

Evaluating partisan effects on budget balances

Bachelor Thesis Economics

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Abstract:

By use of panel data, this thesis examines the effects governments of different ideological convictions have on the budgetary balance of their country. Using data of 24 OECD countries in the period between 1973 and 2012 this research finds that left-wing governments tend to perform more conservatively with regard to the budgetary balance than centrist and rightist authorities do.

Keywords: budgetary balance, partisan politics, political economy

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Preface

“It’s the economy, stupid” as President Bill Clinton stated in his winning 1992 presidential campaign. Economic variables are heavily debated during each election period, as they are of paramount importance in each individual’s life. Ranging for questions like “Is the demand for labour at such a level that I will be able to acquire a suitable job after my studies?” and “Will I be able to live a decent life after my retirement?” to “How much tax money should be utilised to cater to the needs of people in developing countries?” and “Should the government risk budgetary deficits to counter economic crises?”; the ties between politics and macroeconomic variables seem evident.

Personally, I am interested especially in the last question, which is the subject of heated political debate at this time in the Netherlands. Should “we” comply with the Brussels’ budgetary norm which restricts deficits to a maximum of three percent? And if so, in what manner? Should the government cut its expenses, boost its revenue, or should expensive facilities, such as social benefits, be reformed? And finally, what ideological preferences should the administration that leads “us” on the path back to prosperity have?

The reason for this research is to find out if these ideological preferences actually matter. Are the claims that the budget intensive boosting of the economy by left-wing administrations is short-sighted valid, or do right-wing governments yield similar effects to the budgetary balance? And what role does the European economical and monetary integration play in this case?

1. Introduction

1.1 Relevance

I am not worried about the deficit. It is big enough to take care of itself. – Ronald Reagan

After the sudden bankruptcy of Lehman Brothers in September 2008 gave rise to worldwide economic crisis, budgetary balances have been under severe scrutiny. Especially in Europe, where the US subprime mortgage crisis, among other reasons, resulted in a devastating sovereign debt crisis, this shift in focus has been apparent. Following from the Maastricht Treaty (signed on February 7th, 1993 and enforced on November 1st, 1993) all countries in the European Monetary Union, the countries using the Euro as their currency, were bound to the following convergence criteria, concerning budgetary deficits and public debt¹:

- 1. Annual budget deficit of a certain country shall be no more than 3 percent of the gross domestic product (GDP) of this country;**
- 2. A certain country's public debt shall be no more than 60 percent of GDP, or steadily converging towards this level;**

These criteria (criteria 2 and 3 of the treaty) are interesting in the course of this public debt crisis, as they restrict the possibilities a nation state's government has to conduct expansionary policies to boost its economy, thus gaining a perspective to leave the recession which followed from the debt crisis.

But this possible solution is just one side of the medal, as budgetary scrutiny itself can be regarded as a way to evade economic crises too. By refraining from excessive deficits a government ensures its public debt will not rise extensively, or in the case of budget surpluses it could even opt to decrease the sovereign debt, which in its turn would lead to lower interest costs and fewer expenses accordingly.

The majority of political economists argue that the choice between budgetary scrutiny and expansionary policies basically is a matter of ideological preference. The general assumption is such that left-wing administrations prefer to boost the economy, whereas right-wing governments rather not intervene in the market too much (Alesina et al., 1997). This leads to higher expenditure under left-wing authorities.

¹ http://glossary.reuters.com/index.php?title=Maastricht_Criteria

1.2 Thesis structure and research objectives

This thesis will be set up as follows: first the determinants of the budgetary balance of a country will be defined and an overview of existing political economic models will be given. Afterwards a baseline model and four models with refinements will be defined, and the methodology and hypotheses will be drafted. The following part will consist of an empirical research in 24 OECD-countries over a time period of forty years, testing the baseline model and the more extensive models defined earlier. Finally the results of the research will be extensively explored, discussed and concluded.

Many macroeconomic variables exist which possibly are influenced by political factors. Of these variables the budgetary balance caught my attention, as the literature on this variable is relatively limited. This may however not be confused as a sign of little importance of the balance in budget, as its effects are vast and possibly devastating. As an example of the previous one might think of the Italian default under the Mussolini regime of the early 1930s, the effects of which (the government found it hard to acquire the budget it needed to cater to the population's needs) threw poverty upon the local population (Burda & Wyplosz, 2009). Each single Euro which is loaned today will have to be repaid in the future with interest. So choosing to run extensive budgetary deficits have a direct impact on the near, to far future. When President Obama proposed a budget deficit of 12.4% of GDP, this was deemed to be "Generational theft" by some of his adversaries (Gayer & Rosen, 2010). As sovereign debt generally has duration of several decades, the intensity of current budgetary scrutiny influences the spending profile of future generations, through interest payments (debt service) and bond instalments. Optimal policies concerning the size of government revenue and government expenditure (which lead to either budgetary deficits or surpluses) should be adapted according to economic circumstances, as first discussed by Barro (1979, 1986), whose "consumption and tax smoothing" model argues that the taxes imposed and the consumption level chosen by the government should be adjusted to economic circumstances.

The main aim of this thesis is to investigate if the ideological stance of a government influences the height of the budgetary balance, and to see if this effect is different for countries using the Euro as their currency. Since the first part of this question has been the subject of little research, whereas the latter part has not been research thoroughly yet, I sincerely hope that with this research I can contribute to the knowledge in the field of political economy.

2. Literature research

2.1 Structure

In this section an overview of the literature research conducted will be given. First, an overview of models of political economy will be given, which accounts for the way in which political influence on macroeconomic matters is formalised. These models will offer insight in how leftist and rightist parties differ in the policies they prefer and how to attempt to win elections (which enables them to control local policy in the next period). Second, an overview will be given offering insight in the determinants of budgetary balances. Finally, an overview of empirical studies into the determinants of budgetary balances will be given.

2.2 Models of political economy: overview

The amount of research that has been done to investigate the influence of politics on macroeconomic variables, and vice versa, is vast, thus stressing the perceived importance of the relation between these factors. The models which have been set up to capture these effects can be roughly divided in two groups: opportunistic models and partisan models, both of which will be explored in the following sections, which serves as a synopsis of Alesina et al. (1997).

2.2.1 Opportunistic models

In opportunistic models the assumption is that politicians are fond of holding office, because of the benefits it yields. This desire to be in a position of power is such that if the demands of the public, the voters, changes, politicians alter the policies they choose accordingly. Opportunistic politicians thus do not follow a certain partisan ideology (or tend to digress from the chosen ideology rather easily), which makes these models (many of which assume identical voters) unfit for this research. In this research the assumption is made that policymakers care about the ideology of their constituency, and stick to this policy even if this would lead to unfavourable results at election times. The opportunistic models however established a solid base for political economy, and if the reader wishes to read a detailed analysis of such models, one might consider the excellent work of Alesina et al. (1997).

2.2.2 Partisan models

The main assumption of partisan models states that policymakers are chiefly concerned with pursuing economic policies which follow the ideological goals of themselves and their constituencies. The

opportunistic assumption that politicians are fond of holding office, because of the benefits it yields is partly correct in this context as partisan politicians need to win the elections to implement their policies. Concerning these ideological preferences the assumption is that left-wing governments are more prone to meddle in the local economy (in order to ensure more favourable outcomes for the constituencies), whereas right-wing administrations prefer a *laissez-faire* approach in which the government trusts on the markets to reach equilibriums. Within partisan models a divide can be made between: traditional models and rational models. Both models generally are discussed in terms of unemployment and economic growth, and theoretical partisan models on fiscal policy are hard to find as most authors chose an empirical approach to the latter. But since unemployment and economic growth commonly are regarded as (two of the) determinants of fiscal policy (thus debt and budgetary balance), as follows from the vast amount of empirical research conducted on fiscal policy (amongst whom Alesina et al. (1997), Edin & Ohlsson (1991), Persson & Tabellini (2000), Roubini & Sachs (1989), Woo (2003)), it could be useful to evaluate these theoretical models nevertheless. The different ideologies leftist and rightist policymakers hold with regard to economic growth and unemployment lead to the adoption of different policies, which will lead to other levels of tax incomes and government expenses, thus yielding different budgetary balances.

2.2.2.1 Traditional partisan model

This theory, as empirically founded by Hibbs (1977, 1987), has been placed in the theoretical framework of models which apply the exploitable Phillips curve approach (which depicts a trade-off between inflation and unemployment) and has been formalised theoretically by Alesina et al. (1997). The underlying assumptions are as follows:

1. *An expectation-augmented Phillips curve holds;*
2. *Expectations concerning the inflation are adaptive;*
3. *Policymakers are not identical. Left-wing governments value unemployment and growth more than inflation, whereas the contrary applies to right-wing administration;*
4. *In every election an incumbent faces only one challenger;*
5. *Each voter has his/her individual preferences over the composition between unemployment/growth and inflation, and casts a vote for either the left-wing or right-wing party accordingly;*
6. *The governing politicians can influence aggregate demand through drafting up policies;*
7. *The time at which elections are hold is of an exogenous nature.*

The Phillips curve describes the relation between unemployment and inflation, and seemed to capture this effect well until the emergence of the oil shocks in 1974 and 1980 (Burda & Wyplosz, 2009). During these episodes the Phillips curve appeared to not be appropriately modelled, as the role expectations play in forecasting the economic movement were neglected. In partisan models an economy is assumed in which an expectations-augmented Phillips curve holds (Alesina et al., 1997)

$$y_t = \bar{y} + \gamma(\pi_t - \pi_t^e); \quad \gamma > 0$$

in which y_t depicts the economic growth of the country, defined as the rate of growth of the Gross National Products (GNP). \bar{y} denotes the trend of economic growth, the natural rate of growth, π_t and π_t^e are measures of the inflation rate and the expected inflation rate respectively.

This equation can also be written in terms of unemployment, substituting y_t and \bar{y} for similar measures of unemployment and the natural rate of unemployment and taking another positive parameter γ' instead of γ . Assuming this parameter to be unitary and equal the Phillips curve in this model can be simplified to (Alesina et al. 1997):

$$y_t = \bar{y} + \pi_t - \pi_t^e$$

As inflation expectations are assumed to be updated constantly to the economic figures of that moment, the expected inflation rate can be defined as follows (Alesina et al., 1997):

$$\pi_t^e = \pi_{t-1} + \gamma(\pi_{t-1}^e - \pi_{t-1}); \quad 0 < \gamma < 1$$

so it is clear that inflation expectations are based upon historical measures of inflation and (partly) corrected for expectation errors in the previous period.

Once elected the policymaker follows the ideological preferences of its constituency. This process however is somewhat complicated if elections emerge. According to the median voter theorem (Gayer & Rosen, 2010) in a bi-party political landscape the optimal action for a party would be to converge to the middle, in an effort to win votes from the other party. Since both parties act in this manner political convergence will be an inevitable outcome. In this model the median voter theorem is not fully applied to, but the incumbent government might change its policies in the pre-election time to win over the marginal voter. However, the adopted policies of both parties will not be identical.

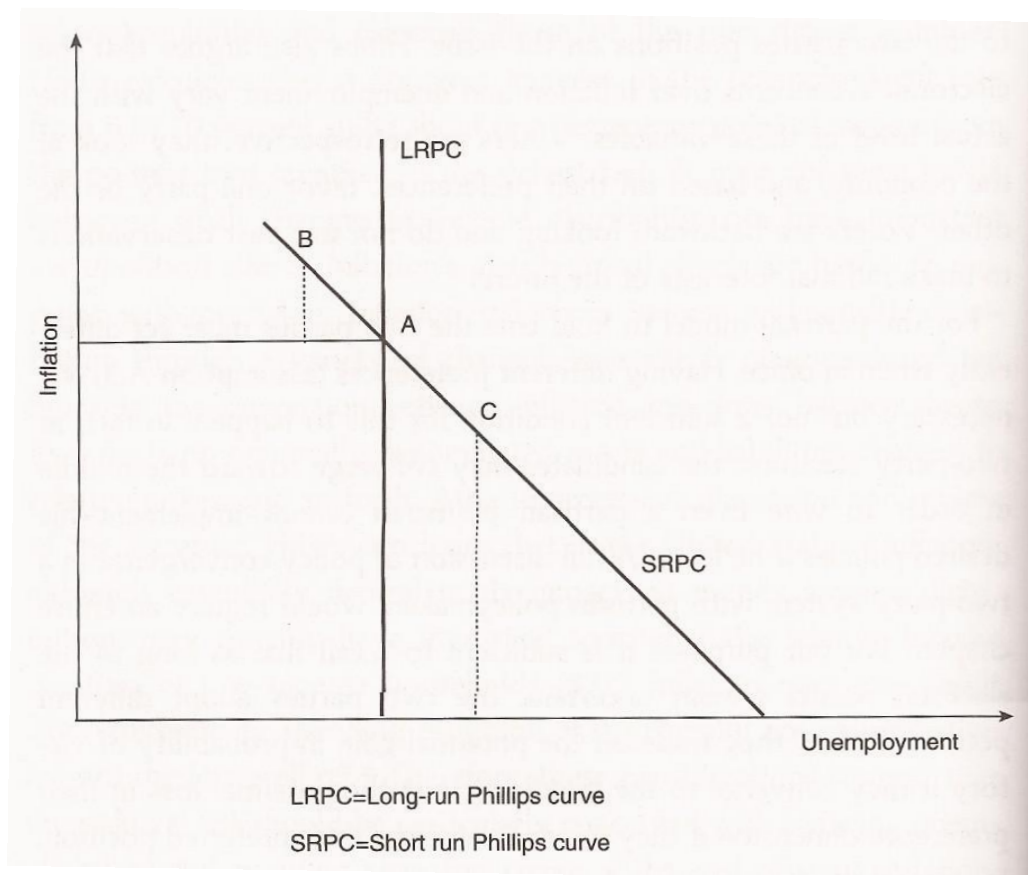


Figure 1: Traditional Partisan model (Alesina et al., 1997), source: Alesina et al. (1997)

Figure 2, which is analogous to Figure 1, depicts the Hibbs model. Note this model considers inflation and unemployment, rather than inflation and economic growth. In the domain of political economy these variables are used rather interchangeable because most models neglect capital as an input factor for production. So labour is the sole input factor and therefore (un)employment effects economic growth directly.

