journal of Political Research **44**(7-8): 1049-1055.
- OECD.stat. (2010). "National Accounts - Annual National Accounts - 2. Disposable income and net lending - net borrowing." from <http://stats.oecd.org/Index.aspx>.
- Ostrom, Elinor (1986). "An Agenda for the Study of Institutions." Public Choice **48**(1): 3-25.
- Pennings, Paul, Hans Keman and Jan Kleinnijenhuis (2006). Doing research in political science. London, Sage.
- Persson, Torsten and Lars E. O. Svensson (1989). "Why a Stubborn Conservative would Run a Deficit: Policy with Time- Inconsistent Preferences." The Quarterly Journal of Economics **104**(2): 325-345.
- Persson, Torsten and Guido Tabellini (1999). "The size and scope of government:: Comparative politics with rational politicians." European Economic Review **43**(4-6): 699-735.
- Persson, Torsten and Guido Tabellini (2000). Political economics: explaining economic policy. Cambridge, Mass., MIT Press.
- Petersen, Mitchell A. (2009). "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches." Rev. Financ. Stud. **22**(1): 435-480.
- Pettai, Vello (2002). "Estonia." European Journal of Political Research **41**(7-8): 947-951.
- Pettai, Vello (2003). "Estonia." European Journal of Political Research **42**(7-8): 935-939.
- Pettai, Vello (2004). "Estonia." European Journal of Political Research **43**(7-8): 993-999.
- Pettai, Vello (2005). "Estonia." European Journal of Political Research **44**(7-8): 1002-1011.
- Pettai, Vello (2006). "Estonia." European Journal of Political Research **45**(7-8): 1094-1100.

- Pettai, Vello (2007). "Estonia." European Journal of Political Research **46**(7-8): 943-948.
- Pierson, Paul (2003). Big, Slow-Moving, and ... Invisible: Macrosocial processes in the study of comparative politics. Comparative Historical Analysis in the Social Sciences. James Mahoney and Dietrich Rueschemeyer. Cambridge, Cambridge University Press: 177-207.
- Poguntke, Thomas (2001). "Germany." European Journal of Political Research **40**(3-4): 307-312.
- Poguntke, Thomas (2002). "Germany." European Journal of Political Research **41**(7-8): 959-963.
- Poguntke, Thomas (2003). "Germany." European Journal of Political Research **42**(7-8): 957-963.
- Poguntke, Thomas (2004). "Germany." European Journal of Political Research **43**(7-8): 1010-1014.
- Poguntke, Thomas (2005). "Germany." European Journal of Political Research **44**(7-8): 1019-1024.
- Poguntke, Thomas (2006). "Germany." European Journal of Political Research **45**(7-8): 1110-1116.
- Poguntke, Thomas (2007). "Germany." European Journal of Political Research **47**(7-8): 957-961.
- Przeworski, Adam and Henry Teune (1970). The logic of comparative social inquiry. New York, Wiley.
- Raudenbush, Stephen W. and Anthony S. Bryk (2002). Hierarchical linear models: applications and data analysis methods. Thousand Oaks, Sage Publications.
- Raudenbush, Stephen W., Anthony S. Bryk, Yuk Fai Cheong, Richard Congdon and Mathilda Du Toit (2004). HLM 6: hierarchical linear & nonlinear modeling. Lincolnwood, Ill., Scientific Software International.
- Reuters. (2010). "Conservatives need partner after inconclusive UK vote." from <http://www.reuters.com/article/idUSTRE6456NZ20100507>.
- Reynolds, Andrew and Ben Reilly (1997). The International IDEA handbook of electoral system design. Stockholm, International IDEA.
- Rihoux, Benoît, Régis Dandoy, Lieven De Winter and Patrick Dumont (2005). "Belgium." European Journal of Political Research **44**(7-8): 957-967.
- Rihoux, Benoît, Lieven De Winter, Patrick Dumont and Régis Dandoy (2003). "Belgium." European Journal of Political Research **42**(7-8): 900-909.

Rihoux, Benoît, Lieven De Winter, Patrick Dumont and Régis Dandoy (2004). "Belgium." European Journal of Political Research **43**(7-8): 950-962.

Rihoux, Benoît, Lieven De Winter, Patrick Dumont and Serge Deruette (2007). "Belgium." European Journal of Political Research **46**(7-8): 891-900.

Rihoux, Benoît, Patrick Dumont and Régis Dandoy (2001). "Belgium." European Journal of Political Research **40**(3-4): 254-262.

Rihoux, Benoît, Patrick Dumont, Lieven Winter and Régis Dandoy (2002). "Belgium." European Journal of Political Research **41**(7-8): 915-926.

Roubini, Nouriel and Jeffrey Sachs (1989a). "Political and economic determinants of budget deficits in the industrial democracies." European Economic Review **33**: 903-938.

Roubini, Nouriel and Jeffrey Sachs (1989b). "Government Spending and budget deficits in the industrial countries." Economic Policy **4**(8): 100-132.

Sarakisian, Natasha. (2007). "HLM Diagnostics." from [www.sarkisian.net/sc705/october4.doc](http://www.sarkisian.net/sc705/october4.doc).

Schumpeter, Joseph A. (1954). History of Economic Analysis. Oxford, Oxford University Press.

Shi, Min and Jakob Svensson (2002). Conditional Budget Cycles.

Short, Jeremy C., David J. Ketchen Jr., Nathan Bennett and Mathilda du Toit (2006). "An Examination of Firm, Industry, and Time Effects on Performance Using Random Coefficients Modeling." Organizational Research Methods **9**(3): 259-284.

Siaroff, Alan (2003). "Comparative presidencies: The inadequacy of presidential, semi-presidential and parliamentary distinctions." European Journal of Political Research **42**(3): 387-312.

Sidler, Andreas (2007). "Switzerland." European Journal of Political Research **46**(7-8): 1127-1133.

Singer, Judith D. and John B. Willett (2003). Applied longitudinal data analysis: modeling change and event occurrence. Oxford, Oxford University Press.

Skocpol, Theda (2003). Doubly Engaged Social Science: The Promise of Comparative Historical Analysis. Comparative Historical Analysis in the Social Sciences. James Mahoney and Dietrich Rueschemeyer. Cambridge, Cambridge University Press: 407-428.

Spirova, Maria (2007). "Bulgaria." European Journal of Political Research **46**(7-8): 901-908.

Stan, Lavina and Razvan Zaharia (2007). "Romania." European Journal of Political Research **46**(7-8): 1082-1095.

Steenbergen, Marco R. and Bradford S. Jones (2002). "Modeling Multilevel Data Structures." American Journal of Political Science **46**(1): 218-237.

- Strøm, Kaare (1990). Minority government and majority rule. Cambridge, Cambridge University Press.
- Sundberg, Jan (2001). "Finland." European Journal of Political Research **40**(3-4): 291-299.
- Sundberg, Jan (2002). "Finland." European Journal of Political Research **41**(7-8): 952-954.
- Sundberg, Jan (2003). "Finland." European Journal of Political Research **42**(7-8): 940-942.
- Sundberg, Jan (2004). "Finland." European Journal of Political Research **43**(7-8): 1000-1005.
- Sundberg, Jan (2005). "Finland." European Journal of Political Research **44**(7-8): 1008-1011.
- Sundberg, Jan (2006). "Finland." European Journal of Political Research **45**(7-8): 1101-1103.
- Sundberg, Jan (2007). "Finland." European Journal of Political Research **46**(7-8): 949-952.
- Tanzi, Vito and Hamid R. Davoodi (2000). Corruption, Growth, and Public Finances. IMF Working Paper, International Monetary Fund. **00/182**.
- Teorell, Jan, Nicholas Charron, Marcus Samanni, Sören Holmberg and Bo Rothstein (2009b). The Quality of Government Dataset Codebook, version 17June09, University of Gothenburg: The Quality of Government Institute.
- Tufte, Edward R. (1978). Political Control of the Economy, Princeton University Press.
- Učeň, Peter (2001). "Slovakia." European Journal of Political Research **40**(3-4): 402-412.
- Učeň, Peter (2002). "Slovakia." European Journal of Political Research **41**(7-8): 1075-1083.
- Učeň, Peter (2003). "Slovakia." European Journal of Political Research **42**(7-8): 1067-1077.
- Učeň, Peter (2004). "Slovakia." European Journal of Political Research **43**(7-8): 1121-1129.
- Učeň, Peter (2005). "Slovakia." European Journal of Political Research **44**(7-8): 1167-1178.
- Učeň, Peter (2006). "Slovakia." European Journal of Political Research **45**(7-8): 1254-1259.
- UNPD. (2009). "World Population Prospects: The 2008 Revision Population Database: Population 65+." Retrieved April 7th, 2010, from <http://esa.un.org/unpp/index.asp?panel=2>.
- UNU-WIDER. (2008). "World Income Inequality Database V2.0c May 2008." from [http://www.wider.unu.edu/research/Database/en\\_GB/database/](http://www.wider.unu.edu/research/Database/en_GB/database/).
- USDA. (2009, Nov 4, 2009). "Real GDP (2005 dollars) Historical." from <http://www.ers.usda.gov/Data/Macroeconomics/>.
- Volkerink, Bjørn and Jakob de Haan (2001). "Fragmented government effect on fiscal policy: New evidence." Public Choice **109**: 221-242.