Assume that the economy is at point A at election time. If a right-wing government is elected partisan ideology dictates that the government's objective should be to move to point C, thus lowering inflation and increasing unemployment. This is accomplished through deflationary policies, which pose a real threat of recession. If a left-wing authority is elected partisan ideology dictates that the administration's objective should be to move to point B. This is accomplished through stimulating the economy by expansionary monetary and fiscal policy, which poses the threat of high budgetary deficits. Note that Hibbs did not seem too concerned with shifts in the short-run Phillips curve, as he never really commented on it. Alesina et al. (1997) conclude from this that the perceived level of parameter γ in the augmented Phillips curve is low, which means that erroneously forecasting of the inflation will not be taken too severely.

2.2.2.2 Rational partisan model

In this model by Alesina (1987) the adaptive inflation expectations are altered to rational expectations concerning the inflation. The assumptions are as follows (Alesina et al., 1997):

1. *An expectation-augmented Phillips curve holds;*
2. *Expectations concerning the inflation are rational;*
3. *Policymakers are not identical. Left-wing governments value unemployment and growth more than inflation, whereas the contrary applies to right-wing administration;*
4. *In every election an incumbent faces only one challenger;*
5. *Voters have different preferences concerning inflation and unemployment. They cast a vote for the party that yield them the highest utility;*
6. *The governing politicians can influence inflation through drafting up policies;*
7. *The time at which elections are hold is of an exogenous nature.*

For this model it is best to consider the Phillips curve with regard to wage-contracts. Because of the fact that this model is not directly related to the question at hand (influence of partisan factors on the budgetary balance) an extensive overview will not be offered in this thesis, and can be found in Alesina et al. (1997) The process which voters go through when deciding to cast a vote upon a political party however is of paramount importance to those parties, as they need to be elected to be able to execute the policies they deem to be best fit. Alesina et al. (1997) go a comprehensive overview of this process, of which the conclusion will be given next.

Thus, in the first period of a left-wing government, growth is above its natural rate, and in the first period of a right-wing government, growth is below the natural rate. In the second period, growth is at its natural rate with both types of government.

From this it follows that if we were to extend this model to an infinite number of time horizons, rather than the bi-period models adopted by Alesina et al. (1997), leftist and rightist parties would be elected to rule the country in an alternating fashion. A leftist government would be replaced by a rightist authority for the benefits the latter puts forwards on the growth rate (above the natural level). Eventually this would lead to a growth bubble (overshooting) and a recession during which the public loses faith in the rightist government and punishes it by electing the leftist party. This process goes on repetitively (Lindbeck, 1993). The overshooting process is directly related to the budgetary balance, as governments are not able to cut costs immediately if the economic circumstances change for the worst (due to long-term

contracts and related aspects), which leads to a situation in which the authorities are forced to run (extensive) budgetary deficits.

2.3 Political models of budget deficits

In this section an overview will be given from six model groups as defined by Alesina and Perotti (1995), and quoted from Alesina et al. (1997):

1. Models based upon the idea of “fiscal illusion”;
2. Models of debt as a strategic variable;
3. Models of intergenerational redistributions;
4. Models of distributional conflict;
5. Models of geographically dispersed interests;
6. Models of budgetary institutions.

2.3.1 Models based upon the idea of “fiscal illusion”

This model is based on the following two assumptions (Alesina et al., 1997):

1. Opportunistic governments boost their chances of being re-elected by running budgetary deficits;
2. Voters are naïve; they do not comprehend the government’s intertemporal budget constraint.

In this model the public tends to undervalue the taxation level adopted by the government and to overestimate the benefits of government transfers and other expenses. This leads to a situation in which incumbent governments are not punished for running high deficits, as they are re-elected by the naïve public. According to Alesina et al. (1997) these models lack explanatory force as they do not succeed in explaining why some countries run high deficits and others do not. These models fail to account for differences between countries and time. An explanation in the lines of a difference in the public’s naivety does not seem to be satisfactory.

2.3.2 Models of debt as a strategic variable

In this type of models the total accumulated debt is regarded as a link between current and future administrations. This is due to the fact that budgetary deficits of today have a direct impact on the next period. Alesina et al. (1997) argue that the costs of running budgetary deficits is not fully internalised in the present. They argue that this so-called “deficit bias” aggravates with political polarisation and a rise in electoral uncertainty. This point is exemplified as follows: if the current government wishes to minimise

government expenditure, but simultaneously it knows that a succeeding government would wish to increase spending, the current government could run a high budgetary deficit to restrict the budget of the next government. This could thus empower the current government to impose its will upon a succeeding one.

Aghion and Bolton (1990) show that budgetary deficits cannot merely be used as a means to influence a future government, but also to affect public preferences on fiscal policy, through the assets the public holds. Skyrocketing inflation and defaults could scare the public to changing their stance on fiscal policy.

Again Alesina et al. (1997) argue that these models do not pass empirical testing on country-specific and time-specific differences.

2.3.3 Models of intergenerational redistributions

These types of models argue that the current generation has “an obvious political advantage” (Alesina et al., 1997), because they have the opportunity to cast a vote for current economic policies, whereas future generations evidently lack this ability. This argument has been frequented during the build up to the election for the Dutch parliament in September 2012. But fear of imposing enormous debts on future generations might not be justified, as where some bear a raised burden of public debt; others gain from the accumulation of public debts as they gain the benefits from holding governmental bonds. Put differently, if a government were to raise its indebtedness to the local population (by issuing government bonds to acquire funds for its budgetary deficit) this would leave some inhabitants with a claim on the government. When the time comes the government pays back its debt to (the heirs of) these inhabitants, this will be done by use of tax money, acquired (again) from the public. This leads to an unequal distribution of the debt burden, as some people (relatively) gain from the government’s indebtedness, whereas others pay the burden. Krugman (2012) argues this would redistribute wealth, but not make a country less well off (Krugman, 2012), as where some benefit, others suffer.

2.3.4 Models of distributional conflict

This model assumes that the power to decide on the budget is shared between the policymaker and another party, such as in the case of a multiparty government. Assume a coalition government existing of two parties with non-similar ideological preferences regarding budgetary scrutiny. This situation gives rise to a situation in which both veto-powered parties have different perspectives and objectives if they were to cope with a sudden, but permanent fiscal shock. In this “war of attrition model” described by Alesina and Drazen (1991), postponing a reply to this shock is costly, as the distortion holds on and budgetary deficits

persist to soar. Since both parties would be better off by replying instantaneously this could be regarded as a Nash equilibrium in an one-time Prisoner's Dilemma. However, delays can occur for the following reasons: disproportionality in the burden each party has to take or asymmetrical information about the costs of delay imposed upon the rival. The latter could also be a reason to justify procrastination as harming a rival could be beneficial to the other party for political (re-electoral) reasons.

Spolaore (1993) deals with both multiparty and single-party governments. His findings on the former are analogous to those of Alesina and Drazen (1991). Spolaore (1993) finds that single-party governments tend to stabilise too much, as their overreacting to shocks results in a failure to internalise the costs of stabilisation fully, because they wish to guard their constituency beyond the optimal level for the full society.

Velasco (1995) discusses a "tragedy of the commons" coalition government model. In his model multiple governmental officers draw resources from the central budget, which is referred to as the "common pool" problem. If central command is absent this will lead to different departments receiving budgets beyond the optimal level and a situation in which the total budget overshoots and budgetary deficits are formed.

2.3.5 Models of geographically dispersed interests

In these models the question of different level of governmental force is addressed. Local authorities tend to overestimate the budgetary needs of their constituencies, which leads to an overspending problem (Alesina et al., 1997), analogously to the analysis of the previous section.

2.3.6 Models of budgetary institutions

These models address all procedures, rules and regulations budgets need to confirm to. Due to the fact that these differ greatly between different countries, this serve as an explanation why vast differences in budgetary discipline are apparent between different countries. As this thesis does not investigate the differences in the effects of geographical location on budgetary balances, but rather investigates the effect of ideological preferences on budgetary balances a more thorough analysis of these kinds of models is refrained from. It must however be noted that these model partly account for the apparent country-specific differences.

2.4 Theoretical determinants of budgetary balances

The assumption is made that the government consumes goods and services (the government hires employees to build public goods, such as roads and bridges, and provide public services, such as education

and defence) and makes transfers to households (such as unemployment or retirement benefits), which it pays for by means of the taxes it collects (Burda & Wyplosz, 2009). From empirical research (by for instance Roubini & Sachs, 1989) it follows that the revenues of governments sometimes fails to exceed its expenditures, which leads to debt creation by the governments, as the authorities need to borrow money to pay for their expenses. OECD (Organisation for Economic Co-operation and Development) conventions dictate that the annual change in government (or public) debt should be divided in two parts: the primary deficit (the amount in which government expenditure exceeds government revenue for a specific year) and interest payments.

Before we move on to the political influence on the budgetary deficit, we first establish the determinants of this deficit.

2.4.1 Two-period model of public debt

If we assume a two-period model (which later on will be extended to an infinite time horizon), which must be solved for zero at the end of the second period and which allows the government to be indebted in the first period only, the government budget constraint is as follows (Burda & Wyplosz, 2009):

$$T_2 - G_2 = (1 + r_G)(G_1 - T_1) + D_1 + r_G D_1 = (1 + r_G)(D_1 + G_1 - T_1)$$

in which T_n equals net tax revenue in period n (defined as total tax income minus transfers to household, also referred to as government revenue), G_n equals government expenditure in period n (also sometimes referred to as the size of government), D_n equals government debt in period n (in this example normalised to 1) and r_G equals the interest rate on government debt (here normalised to the interest rate which applies to the government debt over the first period).

The implication of this model is such that the net present value of the government debt (the summation of government debt of all periods, discounted for time), including interest payments (discounted for time), minus the net present value of the government revenue (discounted for time) must equal zero. This lead to a model in which years of budgetary deficits must be followed by years of budgetary surpluses, and vice versa. This can be done in a number of ways.

First, by consumption and tax smoothing. This theory, first described by Barro (1979, 1986) basically urges governments to set government consumption and taxes counter-cyclical to stimulate the economy and retain a stabilised debt. To illustrate this Barro states that governments spend more money in times of economic turmoil (or war) and should save money in times of economic prosperity (or peace).

This theory is similar to the Keynesian doctrine, which dictates that government expenses should be contra-cyclical, with high expenses in time of economic downturn and vice versa.

Second, by stabilisation of output and employment. Since the possibilities of individuals to gain credit are limited (Burda & Wyplosz, 2009) the authorities should meddle in economic circumstances when the economic cycle is slowing down or shrinking, as the limitations to individual's budget constraints could possibly aggravate an economic crisis by a negative aggregate demand shift.

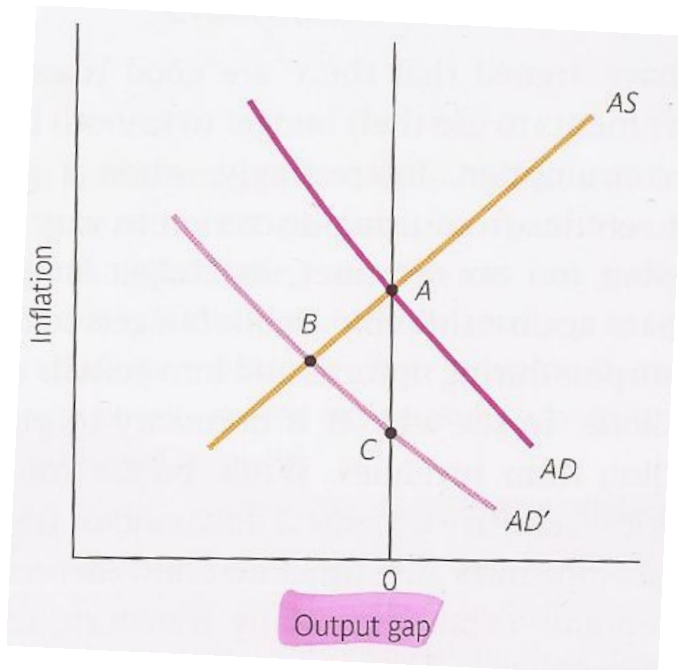


Figure 2 - Aggregate demand shift, source: Burday & Wyplosz, 2009

Such a negative aggregate demand shift is depicted in Figure 1 by the leftward shift of AD to AD'. The economy moved from point A to point B, where the output gap is negative (actual output is lower than expected output: $Y < Y^e$) and inflation fell (due to the decrease in demand). Without further action of the government the economy will eventually stabilise at point C (the *laissez-faire* outcome), with a constant output gap (though total output will be lower than in the initial situation) and a lower rate of inflation. Economic theory dictates that in the long term the aggregate demand will rise again, because the low inflation rate yields this country a comparative advantage over the rest of the world, which will lead to higher exports of output of this country to the rest of the world, and boost the economy back to point A again. But this process is slow and the economic depression (which causes the economy to move away from point A initially) can be hurtful to the local economy, as firms are going out of business and local

unemployment soars, which in its turn will lead to lower government income (lower tax income and higher transfers to households) and a worsening of the budgetary balance.

If the government wishes to fasten up this process, its best option would be to boost the economy by raising aggregate demand. This will lead to budgetary deficits (as government expenditure rises due to higher government demand, or government revenue plummets, due to tax reliefs for firms, which will safeguard the employment levels), but will keep the country's output stabilised (Burda & Wyplosz, 2009). Leftist governments generally are assumed to be likely to conduct this approach (Alesina et al., 1997).

Finally, the government can adopt a *laissez-faire* approach, which relies on automatic stabilisers. In this scenario the government chooses the "slow approach" described above, relying on lower tax incomes and high transfers to households in times of low economic growth and the reverse in times of high economic growth (Burda & Wyplosz, 2009). Rightist authorities are considered more prone towards this approach.

From this it follows that economic growth, inflation, government expenditure, government revenue and the interest rate on government debt are determinants of budgetary balances. It also became clear that leftist and rightist governments choose different policies and different levels of government spending to reach the targets they aspire to.