- Von Hagen, Jürgen (2003). Fiscal discipline and growth in Euroland. Experiences with the Stability and Growth Pact. ZEI Working Paper. **B062003**.
- von Hagen, Jürgen (2006). "Fiscal Rules and Fiscal Performance in the European Union and Japan." Monetary and Economic Studies **24**(1).
- Vowles, Jack (2001). "New Zealand." European Journal of Political Research **40**(3-4): 370-374.
- Vowles, Jack (2002). "New Zealand." European Journal of Political Research **41**(7-8): 1041-1046.
- Vowles, Jack (2003). "New Zealand." European Journal of Political Research **42**(7-8): 1037-1047.
- Vowles, Jack (2004). "New Zealand." European Journal of Political Research **43**(7-8): 1093-1098.
- Vowles, Jack (2005). "New Zealand." European Journal of Political Research **44**(7-8): 1134-1139.
- Vowles, Jack (2006). "New Zealand." European Journal of Political Research **45**(7-8): 1207-1220.
- Vowles, Jack (2007). "New Zealand." European Journal of Political Research **46**(7-8): 1049-1054.
- WBSM. (2010). "Implicit GDP-deflator." from <http://go.worldbank.org/TAFVBB7S71>.
- WBWDI. (2010). "Inflation, GDP deflator (annual %)." World Development Indicators, from <http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=135>.
- Weingast, Barry R., Kenneth A. Shepsle and Christopher Johnsen (1981). "The Political Economy of Benefits and Costs: A Neoclassical Approach to Distributive Politics." The Journal of Political Economy **89**(4): 642-664.
- Western, Bruce (1998). "Causal Heterogeneity in Comparative Research: A Bayesian Hierarchical Modelling Approach." American Journal of Political Science **42**(4): 1233-1259.
- Widfeldt, Anders (2001). "Sweden." European Journal of Political Research **40**(3-4): 421-425.
- Widfeldt, Anders (2002). "Sweden." European Journal of Political Research **41**(7-8): 1089-1094.
- Widfeldt, Anders (2003). "Sweden." European Journal of Political Research **42**(7-8): 1091-1101.