2.4.2 Persson & Tabellini (2000) model of public debt and size of spending

From the previous section we concluded that left-wing and right-wing parties disagree about the optimal level of government spending. Persson & Tabellini (2000) established a simple model to clarify why the public votes for a certain party. Since it is necessary for a party to be elected to be able to draft up policies, it is crucial to gain an understanding of the election process. They assume a two-period model, in which individuals have identical incomes and preferences over consumption and leisure (thus starting from an opportunistic point of view, which is later extended to account for partisanship). An individual can either spend his/her time on labour or leisure; they can save money by holding public debt (at gross interest rate R_b). Each individual receives an initial endowment which cannot be taxed, as only labour is taxed (at rate τ).

The government is assumed to be committed to repaying the debt, which (together with the absence of discounting and the linear utility function) serves as evidence that debt can be dropped from the equations. This leads to the following government utility function (expressed over $b + g_2$) (Persson & Tabellini, 2000):

$$u = W(b + g_2) \equiv \max[c_1 + c_2 + V(x_2)]$$

Individuals are divided in two groups, which are equally large and labelled LW and RW (either left-wing or right-wing), who have different perspective on the size of government expenditure g^{LW} and g^{RW} , which equal to g^T . To simplify the algebra, assume an individual belonging to group J cares about $g^J, J = LW, RW$. Individual public policy preferences are as follows (Persson & Tabellini, 2000):

$$w^J = W(b + g_2) + H(g_1^J) + H(g_2^J)$$

This enables us to set up a benchmark to decide which group will vote for which party, by taking first-order conditions to yield the optimal policy. Since $g_1 = b$, $W_b = W_g$, and both types of goods will receive an equal consumption for both periods, this scenario holds if both groups have identical preferences over g^J , which under the assumption of partisanship does not hold.

If preferences over g^J are unequal, the following preferences hold for group J (Persson & Tabellini, 2000):

$$w^J = W(b + g_2) + \alpha^J(H(g_1) + H(g_2))$$

in which we assume $\alpha^{LW} < \alpha^{RW}$. So optimal policy in period 2 is (Persson & Tabellini, 2000):

$$W_g(b + g_2) + \alpha^J H_g(g_2) = 0$$

This condition implies that a left-wing government always spends more than a right-wing government (when debt is assumed to be constant), and both types of government are prone to spend less when debt is higher ($G^{LW}(b) > G^{RW}(b)$ and $G_b^J < 0$).

If a right-wing government is the incumbent in period one, its objective (which will raise the chances of being re-elected) are as follows (Persson & Tabellini, 2000):

$$E[w^R(b)] = P_{RW}W(b + G^{RW}(b)) + (1 - P_{RW})W(b + G^{LW}(b)) \\ + \alpha^{RW}[H(b) + P_{RW}H(G^{RW}(b)) + (1 - P_{RW})H(G^{LW}(b))]$$

Taking first-order conditions of this equation yields (Persson & Tabellini, 2000):

$$\begin{aligned}
& \alpha^{RW} \left(H_g(g_1) - H_g(G^{RW}(b)) \right) \\
& = (1 - P_{RW})(\alpha^{LW} - \alpha^{RW})H_g(G^{LW}(b))G_b^{LW} \\
& + (1 - P_{RW}) \left(W_b(b + G^{RW}(b)) - W_b(b + G^{LW}(b)) \right)
\end{aligned}$$

If $P_{RW} = 1$ (so the right-wing incumbent will be re-elected with full certainty), the right-wing government will spend an equal amount in period 1 and period 2 (as the right-hand side of the last equation equates to zero). Since the last term of the right-hand side is positive (as $G^{RW} < G^{LW}$ and $W_{bg} < 0$), which stresses the fact that the expected future distortionary effect of taxes is higher than the right-wing incumbent would like, forcing it to spend less and thus create less debt. The first term will take a negative value (since $\alpha^{LW} > \alpha^{RW}$ and $G_b^{LW} < 0$), depicting a strategic opportunity for the right-wing incumbent to overspend in period 1, to force a possible left-wing successor to spend less. This leads to the assumption that right-wing governments tend to overspend, where left-wing authorities are forced to spend less than expected (as they must clear the debt left by the right-wing government) (Persson & Tabellini, 2000). This assumption is the opposite of the common assumption that left-wing governments are prone to run higher deficits than right-wing governments (which is adopted by for instance Alesina et al. (1997) and Roubini and Sachs (1989)).

2.5 Empirical determinants of budgetary balances

The question of which factors determine the height of budgetary balances has been the subject of many empirical studies. In this section a short overview will be given and a selection will be made of determinants to include in the empirical research.

2.5.1 Empirical research by Alesina et al. (1997)

In this research Alesina et al. analyse “Electoral and partisan determinants of fiscal policy and budget deficits”. They start with noticing that in previous research the assumption is made that budgetary deficits should be apparent in pre-election years. The construction of such deficits however seems ambiguous: deficits are forced by reduced taxes, higher government expenditure or a combination of both, which may well differ per country over time. Alesina et al. continue their analysis by stating that there seems to be no theoretical basis for the general assumption that left-wing governments run higher deficits than rightist authorities. Left-wing governments might well be more inclined to spend more government money, but they might be more prone to raise taxes too.

Alesina et al, consider a variety of macroeconomic and political variables, in which the unemployment rate, the rate of economic growth, the change in public debt (when compared to the previous year) and this last term multiplied by the difference between the real interest rate and the economic growth rate are found to have a significant influence.

Their research is structured as follows: a baseline model without political variables is considered first, followed by several extensions which incorporate political (partisan) effects too. Among their findings, Alesina et al. conclude that in the period between 1985 and 1993 “even left-wing governments have become fiscally more conservative. In fact, the worldwide recession of the early 1980s left a legacy of high deficits and large debt-to-GDP ratios in many industrial countries and led to a general trend toward fiscal retrenchment in the second half of the decade” (Alesina et al, 1997). This research further rejects a political business cycle, in which electoral years are significantly different for off-election years.

2.5.2 Empirical research by Roubini & Sachs (1989), revised by De Haan & Sturm (1997)

In this research Roubini and Sachs analyse “The post-1973 rise in budget deficits in the OECD”. They assume that “when political power alternates randomly between competing political parties, each government will be tempted to leave a legacy of high debt for its successor, whose spending priorities it is not likely to share.” (Roubini & Sachs, 1989) and further assume that all government debt has to be solved if time moves to infinity, which according to them leads to a hypothesis of tax smoothing.

Roubini and Sachs consider a range of macroeconomic and political variables, from which the growth rate in unemployment, economic growth, public debt stock and interest rate, and a political dummy prove to yield significant effects. The political dummy differs between single party majority, two-party coalition and over-two-party coalition parliamentary governments, and minority parliamentary governments.

Roubini and Sachs’ overall conclusion are such that sufficient significant evidence for the tax smoothing model cannot be found and budget deficits cannot be satisfactorily explained when appealing to increases in the expenditure of the government. They do however conclude that single-party majority governments run lower deficits than large coalition governments.

According to De Haan and Sturm the positive findings of Roubini and Sachs (1989) on the political dummy, capturing the effect of coalition governments, actually shows that minority governments run larger deficits. This claim is advocated by Edin and Ohlsson (1991) and gives rise to the addition of a going-average variable for minority governments as an independent variable to this research.

2.5.3 Empirical research by Woo (2003)

In this research Woo analyses “Economic, political, and institutional determinants of public deficits”. Woo “considers three types of structural determinants of deficits: (i) political factors such as political instability, government fragmentation, and political institutions, (ii) social polarization such as income inequality and ethnic divisions, and (iii) institutional factors such as budgetary procedures and rules, bureaucratic efficiency, and democracy.” (Woo, 2003) For the course of this thesis the first set of determinants is most relevant.

Woo starts with a benchmark model consisting of several macroeconomic variables, after which he adapts the model to account for political (partisan) results too. The research finds significant results for both the change in and average value in growth rate of GDP, 1970s and 1980s decade dummies and the political dummies (on stability of political systems, assassinations, cabinet changes and coup d'états).

Woo concludes that countries in which a proportional representation model is used rather than first-past-the-post (which commonly results in coalition versus majority governments, respectively) tend to cope with higher budgetary deficits. This association however is not consistent.

3. Empirical research

3.1 Introduction and setting

This chapter gives a comprehensive overview of the approach taken towards conducting the empirical research, i.e. the chosen model, the hypotheses which were tested, the methodology which was used and the results found.

But first it is essential to set a framework for this research. This research is conducted in a sample of 24 member states of the Organisation for Economic Co-operation and Development (OECD) during the year 1973 through 2012. In February 1973 the Bretton Woods system, in which local currencies were pegged to the price of gold was abandoned after the United States decided to terminate the convertibility of its currency to gold in August 1971. From March 1973 a floating exchange regime was adopted in which most nation states decided to peg their local currency to the U.S. \$. This unilateral convergence of monetary approach serves as a good starting point of this research, which is prolonged as far as data is available.

3.2 Variables

The following sections will give an overview of the variables chosen to be empirical researched and their expected movements.

3.2.1 Variables adopted in empirical research

Reminiscing the preceding chapter the empirical research will aim to find the effect of several macroeconomic and political variables on the budgetary balance of a country. The budgetary balance is defined as the general government net lending/borrowing as a percentage of the national GDP. Negative values denote budgetary deficits, positive values depict budgetary surpluses and the value zero is taken for equilibrium.

From both theoretical and empirical sources evidence was gained to include the following dependent variables: unemployment, economic growth, real interest rate, total sovereign debt stock, output gap and political variables. The unemployment rate is defined as the percentage change with regard to the previous year of the total population between 15 and 64 who are unemployed. This variable influences the budgetary balance through taxes paid and social benefits required by the public. The economic growth rate is the percentage change of the real GDP over the previous year, which shows whether or not a country is producing more when compared to the previous year. High economic growth rates are associated with

prosperity and should therefore be accompanied by higher tax incomes and lower social benefit costs for the government. If real interest rates (defined as the lending interest rate of the government adjusted by inflation) rise this would lead to a more expensive acquisition of additional funds by the government, forcing them to refrain from running (high) deficits. The same applies for higher stocks of public debt (defined as the total government debt stock, measured as a percentage of national GDP), higher debt stocks are generally paired with high interest costs, forcing governments to cut expenses (as a larger part of the budget is spend on interest costs when compared to countries with lower debt stocks). This restriction has been further emphasised by the Maastricht Convergence Criteria. To account for effect of the economic trend (to distinguish “good years” from “bad years”) the output gap is added, which measures the difference between the actual GDP and the natural GDP (long run target level adopted by the government).

When moving on the political variables we distinguish three types: partisan variables, ratio variables and Maastricht variables. The partisan variables denote the relative power leftist, centrist and rightist parties had in a certain country in a certain year. This leftist share of political power is measured as the relative share of parliamentary seats held by all left parties in a certain year in a certain country, and has extreme values zero (no political power) and one (full political power). A more extensive calculation of these variables can be found in the section on “Methodology”. The ratio variable “Minority” takes value one if the government of a certain country has no majority in parliament in a certain year and takes value zero should the contrary apply. With regard to the Maastricht Convergence criteria of 1993 a dummy variable taking value one for countries who signed the Maastricht Treaty, from 1994 onwards, is designed. This variable is multiplied by the partisan variable to account for possible differences in the willingness of partisanship to actually comply with these criteria (as the willingness to comply proved to be not equally distributed between political parties during the 2012 Dutch parliamentary elections).

The figure below shows the correlation between all dependent variables, values higher than 0.80 could be a clue of statistical influence between the dependent variables which would lead to biased results.

| | UNEMPL~E | ECONOM~E | REALIN~E | OUTPUT~P | TOTALS~T | LEFT | CENTRIST | MINORITY | LEFT19~O | CENTRI~O |
|--------------|----------|----------|----------|----------|----------|---------|----------|----------|----------|----------|
| UNEMPLOYME~E | 1.0000 | | | | | | | | | |
| ECONOMIC_G~E | 0.0267 | 1.0000 | | | | | | | | |
| REALINTERE~E | 0.1830 | -0.1057 | 1.0000 | | | | | | | |
| OUTPUTGAP | -0.4361 | 0.3848 | -0.1858 | 1.0000 | | | | | | |
| TOTALSTOCK~T | 0.1743 | -0.1986 | 0.0897 | -0.1920 | 1.0000 | | | | | |
| LEFT | 0.1437 | 0.0095 | 0.1197 | -0.0014 | 0.0177 | 1.0000 | | | | |
| CENTRIST | -0.1532 | -0.0553 | -0.0013 | -0.0341 | 0.0333 | -0.3834 | 1.0000 | | | |
| MINORITY | 0.0194 | 0.0463 | 0.0071 | 0.0038 | -0.0200 | 0.2641 | -0.0998 | 1.0000 | | |
| LEFT1993EURO | 0.2668 | 0.0609 | 0.0101 | -0.0210 | 0.2182 | 0.4957 | -0.2400 | -0.0102 | 1.0000 | |
| CENTRIST19~O | 0.0520 | 0.0446 | -0.0239 | 0.0330 | 0.0439 | -0.0654 | 0.2795 | -0.0184 | 0.1082 | 1.0000 |

Table 1 - Correlation matrix dependent variables

From this figure there is no evidence for statistical inference between the dependent variables.

3.2.2 Expected signs of the variables

In this research the assumption is made that government deficit/surplus depends on both real macro-economic factors and partisan effects. First, One could argue that if the unemployment rate rises (falls), this causes an upwards (downwards) expense shock to the government as social security facilities will be more (less) exhaustively demanded (Burda & Wyplosz, 2009). The question of causality is heavily debated, as for instance Alesina et al. (1997), Persson and Tabellini (2000) and Roubini and Sachs (1989) could be seen as advocates of this analysis, but Reinhard and Rogoff (2011) are convinced of the contrary.

Second, An equivalent reasoning holds for economic growth as an increase (decrease) in economic growth will lead to a higher (lower) demand for employees and thus more (less) tax benefits for the government, which would ease (worsen) budgetary deficits (Burda & Wyplosz, 2009).