- Widfeldt, Anders (2004). "Sweden." European Journal of Political Research **43**(7-8): 1144-1150.
- Widfeldt, Anders (2005). "Sweden." European Journal of Political Research **44**(7-8): 1195-1202.
- Widfeldt, Anders (2006). "Sweden." European Journal of Political Research **45**(7-8): 1270-1274.
- Widfeldt, Anders (2007). "Sweden." European Journal of Political Research **46**(7-8): 1118-1126.
- Woldendorp, Jaap, Hans Keman and Ian Budge (2000). Party government in 48 democracies (1945-1998): composition, duration, personnel. Dordrecht, Kluwer.
- Woo, Jaejoon (2001). "Economic, political, and institutional determinants of public deficits." Journal of Public Economics **87**: 387-426.
- Wooldridge, Jeffrey M. (2009). Introductory econometrics: a modern approach. Mason, Ohio, South-Western Cengage Learning.
- Yeh, Ping-Hong, Stefan Gazdzinski, Timothy C. Durazzo, Karl Sjöstrand and Dieter J. Meyerhoff (2007). "Hierarchical linear modeling (HLM) of longitudinal brain structural and cognitive changes in alcohol-dependent individuals during sobriety." Drug and Alcohol Dependence **91**(2-3): 195-204.
- Ysmal, Colette (2001). "France." European Journal of Political Research **40**(3-4): 300-306.
- Ysmal, Colette (2002). "France." European Journal of Political Research **41**(7-8): 955-958.
- Ysmal, Colette (2003). "France." European Journal of Political Research **42**(7-8): 943-956.
- Ysmal, Colette (2004). "France." European Journal of Political Research **43**(7-8): 1006-1009.
- Ysmal, Colette (2005). "France." European Journal of Political Research **44**(7-8): 1012-1018.
- Ysmal, Colette (2006). "France." European Journal of Political Research **45**(7-8): 1104-1109.
- Ysmal, Colette (2007). "France." European Journal of Political Research **46**(7-8): 953-956.
- Aalberg, Toril (2001). "Norway." European Journal of Political Research **40**(3-4): 375-382.
- Aalberg, Toril (2002). "Norway." European Journal of Political Research **41**(7-8): 1047-1056.
- Aalberg, Toril (2003). "Norway." European Journal of Political Research **42**(7-8): 1048-1051.
- Aalberg, Toril (2004). "Norway." European Journal of Political Research **43**(7-8): 1099-1105.
- Aalberg, Toril (2005). "Norway." European Journal of Political Research **44**(7-8): 1140-1146.

Aalberg, Toril (2007). "Norway." European Journal of Political Research **46**(7-8): 1055-1062.

Aalberg, Toril and Tove Brekken (2006). "Norway." European Journal of Political Research **45**(7-8): 1221-1230.

Aaron, Henry (1976). "Inflation and the Income Tax." The American Economic Review **66**(2): 193-199.

## 7 Appendix

### 7.1 Analysis without Botswana and Norway

**Table 7-1:** Effect of all significant level-2 variables without Botswana and Norway

<b>Fixed effects</b>	<b>Coefficients</b>	<b>Robust S.E.</b>	<b>P-value</b>	
Model for average deficit score in 1993				
Intercept (***)	-4.486	1.193	.001	
GDP growth (***)	.183	.054	.001	
Inflation	.055	.047	.241	
Majority	.804	1.785	.652	
Centre-left	.616	.382	.107	
SGP (*)	2.000	1.123	.075	
Election (**)	-.516	.235	.029	
Majoritarian electoral system (**)	1.229	.549	.031	
Quality of government (***)	8.376	1.950	.000	
Political instability (***)	-2.302	.500	.000	
Population over 65 (**)	-.228	.094	.020	
Model for deficit growth				
Intercept (**)	.252	.103	.019	
Political instability (*)	.116	.061	.065	
Economic inequality (**)	.012	.005	.016	
Population over 65	.011	.011	.309	
<b>Random effects</b>	<b>Variance component</b>	<b>d.f</b>	<b>Chi-square</b>	<b>P-value</b>
Level-1 variation				
Level-1 error	7.495			
Level-2 variation				
State mean initial score (***)	3.782	39	379.23	.000
State mean trend rate (***)	.038	40	279.23	.000
<b>Model fit</b>	<b>Observations</b>			
Deviance = 4283.78	N (level-1): 1020			
Number of estimated parameters = 19	N (level-2): 45			
AIC = 4302.78				
Significance levels: (*) = p<.10, (**) = p<.05, (***) = p<.01 (two-tailed tests)				
Number of iterations (maximum likelihood estimation) = 12				