Third, the effect of a rising (falling) real interest rate on the current budgetary balance seems ambiguous, as this would cause more (less) expensive interest payments on new loans to the government which would be harmful (beneficial). But simultaneously it could be argued that rising (falling) real interest rates are caused by higher (lower) demand for loans which could be an effect of improving economic conditions in which more entities wish to capitalise on the low real interest rates, thus boosting them upwards.

Fourth, when considering the debt-to-GDP ratio, one could suppose a sliding slope argument, in which higher (lower) debt-to-GDP ratios make governments relatively less (more) prone to running deficits as the surpluses needed to eventually improve the debt-to-GDP ratio (decrease the ratio) getting less attainable (Burda & Wyplosz, 2009)

Fifth, when considering partisan effects, rather than macro-economic factors, the following could be summarised from the theoretical review of the previous chapter. In essence left-, right-wing and centrist administrations all can be forced to run deficits by economic turmoil (be it intentionally, or through automatic stabilisers). The assumption is such that left-wing parties value factors such as unemployment and social security heavier than their right-wing adversaries do. This leads to left-wing governments being more prone to actively try to force the economy towards more favourable outcomes (lower unemployment, higher economic growth) than their right-wing counterparts (Alesina et al., 1997). The assumption therefore is that fully left-wing governments run higher deficits than fully right-wing governments. It must be noted however that literature does not give a clear-cut consensus on this assumption, as for instance Persson and Tabellini (2000) reach an opposing conclusion, as discussed

before. Partisan effects however are softened if either wing party is forced to work together with the other, or with centrist forces.

Sixth, in the case of minority governments, the assumption that the effects these type of governments have on the budgetary balance are lower than those of full size governments seems plausible, as all seats in the parliament could be pivotal to reach a majority. Therefore the effects rump governments have on the government deficit/surplus are wing-dependent, but smaller in size (De Haan & Sturm, 1997).

Seventh, the assumption on the effect of the Maastricht Convergence Criteria (put differently, the emergence of the Euro), which is a direct result of the political discussion preceding the 2012 Dutch parliamentary elections, is such that governmental, and analogously partisan, effects on the budgetary balance have decreased, due to the shift in the ability to use seigniorage as a means to decrease the real value of public debt away from national governments to the European Central Bank. So the $D_{Maastricht|PAR_X}$ -condition is expected to have a smaller, more positive effect when compared to the pre-1993 period and the non-Euro countries

Eighth, the sign of country-specific effects cannot be readily determined in advance. It however seems plausible that the addition of country-specific effects (i.e. moving from an OLS model to a model with fixed effects) dampens the explanatory power of the dependent variables, as this explanatory power will partly move to the country-specific effects.

Finally, the addition of time-fixed effects will further dampen the explanatory power of the dependent variables, as time-fixed effects will filter out extraordinary years (i.e. recession or the oil shocks).

The following table summarises the expected signs for all variables (keep in mind that Δ depicts a change in terms of percentage with respect to the previous year, so $\Delta X = \frac{X_t - X_{t-1}}{X_{t-1}}$):

| Variable | Expected sign |
|--------------------------|---|
| ΔU_{it} | Minus |
| ΔY_{it} | Plus |
| Δr_{it} | Ambiguous |
| Δd_{it} | Plus |
| $\beta_5 PAR_{LEFT}$ | $PAR_{LEFT} < \beta_6 PAR_{CENTRIST}$, generally minus |
| $\beta_6 PAR_{CENTRIST}$ | $PAR_{LEFT} > \beta_6 PAR_{CENTRIST}$, generally minus |
| $MINORITY$ | $MINORITY < \beta_6 PAR_{LEFT,CENTRIST}$, generally minus |
| D_i | Ambiguous, but lower effects of other explanatory variables |
| $Y_{it} - Y_{it}^e$ | Ambiguous, but lower effects of other explanatory variables |

| | | |
|---------------------------------|---------------------------------|----------------------|
| $D_{Maastricht PAR_{LEFT}}$ | $D_{Maastricht PAR_{LEFT}}$ | $< PAR_{LEFT} $ |
| $D_{Maastricht PAR_{CENTRIST}}$ | $D_{Maastricht PAR_{CENTRIST}}$ | $< PAR_{CENTRIST} $ |

Table 2 - Expected signs of variables in the extended model

3.3 Methodology

The electoral results which have been acquired are manipulated to give partisan continuous variables, which are manipulated to weighted averages of the percentage of government seats held by left-, centrist and right-winged parties. If for instance elections in country X, in which 76 seats are needed for a majority in parliament, are conducted on May 1st, and a new government enters into force on June 1st the calculation of the partisan variables is as follows:

| Date | Name government | Government coalition | Seats coalition | Total seats government | LEFT | CENTRIST | RIGHT | TOTAL |
|-------------|-----------------|-------------------------------------|-----------------|------------------------|--------------------|--------------------|--------------------|----------|
| Pre 2013 | Jones I | Labour, Centre Party | 49 31 | 80 | =151/365*49/80 | =151/365*31/80 | - | |
| 1-6-2013 | Jones II | Labour, Centre Party, Conservatives | 42 32 9 | 83 | =214/365*42/83 | =214/365*32/83 | =214/365*9/83 | |
| 2013 | | | | | 0.550073032 | 0.386352121 | 0.063574847 | 1 |

Table 3 - Example partisan dummy calculation

From this it follows that left-wing parties have dominated the government in country X in 2013, with 55.01% of governmental power, whereas centrist and right-wing parties accounted for 38.64 and 6.36% respectively.

The same approach has been followed in calculating the value for the “MINORITY” variable. If in the previous example the Centre Party had quit the government on April 18th, this would leave Jones I as a minority (rump) government between April 18th and May 31st, or 44 days in a regular year, thus $MINORITY_{X,2013} = \frac{44}{365} \approx 0.1205$.

The Fixed Effects model seems to be the best estimator for the extended models dealt with in this thesis as it estimates the within variation of a model (e.g. it compares a specific country’s variables just to other variables of that specific country). To control whether the Fixed Effects model or a model of Random Effects gives the best results, a Hausman test is conducted. If the null hypothesis of this model

(no Fixed Effects) is rejected, the Fixed Effects estimator estimates the individual-specific effects best, as it is proven to be both the most consistent and most efficient estimator.

3.4 Models

The following sections will discuss an Ordinary Least Squares (OLS) baseline model which serves as a benchmark for this research, and four extensions. The first extension will explore the additional effects of partisanship on the baseline OLS, whereas the second extension is a one-way fixed effects model with country-specific effects. Afterwards we move on to a two-way fixed effects model with country-specific and time-specific effects and finally we will regard a model with the addition of a dummy accounting for the Maastricht Treaty.

3.4.1 Baseline model

In the baseline model the effects of certain determinants used both theoretically and practically will be analysed. The following model will be explored:

$$B_{it} = \alpha + \beta_1 \Delta U_{it} + \beta_2 g_{it} + \beta_3 \Delta r_{it} + \beta_4 \Delta d_{it} + \varepsilon$$

in which ΔX_{it} denotes a change in terms of percent of variable X for country i when comparing year t to year $t - 1$ ($\Delta X = \frac{X_t - X_{t-1}}{X_{t-1}}$) and β_n is a coefficient value, measuring the effect of a dependent variable on the independent variable. The dependent variable B_{it} denotes the budgetary balance (positive values denote surpluses, negative values stand for deficits), the dependent variables are unemployment (U), economic growth ($g = \frac{\Delta Y}{Y}$), real interest rate on public debt (r) and the total stock of public debt as a percentage of GDP ($d = \frac{D}{Y}$), α is a constant value (intercept value) and ε is a residual term.

3.4.2 First extended model: partisan effects

In the first extended model, the baseline model will be adapted to account for partisan effects. The following model will be explored:

$$B_{it} = \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY_{it} + \beta_4 \Delta U_{it} + \beta_5 g_{it} + \beta_6 \Delta r_{it} + \beta_7 \Delta d_{it} + \varepsilon$$

in which $PAR_{LEFT_{it}}$ is a continuous variable denoting the relative governmental power (partisan power) of left-wing parties in country i during year t (discounted per day, a calculation of this is given in a preceding section) and $MINORITY_{it}$ is a continuous variable denoting the relative governmental power of minority governments (discounted per day).

3.4.3 Second extended model: country-specific and partisan effects

In the second extended model, the baseline model will be adapted to account for country-specific effects and partisan effects. The following model will be explored:

$$B_{it} = \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY_{it} + \beta_4 Z_i + \beta_5 \Delta U_{it} + \beta_6 g_{it} + \beta_7 \Delta r_{it} + \beta_8 \Delta d_{it} + \varepsilon$$

in which Z_i are country-specific effects, which are measured by a one-way fixed effects model.

3.4.4 Third extended model: country-specific, partisan and time-fixed effects

In the third extended model, the baseline model will be adapted to account for country-specific, partisan and time-fixed effects. The following model will be explored:

$$B_{it} = \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY_{it} + \beta_4 Z_i + \beta_5 t_i + \beta_6 (Y_{it} - Y_{it}^e) + \beta_7 \Delta U_{it} + \beta_8 g_{it} + \beta_9 \Delta r_{it} + \beta_{10} \Delta d_{it} + \varepsilon$$

in which t_i are time-specific effects and $(Y_{it} - Y_{it}^e)$ denotes the output gap, a measure of the state of the economy (positive values depict above trend economic growth levels, negative values depict below economic growth trend levels). The output gap serve as a means to account for time-specific variation, which in term of this research accounts for the possibility that certain wing-parties are elected more often in times of economic crises (which would influence their budgetary performances in a negative manner). Time-specific effects account for years in which all countries in the sample went through bad economic times. Estimators of the time-specific effects are measured by a two-way fixed effects model.

3.4.5 Fourth extended model: country-specific, partisan, time-fixed and post-Maastricht

Treaty effects

In the third extended model, the baseline model will be adapted to account for country-specific, partisan, time-fixed and post-Maastricht Treaty effects. The following model will be explored:

$$\begin{aligned} B_{it} = & \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY + \beta_4 Z_i + \beta_5 t_i + \beta_6 (Y_{it} - Y_{it}^e) \\ & + \beta_7 D_{Maastricht|PAR_{LEFT_{it}}} + \beta_8 D_{Maastricht|PAR_{CENTRIST_{it}}} + \beta_9 \Delta U_{it} + \beta_{10} g_{it} + \beta_{11} \Delta r_{it} \\ & + \beta_{12} \Delta d_{it} + \varepsilon \end{aligned}$$

in which $D_{Maastricht|PAR_{LEFT_{it}}}$ denotes a dummy, which takes value 1 for countries which ratified the Maastricht Treaty (also referred to as “Euro countries”) for the year $t = [1994, 1995, \dots, 2012]$, multiplied by the continuous value of $PAR_{LEFT_{it}}$. This dummy is looking for evidence that leftist, centrist and rightist governments behave differently due to the Maastricht treaty. $D_{Maastricht|PAR_{LEFT_{it}}} = 0$ if there is no left-wing representation in country i during year t , $D_{Maastricht|PAR_{LEFT_{it}}} = 1$ if there is full left-wing representation and $0 < D_{Maastricht|PAR_{LEFT_{it}}} < 1$ for coalition governments. An comprehensive overview of all variables (and their data sources) can be found in the Appendix.

The aim of this model is to investigate the willingness of political parties to comply with the Maastricht Treaty budgetary balance norm of three per cent. The motive for this investigation is to see if the discussion during the 2012 Dutch parliamentary election (in which the right-winged Freedom Party proposed to exit “the European experiment”, an opinion which was not shared by many leftist and centrist parties) statistically applies to all EMU-countries, after the signing and ratification of the Maastricht Treaty of 1993. This model will be compared with the third extended model, to see if an improvement is apparent and if so, governments of which political ideology perform best.

3.5 Descriptive analysis of input data

In this section the raw data which is used in the extended model will be evaluated. The graphs below give an overview of the budgetary balance per country per year, for the 24 OECD sample countries in the period 1973-2012.

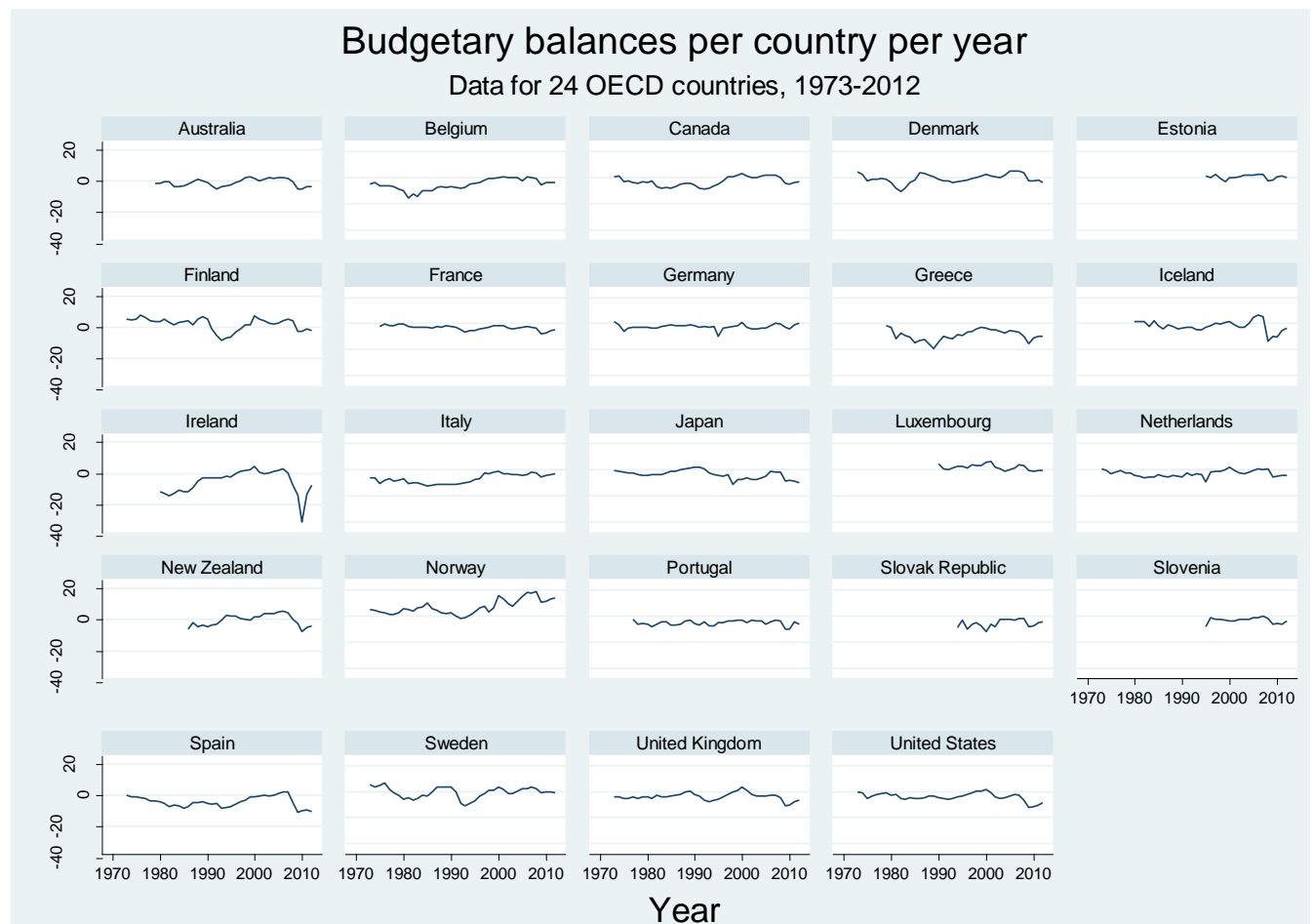


Figure 3 - Budgetary balance per country per year

When comparing the Euro countries to those that did not ratify the Maastricht Treaty of 1993 it seems apparent that for all Euro countries the volatility in their budgetary balances decreased in the post 1993 era when compared to the years before 1994. This effect does not occur for non-Euro countries, which does however not imply that their budgetary scrutiny was worse, as for instance has experiences a balanced or positive budget throughout the full research time range. A possible explanation for this is the fact that Norway is an oil-producing country and therefore is affected less by the oil shocks of the 20th century.

It also needs to be noted that for Estonia, Slovak Republic and data are not available from the full research time range, as these countries were not independent nation states during the full research period. For a few other countries the possibility to take 1973 as a starting point was eliminated due to the absence of reliable data.

When regarding the budgetary balances for the PIIGS countries (Portugal, Italy, Ireland, Greece and Spain, widely regarded as the countries to blame for the European sovereign debt crisis) a striking

resemblance among these countries is evident, as all of these countries ran quite excessive debts between 1973 and mid-2000s, whereas the temporary rise at the of the '80s and halfway the '90s which is apparent for the rest of the sample countries is absent for the PIGGS countries.

When investigating if economic growth (as measured by the percent change in real Gross Domestic Product) and budgetary balance have similar trends it could be argued that this is the case (besides from a slight lag). This seems plausible, when economic growth wanes (grows) so does the employment which forces higher (lower) expenses on the government as demands for social security provisions increase (decrease). Graphs are provided below.

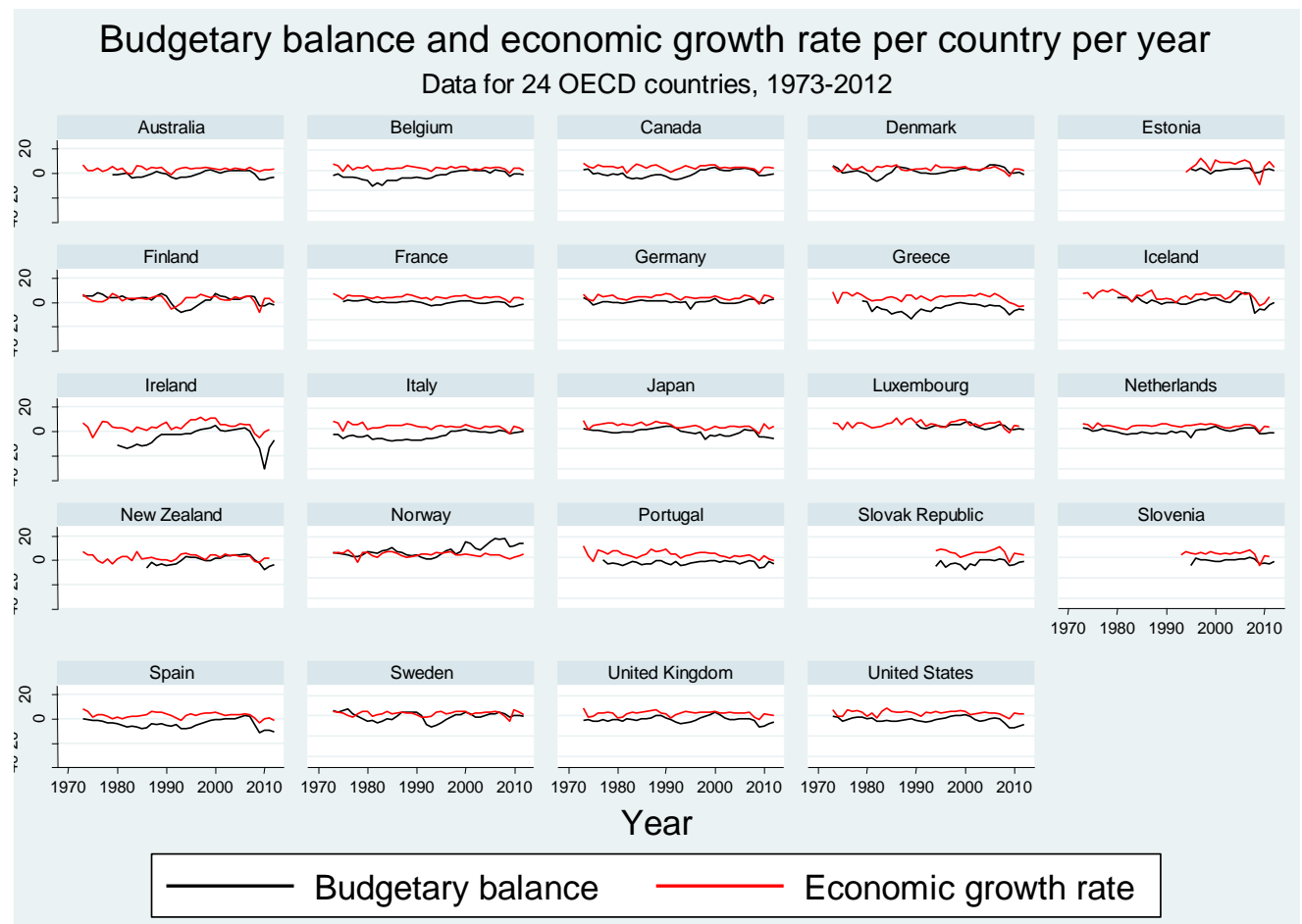


Figure 4 - Budgetary balance and economic growth rate per country per year

When once again regarding the PIIGS countries, it seems to be that distances between the lines depicting the economic growth and the budgetary balance are larger for these countries than for the rest of the sample size, especially in the pre-2000 era. In the case of for instance government deficits and

economic growth grew simultaneously, which at least does not seem to align with expectations. An overview for all countries can be found in the graph below.

Finally, when considering the political ideology of the government, as measured by political dummies which will be more extensively discussed in the section on methodology, some remarkable facts are apparent. For instance, countries which have a presidential government, or use a first-past-the-post (winner-takes-all) electoral system evidently have more stable histories of governmental shifts of power than countries in which a multiparty government (coalition government) is more common. Graphs are provided below.

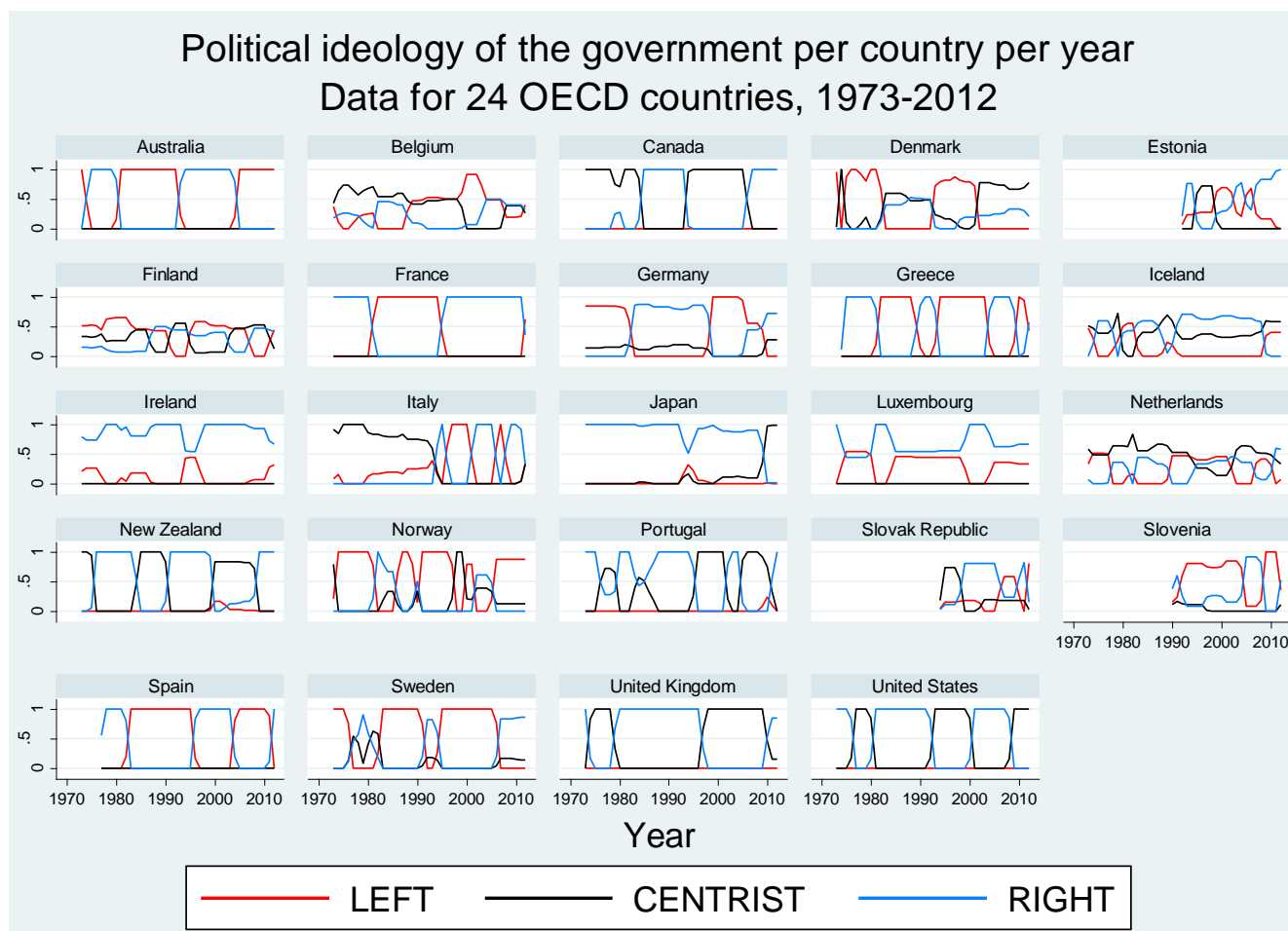


Figure 5 - Political ideology of the government per country per year

Political instability does however not directly lead to economic turmoil, as the political stability in PIIGS countries is higher than in for instance Finland or the Netherlands.

3.6 Hypotheses

The model described in the previous sections will serve to answer the questions posted in the preface to this thesis. To recall these questions:

- Are the claims that the budget intensive boosting of the economy by left-wing administrations is short-sighted valid, or do right-wing governments yield similar effects to the budgetary balance?
- And what role does the European economical and monetary integration play in this case?

When looking into these questions it becomes apparent that the effects of governments of different political convictions, different partisan ideologies, on the budgetary balance and a possible extra effect caused by the ratification of the Maastricht Treaty by a specific country is the main research aim of these thesis. This leads to the following research question:

RQ: Do governments from different partisan ideologies, under possible restrictions due to participation in the Maastricht Treaty, have significant different effects on the budgetary balance of their country?

The drafted hypotheses to test this research question are as follows:

H1: The partisan effect on the budgetary balance of a country does not differ if the political ideology of the government changes.

H2: The partisan effect of left-wing governments does not have a more negative effect on the budgetary balance of their country than the partisan effect of right-wing governments has.

H3: Countries that devoted themselves to the Maastricht Convergence Criteria do not yield a smaller partisan effect on the budgetary balance of their country than countries that do not comply with the criteria set in Maastricht.

3.7 Empirical results

This section will give and analyse the empirical results found.

3.7.1 Baseline model

Let us first recall the baseline model:

$$B_{it} = \alpha + \beta_1 \Delta U_{it} + \beta_2 g_{it} + \beta_3 \Delta r_{it} + \beta_4 \Delta d_{it} + \varepsilon$$

We move on to the OLS-regression, with heteroskedasticity robust standard errors. The results are presented below:

| Linear regression | | Number of obs = 500 | | | | |
|---------------------|-----------|---------------------|--------|-------|----------------------|-----------|
| | | F(4, 495) = 62.42 | | | | |
| | | Prob > F = 0.0000 | | | | |
| | | R-squared = 0.3592 | | | | |
| | | Root MSE = 3.791 | | | | |
| SURPLUS | Coef. | Robust Std. Err. | t | P> t | [95% Conf. Interval] | |
| UNEMPLOYMENTRATE | -.4747987 | .0434251 | -10.93 | 0.000 | -.5601189 | -.3894784 |
| ECONOMIC_GROWTHRATE | .3519077 | .0712869 | 4.94 | 0.000 | .2118454 | .4919699 |
| REALINTERESTRATE | -.1337044 | .0635057 | -2.11 | 0.036 | -.2584783 | -.0089305 |
| DEBTGDPRATIO | -.0450705 | .0054633 | -8.25 | 0.000 | -.0558046 | -.0343363 |
| _cons | 3.015104 | .7077941 | 4.26 | 0.000 | 1.624453 | 4.405755 |

Table 4 - Baseline model OLS regression

With regard to the independent variables it has to be noted that the t-statistics denote a significant effect of the independent variable on the dependent variable if the value exceed the critical t-value of 1.96 (for a 95% confidence level); statistics for the previous can be found in the fourth column of the above figure. Equivalent to the previous one may consider the chance that the absolute value of t of a variable exceeds the critical value of t ($|t^*| = 1.96$); statistics on the previous can be found in the fifth column of the above figure. Analogously to the previous, one may take a look at the 95% confidence interval, which denotes significance of the effect of an independent variable on the dependent variable if the value “0” is included in the range; statistics on this can be found in the sixth and seventh column of the above figure.

First, when looking into the effect of the unemployment rate a strong significant, negative value is apparent. The sign is as expected, if unemployment increases with 1%, the budgetary balance deteriorates

with 0.477% (a one-percent increase in unemployment causes 0.475% extra budgetary deficit). A possible explanation for this observation is that if more individuals were to lose their jobs, they would have to demand unemployment benefits (paid for by the government, from tax money) and consequently pay a lower amount of taxes (as unemployment benefits always are lower than income received from employment). This would lead to a situation in which the government would earn less from taxes, and pay more to unemployment benefits, thus lower government revenue and increasing government expenses, which leads to larger deficits (*ceteris paribus*).

Second, if we turn to analyse the rate of economic growth we see a strong significant, positive value. The sign again is as expected earlier, if the economic growth rate were to grow with 1%, and this would lead to a 0.359% more positive budgetary balance. We can once again explain this observation in terms of employment. An increase in economic growth is caused by higher production rates of local firms (employers), which is caused by higher demand for their products (otherwise there would be no incentive for firms to boost production). If this movement goes on repetitively this would urge firms to hire more employees (if the job market offers individuals fit for the task) or raise existing employee's wages (because competent employees are requested by other firms as well, which might raise their wages to attract more (competent) employees). Both of these developments could well happen simultaneously. This would lead to a situation in which more individuals are employed (so less are unemployed), or each individual earn more (so pays more taxes), or a combination of both. Regardless of the actual developments, this would have a positive effect on the budgetary effect (less deficits, or even more surpluses), as government's revenues rise, or its expenses fall, or a combination of both.

Third, the real interest rate and the GDP-to-debt ratio both show strongly significant, negative coefficients with (considerably) small standard errors. Rises of 1% in real interest rate and the debt-to-GDP ratio will lead to a 0.147% and 0.045% worsening of budgetary balance respectively. Both of these observations are remarkable, but can be explained in terms of interest costs to the government. From these observations it follows that on average local governments have not been able to balance their budgets. If interest rate grew, the budgetary balance worsened, which can only happen if governments continue to overspend. The same applies to the debt-GDP ratio, if this ratio grows (so countries have experienced budgetary deficits in the previous year, or previous years) the budgetary balance of this year deteriorates. This development seems logical if we consider a sudden contractionary shock (such as the oil shocks, the 2000 Dutch internet bubble, or the European sovereign debt crisis of the last years), which the government needs to cope with. In these harsh economic times the revenue of governments plummets (due to unemployment, lower economic growth) and the authorities have a hard time to balance their budgets. So they decide to attract additional funds through government bonds. But due to the economic turmoil, the public trust in the governments solvency falls, and higher interest rates are demanded to make up for the

extended risk of repayment. The same applies to countries with high debt-GDP ratios, as they are regarded as less solvent as well, and face higher interest rates. So in fact a clear relation between these three variables (budgetary balance, real interest rate and debt-GDP ratio) is apparent, but the causality is unclear.

Finally, the F-test is rejected (which means the model is drafted up in a right manner) and explanatory power of this model as measured by R-squared is 35.92%. Note that high values of R-squared can denote the presence of autocorrelation in macro-economic data.

3.7.2 First extended model: partisan effects

Recalling the first extension to the baseline model, incorporating partisan effects:

$$B_{it} = \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY_{it} + \beta_4 \Delta U_{it} + \beta_5 g_{it} + \beta_6 \Delta r_{it} + \beta_7 \Delta d_{it} + \varepsilon$$

We move on to OLS-regression with heteroskedasticity robust standard errors. The following table presents the results:

| Linear regression | | Number of obs = 500 | | | | |
|---------------------|-----------|---------------------|--------|-------|----------------------|-----------|
| | | F(7, 492) = 40.66 | | | | |
| | | Prob > F = 0.0000 | | | | |
| | | R-squared = 0.4234 | | | | |
| | | Root MSE = 3.607 | | | | |
| SURPLUS | Coef. | Robust Std. Err. | t | P> t | [95% Conf. Interval] | |
| LEFT | 1.864374 | .5110125 | 3.65 | 0.000 | .8603379 | 2.86841 |
| CENTRIST | -.5691179 | .4962522 | -1.15 | 0.252 | -1.544153 | .405917 |
| MINORITY | 1.703692 | .4255201 | 4.00 | 0.000 | .8676318 | 2.539753 |
| UNEMPLOYMENTRATE | -.5027459 | .0459882 | -10.93 | 0.000 | -.5931035 | -.4123884 |
| ECONOMIC_GROWTHRATE | .3363565 | .0726001 | 4.63 | 0.000 | .1937119 | .479001 |
| REALINTERESTRATE | -.1540047 | .0612807 | -2.51 | 0.012 | -.2744088 | -.0336005 |
| DEBTGDPRATIO | -.0441344 | .0053825 | -8.20 | 0.000 | -.05471 | -.0335588 |
| _cons | 2.482868 | .6481698 | 3.83 | 0.000 | 1.209346 | 3.75639 |

Table 5 - First extended model OLS regression

First, it is apparent that all results of the baseline model are robust under the addition of partisan effects. There is no large difference between the coefficients, significance or signs of the unemployment rate, economic growth rate, real interest rate or debt-GDP ratio. This may come as no surprise as the

correlation matrix presented in the section on “Variables”, already showed that there is no statistical influence of partisan variables on independent macroeconomic variables.

Second, when moving on to the partisan variables, we come across some remarkable results. Recall that the partisan variables together equal one ($soLEFT + CENTRIST = 1 - RIGHT$) and that this model compares leftist and centrist governments with right-wing authorities. The (remarkable) conclusion from this empirical research is that leftist governments lead to (statistically significantly) 1.86% more positive budgetary balances than right-winged authorities would (or put differently, right-winged government perform even poorer than leftist authorities do). The evidence of this model makes the assumption that left-wing governments are more prone to run budgetary deficits than right-wing governments unwarranted. Consequently we can conclude that centrist governments perform the poorest, with (on average) a 0.57% larger deficit than right-wing authorities. It must however be noted that this model takes averages over time and countries, so therefore these conclusions might be deluded.

Third, if a minority government were to be in charge of a country, this would lead to an increase of 1.704% for each additional percent of time the minority government is in charge. A possible explanation for this observation would be that minority governments need to acquire a majority in parliament, which would turn out to be hard for policies which result in higher expenditure by the governments.

Finally the improvement of the R-squared figure shows higher explanatory power in the model, and the F-test is rejected, so the model is drafted up right.

3.7.3 Second extended model: country-specific and partisan effects

The model used, incorporating country-specific and partisan effects, is as follows:

$$B_{it} = \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY_{it} + \beta_4 Z_i + \beta_5 \Delta U_{it} + \beta_6 g_{it} + \beta_7 \Delta r_{it} + \beta_8 \Delta d_{it} + \varepsilon$$

The results on the fixed effects test² are reported next:

² A Hausman test on random effects has been conducted and its null hypothesis has been rejected, see Appendix A.3 for the results

| Fixed-effects (within) regression | | Number of obs | = | 500 | | |
|---|-----------|-----------------------------------|-------|--------|----------------------|-----------|
| Group variable: COUNTRY | | Number of groups | = | 24 | | |
| R-sq: within | = 0.3096 | Obs per group: min | = | 7 | | |
| between | = 0.3067 | avg | = | 20.8 | | |
| overall | = 0.2948 | max | = | 31 | | |
| | | F(7,23) | = | 7.45 | | |
| corr(u_i, Xb) | = -0.0745 | Prob > F | = | 0.0001 | | |
| (Std. Err. adjusted for 24 clusters in COUNTRY) | | | | | | |
| SURPLUS | Coef. | Robust Std. Err. | t | P> t | [95% Conf. Interval] | |
| LEFT | .6690945 | .9094256 | 0.74 | 0.469 | -1.212196 | 2.550385 |
| CENTRIST | -.9189476 | 1.689721 | -0.54 | 0.592 | -4.414402 | 2.576507 |
| MINORITY | -.0567186 | 1.318135 | -0.04 | 0.966 | -2.783489 | 2.670052 |
| UNEMPLOYMENTRATE | -.6669152 | .1264976 | -5.27 | 0.000 | -.9285955 | -.4052349 |
| ECONOMIC_GROWTHRATE | .3364419 | .0831983 | 4.04 | 0.001 | .164333 | .5085507 |
| REALINTERESTRATE | -.1528162 | .1298008 | -1.18 | 0.251 | -.4213296 | .1156971 |
| DEBTGDP RATIO | -.0002439 | .0151081 | -0.02 | 0.987 | -.0314973 | .0310096 |
| _cons | 2.394416 | 1.194255 | 2.00 | 0.057 | -.0760886 | 4.86492 |
| sigma_u | 2.61863 | | | | | |
| sigma_e | 2.9943968 | | | | | |
| rho | .43335321 | (fraction of variance due to u_i) | | | | |

Table 6 - Second extended model one-way fixed effects test

From the fixed effects model there is overwhelming evidence that country-specific effects apply, explaining 43.34% (ρ) of the variation in the model. All dependent variables but the unemployment rate and the economic growth rate lose their significance, but the observations for most variables are rather robust. Leftist governments still yield better budgetary budget than rightist authorities, who in turn perform better than centrist governments. This model yields evidence for the findings of the first extended models, leftist governments seems to perform best with regard to the budgetary balance. It must however be noted that this model does not correct for time-specific effects, so the possibility that left-wing authorities rule in times of economic prosperity more often than their right-wing adversaries cannot be rejected with the evidence at hand.

The figure and table below show the country-specific effects on the budgetary balance graphically (for the numerical values, please consult Appendix A.4) and give summarising statistics respectively:

Country-specific effects of the budgetary balance

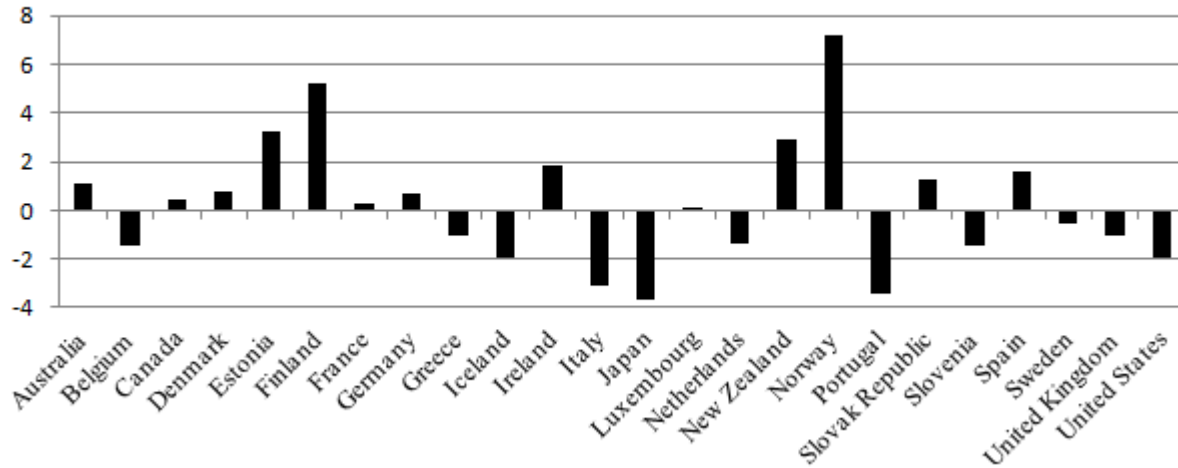


Figure 6 - Second extended model: country-specific effects

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|------------|-----|----------|-----------|-----------|----------|
| alphafehat | 500 | 3.64e-09 | 2.702122 | -3.649427 | 7.204528 |

Table 7 - Second extended model: country-specific effects (summarising statistics)

From this figure it is clear that Finland and Norway boost the average value of the budgetary balance, which shows that those countries perform better than the others with respect to budgetary control.

The F-test is rejected, so there are no objections to the way this model is drafted. The R-square value (the way in which the independent variables of the model explain the variation in the dependent variable) falls, this is a result of the addition of country specific effects

3.7.4 Third extended model: country-specific, partisan and time-specific fixed effects

The model used, incorporating partisan, country-specific and time-specific effects:

$$B_{it} = \alpha + \beta_1 PAR_{LEFT_{it}} + \beta_2 PAR_{CENTRIST_{it}} + \beta_3 MINORITY_{it} + \beta_4 Z_i + \beta_5 \Delta U_{it} + \beta_6 g_{it} + \beta_7 \Delta r_{it} + \beta_8 \Delta d_{it} + \varepsilon$$

We move on to the two-way fixed effect model³, to results of which are shown below:

³ A Hausman test on random effects has been conducted and its null hypothesis has been rejected, see Appendix A.5 for the results

```

Fixed-effects (within) regression      Number of obs   =    440
Group variable: COUNTRY               Number of groups =    24

R-sq:  within = 0.5538                Obs per group:  min =    4
      between = 0.3304                  avg   =   18.3
      overall  = 0.4377                  max   =   31

                                     F(23,23)        =    .
corr(u_i, Xb) = -0.0527                Prob > F        =    .

                                     (Std. Err. adjusted for 24 clusters in COUNTRY)

```

| SURPLUS | Robust | | | P> t | [95% Conf. Interval] | |
|---------------------|-----------|-----------|-------|-------|----------------------|-----------|
| | Coef. | Std. Err. | t | | | |
| LEFT | .5962078 | .6200606 | 0.96 | 0.346 | -.6864854 | 1.878901 |
| CENTRIST | -.3320148 | 1.248693 | -0.27 | 0.793 | -2.915134 | 2.251104 |
| MINORITY | -1.358912 | 1.323296 | -1.03 | 0.315 | -4.096357 | 1.378534 |
| UNEMPLOYMENTRATE | -.3890037 | .1917705 | -2.03 | 0.054 | -.7857113 | .0077038 |
| ECONOMIC_GROWTHRATE | .2073319 | .1220743 | 1.70 | 0.103 | -.045198 | .4598619 |
| REALINTERESTRATE | -.0460777 | .095832 | -0.48 | 0.635 | -.2443214 | .1521659 |
| DEBTGDP RATIO | -.0473028 | .0140735 | -3.36 | 0.003 | -.0764161 | -.0181896 |
| OUTPUTGAP | -.091328 | .1296325 | -0.70 | 0.488 | -.3594933 | .1768373 |
| YEAR | | | | | | |
| 1981 | .410892 | .579909 | 0.71 | 0.486 | -.7887412 | 1.610525 |
| 1982 | -.669726 | 1.658015 | -0.40 | 0.690 | -4.099592 | 2.76014 |
| 1983 | -2.008399 | 1.042553 | -1.93 | 0.066 | -4.165084 | .1482863 |
| 1984 | .1218165 | 1.753443 | 0.07 | 0.945 | -3.505457 | 3.74909 |
| 1985 | -2.788685 | 1.529192 | -1.82 | 0.081 | -5.95206 | .3746905 |
| 1986 | -2.279843 | 1.34007 | -1.70 | 0.102 | -5.051989 | .4923033 |
| 1987 | -1.187134 | 1.321154 | -0.90 | 0.378 | -3.92015 | 1.545881 |
| 1988 | -.9367038 | 1.121785 | -0.84 | 0.412 | -3.257292 | 1.383885 |
| 1989 | -1.361196 | 1.209909 | -1.13 | 0.272 | -3.864084 | 1.141693 |
| 1990 | -1.360534 | 1.397063 | -0.97 | 0.340 | -4.25058 | 1.529512 |
| 1991 | -1.902106 | 1.511358 | -1.26 | 0.221 | -5.028588 | 1.224376 |
| 1992 | -2.379411 | 1.404487 | -1.69 | 0.104 | -5.284815 | .5259916 |
| 1993 | -2.479771 | 1.341653 | -1.85 | 0.077 | -5.255192 | .295651 |
| 1994 | -2.104486 | 1.206347 | -1.74 | 0.094 | -4.600004 | .3910328 |
| 1995 | -1.94248 | 1.338889 | -1.45 | 0.160 | -4.712182 | .8272227 |
| 1996 | -.1039032 | 1.329011 | -0.08 | 0.938 | -2.853172 | 2.645365 |
| 1997 | 1.247969 | 1.343533 | 0.93 | 0.363 | -1.531341 | 4.027278 |
| 1998 | 1.423756 | 1.325747 | 1.07 | 0.294 | -1.31876 | 4.166272 |
| 1999 | 2.15213 | 1.249458 | 1.72 | 0.098 | -.4325705 | 4.73683 |
| 2000 | 3.121968 | 1.480027 | 2.11 | 0.046 | .0602989 | 6.183636 |
| 2001 | 2.033435 | 1.41266 | 1.44 | 0.163 | -.8888758 | 4.955746 |
| 2002 | .9738435 | 1.282456 | 0.76 | 0.455 | -1.67912 | 3.626807 |
| 2003 | .7302827 | 1.159505 | 0.63 | 0.535 | -1.668335 | 3.128901 |
| 2004 | 1.376675 | 1.200819 | 1.15 | 0.263 | -1.107408 | 3.860759 |
| 2005 | 2.201886 | 1.23057 | 1.79 | 0.087 | -.3437427 | 4.747514 |
| 2006 | 3.288604 | 1.47286 | 2.23 | 0.036 | .2417615 | 6.335446 |
| 2007 | 2.939215 | 1.459287 | 2.01 | 0.056 | -.0795496 | 5.957979 |

| | | | | | | |
|---------|-----------|-----------------------------------|-------|-------|-----------|----------|
| 2008 | 1.006168 | 2.048162 | 0.49 | 0.628 | -3.230779 | 5.243115 |
| 2009 | -1.156248 | 1.975894 | -0.59 | 0.564 | -5.243696 | 2.931199 |
| 2010 | -2.790363 | 1.547206 | -1.80 | 0.084 | -5.991002 | .4102764 |
| _cons | 3.014507 | 1.314435 | 2.29 | 0.031 | .2953905 | 5.733623 |
| sigma_u | 2.5411853 | | | | | |
| sigma_e | 2.488275 | | | | | |
| rho | .51051892 | (fraction of variance due to u_i) | | | | |

Table 8 - Third extended model: two-way fixed effects test

The addition of time-fixed effects seems to yield extra evidence to the findings of the previous models. If we consider a 5 percent significance level three years yield significant results (so a significance influence on the budgetary balance is apparent), which shows these years can be considered extraordinary. This model does however not change the conclusion of the previous models; right-winged governments still perform poorer than leftist governments, and better than centre governments. It must however be noted that period before 1997 predominately shows budgetary deficits, while from 1997 until the 2008 economic growth can be regarded as a time of steady budgetary surpluses.

The inclusion of the output gap in this model accounts for deviations from the economic growth trend level, which can be regarded as a means to find out if certain politically coloured governments are more often observed in times of economic prosperity or turmoil. The fact that the variable for the output gap fails to produce significant values, combined with the fact that the coefficient found is very close to zero and the found robustness in the coefficient for leftist and centrist governments serve as evidence that the public does not significantly over-elect certain winged parties in times of extreme economic circumstances. These findings are remarkable, as they are the precise opposite of the general consensus, which depicts leftist governments as more prone to run (higher) budgetary deficits than right winged authorities. It must however be noted that these findings do not indicate that leftist governments spend less than right winged administrations, as taxes might be higher under left wing regimes than under rightist rule. The conclusion is such that the budgetary balance for left-wing governments is more positive (less negative) when compared to rightist and centrist authorities.

The results found do not differ significantly is the variable for economic growth were to be excluded (as it could be argued that economic growth is a measure of country-specific effects, which are already accounted for).

The country-specific effects are shown in the figure below (numerical values can be found in Appendix A.6), and summarising statistics are provided in the table below.

Country-specific effects of the budgetary balance

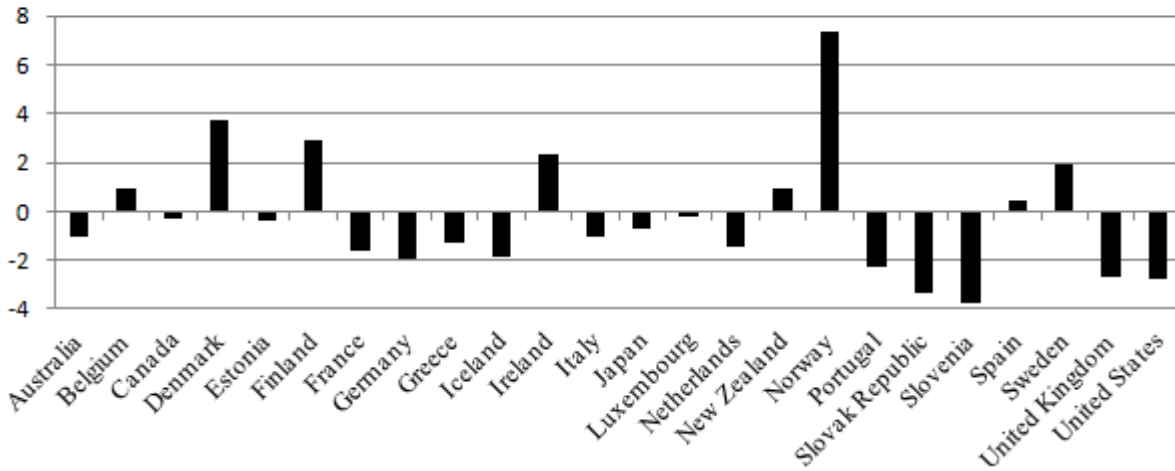


Figure 7 - Third extended model: country-specific effects

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|------------|-----|-----------|-----------|-----------|----------|
| alphafihat | 440 | -2.71e-09 | 2.645384 | -3.730716 | 7.358631 |

Table 9 - Third extended model: country-specific effects (summarising statistics)

From this figure it once more becomes clear that Norway can be regarded as the best performer with regard to balancing its budget. A possible explanation for this observation could be the fact that Norway is an oil-producing country and therefore less vulnerable to (downwards) economic shocks, or oil price shocks.

To conclude this model it has to be noted that the explanatory power of the independent variables rose (because of the inclusion of the variable accounting for output gaps) and that the country-specific effects account for more variation in the budgetary balance than before (because of the inclusion of time-specific effects).

3.7.5 Fourth extended model: country-specific, partisan, time-specific and Maastricht

Treaty effects

Let us recall the fourth extended model, which incorporates partisan, country-specific, time-specific and Maastricht Treaty effects:

$$\begin{aligned}
 B_{it} = & \alpha + \beta_1 D_{Maastricht|PAR_{LEFT}_{it}} + \beta_2 D_{Maastricht|PAR_{CENTRIST}_{it}} + \beta_3 MINORITY + \beta_4 Z_i + \beta_5 t_i \\
 & + \beta_6 (Y_{it} - Y_{it}^e) + \beta_7 \Delta U_{it} + \beta_8 g_{it} + \beta_9 \Delta r_{it} + \beta_{10} \Delta d_{it} + \varepsilon
 \end{aligned}$$

This model, which measures partisan effects in EMU-countries after the signing and ratification of the Maastricht Treaty (so post 1993), can best be compared with the previous model. Since the Maastricht Treaty dictates that all participating countries should have budgetary balances with a minimum of three per cent, the expected development should be that budgetary balances improve for all EMU-countries, regardless of the political ideology of the government. The empirical results of the two-way fixed effects test are presented below (since this model is just a minor adaption of the previous model, a Hausman test is deemed to be superfluous):

| Fixed-effects (within) regression | | Number of obs | = | 440 | | |
|---|-----------|--------------------|-------|-------|----------------------|-----------|
| Group variable: COUNTRY | | Number of groups | = | 24 | | |
| R-sq: within | = 0.5665 | Obs per group: min | = | 4 | | |
| between | = 0.2370 | avg | = | 18.3 | | |
| overall | = 0.3912 | max | = | 31 | | |
| | | F(23,23) | = | . | | |
| corr(u_i, Xb) = -0.1175 | | Prob > F | = | . | | |
| (Std. Err. adjusted for 24 clusters in COUNTRY) | | | | | | |
| SURPLUS | Coef. | Robust Std. Err. | t | P> t | [95% Conf. Interval] | |
| LEFT1993EURO | 2.35503 | 1.019666 | 2.31 | 0.030 | .2456888 | 4.46437 |
| CENTRIST1993EURO | -.3527674 | 1.273713 | -0.28 | 0.784 | -2.987643 | 2.282109 |
| MINORITY | -1.691907 | 1.274524 | -1.33 | 0.197 | -4.328461 | .9446467 |
| UNEMPLOYMENTRATE | -.3815821 | .1926244 | -1.98 | 0.060 | -.7800562 | .0168919 |
| ECONOMIC_GROWTHRATE | .190652 | .1194887 | 1.60 | 0.124 | -.0565291 | .4378332 |
| REALINTERESTRATE | -.0528621 | .0982609 | -0.54 | 0.596 | -.2561302 | .1504061 |
| DEBTGDPRATIO | -.0491035 | .0134832 | -3.64 | 0.001 | -.0769957 | -.0212113 |
| OUTPUTGAP | -.075316 | .1304203 | -0.58 | 0.569 | -.3451109 | .194479 |
| YEAR | | | | | | |
| 1981 | .3794835 | .5271062 | 0.72 | 0.479 | -.7109188 | 1.469886 |
| 1982 | -.9625255 | 1.796279 | -0.54 | 0.597 | -4.678413 | 2.753362 |
| 1983 | -2.613404 | 1.007584 | -2.59 | 0.016 | -4.69775 | -.5290579 |
| 1984 | -.5239541 | 1.765271 | -0.30 | 0.769 | -4.175696 | 3.127787 |
| 1985 | -3.023587 | 1.549094 | -1.95 | 0.063 | -6.228132 | .1809573 |
| 1986 | -2.481408 | 1.462616 | -1.70 | 0.103 | -5.50706 | .5442443 |
| 1987 | -1.352007 | 1.416878 | -0.95 | 0.350 | -4.283042 | 1.579027 |
| 1988 | -1.102768 | 1.218982 | -0.90 | 0.375 | -3.624425 | 1.41889 |
| 1989 | -1.525169 | 1.305777 | -1.17 | 0.255 | -4.226373 | 1.176036 |

| | | | | | | |
|---------|-----------|-----------------------------------|-------|-------|-----------|-----------|
| 1990 | -1.503828 | 1.441258 | -1.04 | 0.308 | -4.485299 | 1.477642 |
| 1991 | -2.041212 | 1.549162 | -1.32 | 0.201 | -5.245898 | 1.163475 |
| 1992 | -2.478423 | 1.449245 | -1.71 | 0.101 | -5.476414 | .5195675 |
| 1993 | -2.561955 | 1.371825 | -1.87 | 0.075 | -5.399792 | .2758821 |
| 1994 | -2.602279 | 1.2248 | -2.12 | 0.045 | -5.135971 | -.0685877 |
| 1995 | -2.36404 | 1.284628 | -1.84 | 0.079 | -5.021495 | .2934151 |
| 1996 | -.4746958 | 1.320651 | -0.36 | 0.723 | -3.206671 | 2.25728 |
| 1997 | .8744646 | 1.253775 | 0.70 | 0.493 | -1.719166 | 3.468096 |
| 1998 | 1.004776 | 1.172818 | 0.86 | 0.400 | -1.421383 | 3.430935 |
| 1999 | 1.671137 | 1.134249 | 1.47 | 0.154 | -.675236 | 4.01751 |
| 2000 | 2.609677 | 1.423898 | 1.83 | 0.080 | -.335881 | 5.555235 |
| 2001 | 1.528551 | 1.393756 | 1.10 | 0.284 | -1.354654 | 4.411756 |
| 2002 | .4690876 | 1.20877 | 0.39 | 0.702 | -2.031443 | 2.969618 |
| 2003 | .2842327 | 1.074001 | 0.26 | 0.794 | -1.937508 | 2.505974 |
| 2004 | .9842501 | 1.135101 | 0.87 | 0.395 | -1.363885 | 3.332385 |
| 2005 | 1.793079 | 1.236252 | 1.45 | 0.160 | -.7643019 | 4.35046 |
| 2006 | 2.864282 | 1.512254 | 1.89 | 0.071 | -.264054 | 5.992618 |
| 2007 | 2.428727 | 1.490599 | 1.63 | 0.117 | -.6548122 | 5.512266 |
| 2008 | .5713864 | 2.05744 | 0.28 | 0.784 | -3.684752 | 4.827525 |
| 2009 | -1.52475 | 1.956729 | -0.78 | 0.444 | -5.572552 | 2.523051 |
| 2010 | -2.903924 | 1.504256 | -1.93 | 0.066 | -6.015714 | .2078671 |
| _cons | 3.372167 | 1.408221 | 2.39 | 0.025 | .4590412 | 6.285294 |
| sigma_u | 2.7902376 | | | | | |
| sigma_e | 2.4525201 | | | | | |
| rho | .56414982 | (fraction of variance due to u_i) | | | | |

Table 10 - Fourth extended model: two-way fixed effect model

From these observations the following seems apparent. Whereas rightist governments still outperform administrations with a centrist ideology (the coefficients for which are robust), the widening of the gap in performance on budgetary balances is remarkable once again. Leftist governments yield an astounding 2.3% higher budgetary balances than their right-winged adversaries. This observation lead to the conclusion that left-wing governments seem to comply with the Maastricht 3% norm better than rightist authorities. Recalling the Dutch parliamentary elections of 2012 left-winged parties can be assumed to be larger advocates of the Maastricht Treaty than rightist and centrist parties are.

It must be noted that once again there seems to be a discrepancy between the pre-1997 era and the period from 1997 onwards. From the time-specific effects it can also be concluded that the Maastricht Treaty was successful in altering the budgetary policies of the participating nations, as the year 1994 is significant and seems to be a pivotal point (changing an increasing deficit to an improvement of the budgetary balance).

The country-specific effects are shown in the figure below (numerical values can be found in Appendix A.7).

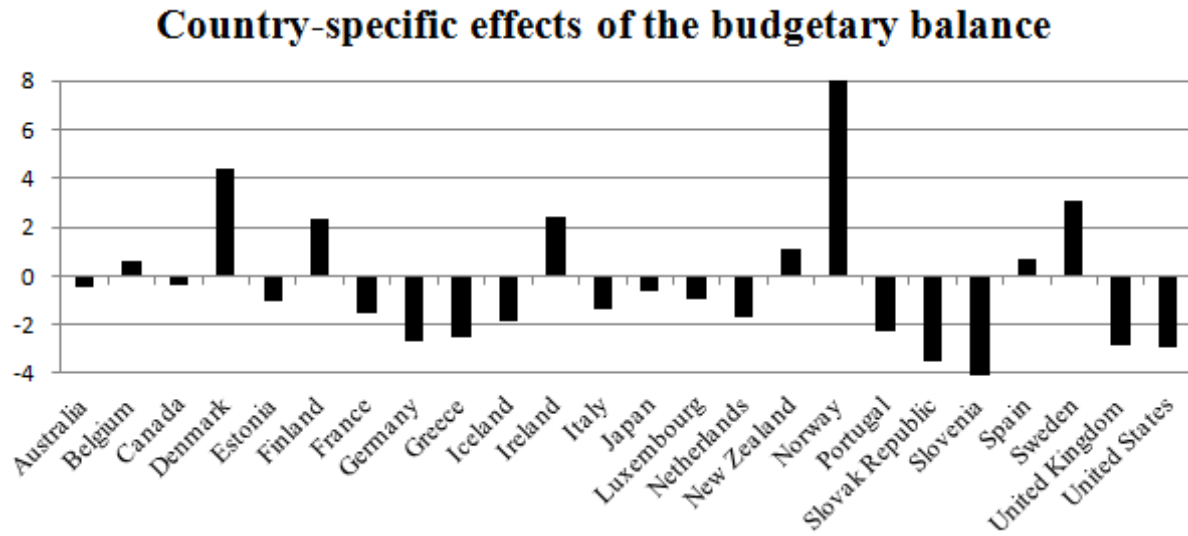


Figure 8 - Fourth extended model: country-specific effects

To conclude this model the observation can be made that the explanatory power of this model is similar to that of the third model, which once again stresses their comparability.

4. Conclusion

Overall the empirical findings of this research are remarkable. In all four extended models a single clear cut conclusion can be made: when comparing leftist, centrist and rightist governments, the first perform over the second and third, while the third outperforms the second. These effects are robust when accounting for country- and time-specific effects, and the influence of the European monetary integration (through the implications of the 1993 Maastricht Treaty) in a wide sample of countries over a time of several decades, but miss significance. We can however argue that because of the fact that the partisan variables' coefficients found in all four extended models are robust the statistical results found can be taken to show an effect. It cannot be said with certainty that partisan influence is the sole source of influence in the budgetary balance (which shows us that these models are not perfect), but there is reasonable evidence that such partisan influence is apparent.

These findings (left-wing, centrist and right-wing governments yield different results to the public treasury, the effects of the first being most favourable) seem to collide with empirical work published before, most notably the research conducted by Alesina et al. (1997). The discrepancy can be declared when time-specific effects are taken notice of. The research of Alesina et al. (1997) dealt with a period of ongoing budgetary deficits (the pre-1997 era), whereas this research takes notice of the succeeding time of budgetary surpluses too. It might well be that leftist governments performed so well in the post-1997 era that their budgetary results improved by so much that they actually managed to surpass right-wing authorities in budgetary performance. This however is a question which needs further research to be resolved.

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A. Appendices

A.1 Variables used in models

| Variable | Short description | Long description | Variable type |
|-----------------|-----------------------|--|-------------------|
| β_n | Coefficient | Measures effect of dependent variable on independent variable. | Numeric value |
| ΔX_{it} | Percent change | Measures percent change of variable when compared to preceding year. | Percent change |
| α | Constant | Measures intercept with y-axis. | Numeric value |
| X_i | Country | Countries in sample, coded 1 through 24, see table below. | Numeric value |
| X_t | Year | Year in sample, 1973-2012. | Numeric value |
| B | Budgetary balance | General government net lending/net borrowing. Positive values denote surpluses, negative values denote deficits. | Percentage of GDP |
| U | Unemployment | Unemployment rate, total population, ages 15 through 64. | Percent change |
| Y | Economic growth | Real GDP growth rate. | Percent change |
| r | Real interest | Lending interest rate adjusted by GDP deflator (inflation). | Index number |
| d | Total government debt | Total government debt stock, measures as percentage of GDP. | Percentage of GDP |
| ε | Residual | Residual of model. | Numeric value |

Table 11 - Variables used in baseline model

| Variable | Short description | Long description | Variable type |
|------------------|--|--|-----------------------------------|
| PAR_{LEFT} | Partisan variable left-wing government | = 0 if no left-wing representation in government, = $0 < X < 1$ if coalition government, = 1 if full left-wing representation in government. | Numeric value, discounted per day |
| $PAR_{CENTRIST}$ | Partisan variable centrist government | = 0 if no centrist representation in government, = $0 < X < 1$ if coalition government, = 1 if full centrist representation in government. | Numeric value, discounted per day |
| $MINORITY$ | Minority governments | = 0 if no minority governments in country i during year t , | Numeric value, discounted per |

= $0 < X < 1$ if minority governments in country i during a part of year t ,
= 1 if minority governments in country i during the whole of year t .

Table 12 - Additional variables used in first extended model

| Variable | Short description | Long description | Variable type |
|----------|--------------------------|---|---------------|
| D_i | Country-specific effects | Measures of extra effects for certain countries | Numeric value |

Table 13 - Additional variables used in second extended model

| Variable | Short description | Long description | Variable type |
|---------------------|-------------------|---|-------------------|
| $Y_{it} - Y_{it}^e$ | Output gap | Actual economic growth minus expected economic growth, negative values denote lower than trend years, positive values denote above trend year | Percentage of GDP |

Table 14 - Additional variables used in third extended model

| Variable | Short description | Long description | Variable type |
|---------------------------------|---|---|-----------------------------------|
| $D_{Maastricht PAR_{LEFT}}$ | Left-wing government, Euro country, post Maastricht | = 0 if no left-wing representation in government of Maastricht committed country in year t after 1993, = $0 < X < 1$ if coalition government (with left-wing representation) in government of Maastricht committed country in year t after 1993, = 1 if full left-wing representation in government of Maastricht committed country in year t after 1993. | Numeric value, discounted per day |
| $D_{Maastricht PAR_{CENTRIST}}$ | Centrist government, Euro country, post Maastricht | = 0 if no centrist representation in government of Maastricht committed country in year t after 1993, = $0 < X < 1$ if coalition government (centrist representation) in government of Maastricht committed country in | Numeric value, discounted per day |

year t after 1993,
= 1 if full centrist representation
in government of Maastricht
committed country in year t
after 1993.

Table 15 - Additional variables used in third extended model

A.2 Data sources

| Variable | Description | Source |
|----------------------------------|--|---|
| ΔB_{it} | Percent change general government deficit/surplus | 1973-2012 OECD online databank (oecd.stats.org) |
| ΔU_{it} | Percent change unemployment rate | 1973-2012 OECD Economic Outlook |
| ΔY_{it} | Percent change real Gross Domestic Product, current prices | 1973-2011 International Monetary Fund World Economic Outlook 2013 |
| Δr_{it} | Real interest rate | 1973-2011 World Bank World Development Index 2013 |
| Δd_{it} | Total government debt as a percentage of GDP | 1973-2012 OECD Economic Outlook |
| $PAR_{X_{it}}$ | Partisan variable | 1973-2012 NSD European Election Database Wikipedia |
| $MINORITY_{it}$ | Minority variable | 1973-2012 NSD European Election Database Wikipedia |
| $Y_{it} - Y_{it}^e$ | Output gap | 1973-2012 OECD Economic Outlook |
| $D_{Maastricht PAR_{LEFT_{it}}}$ | Maastricht dummy | 1973-2012 NSD European Election Database Wikipedia |

Table 16 - Data sources

A.3 Second extended model: Hausman test

| | Coefficients | | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
|--------------|--------------|---------------|---------------------|-----------------------------|
| | (b) fixed | (B) random | | |
| LEFT | .6690945 | .8478925 | -.178798 | .0887012 |
| CENTRIST | -.9189476 | -.9060844 | -.0128632 | .1254243 |
| MINORITY | -.0567186 | .2353781 | -.2920967 | .1574742 |
| UNEMPLOYME~E | -.6669152 | -.5971189 | -.0697963 | .0341626 |
| ECONOMIC_G~E | .3364419 | .3408721 | -.0044302 | .0057008 |
| REALINTERE~E | -.1528162 | -.1570725 | .0042563 | .0058811 |
| DEBTGDPRATIO | -.0002439 | -.0133289 | .013085 | .0044956 |

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$\chi^2(7) = (b-B)' [(V_b-V_B)^{-1}] (b-B)$
 = 20.97
 Prob>chi2 = 0.0038
 (V_b-V_B is not positive definite)

Table 17 - Second extended model: Hausman test

A.4 Second extended model: country-specific effects

| Country | Country-specific effect on the budgetary balance |
|------------|--|
| Australia | 1.084511 |
| Belgium | -1.434582 |
| Canada | 0.4654568 |
| Demark | 0.7921072 |
| Estonia | 3.235568 |
| Finland | 5.243637 |
| France | 0.3105176 |
| Germany | 0.6883647 |
| Greece | -1.024177 |
| Iceland | -1.904868 |
| Ireland | 1.881279 |
| Italy | -3.099238 |
| Japan | -3.649427 |
| Luxembourg | 0.1186814 |

| | |
|-----------------|------------|
| Netherlands | -1.393049 |
| New Zealand | 2.899361 |
| Norway | 7.204528 |
| Portugal | -3.459555 |
| Slovak Republic | 1.254023 |
| Slovenia | -1.423614 |
| Spain | 1.618047 |
| Sweden | -0.5471779 |
| United Kingdom | -1.018416 |
| United States | -1.908184 |

Table 18 - Second extended model: country-specific effects

A.5 Third extended model: Hausman test

| | Coefficients | | | sqrt(diag(V_b-V_B)) S.E. |
|---------------|--------------|---------------|---------------------|-----------------------------|
| | (b) fixed | (B) random | (b-B) Difference | |
| LEFT | .5962078 | 1.79065 | -1.194443 | . |
| CENTRIST | -.3320148 | -.378357 | .0463422 | . |
| MINORITY | -1.358912 | 1.941035 | -3.299947 | .2687801 |
| UNEMPLOYME~E | -.3890037 | -.5017566 | .1127529 | .0914222 |
| ECONOMIC_G~E | .2073319 | .2299119 | -.02258 | . |
| REALINTERE~E | -.0460777 | -.0527273 | .0066495 | . |
| DEBTGDP RATIO | -.0473028 | -.0480296 | .0007267 | .0080084 |
| OUTPUTGAP | -.091328 | -.1619514 | .0706234 | .0073905 |
| 1981bn.YEAR | .410892 | .7878977 | -.3770057 | . |
| 1982.YEAR | -.669726 | 3.005254 | -3.67498 | . |
| 1983.YEAR | -2.008399 | 2.708643 | -4.717042 | . |
| 1984.YEAR | .1218165 | 5.686735 | -5.564919 | . |
| 1985.YEAR | -2.788685 | .060729 | -2.849414 | . |
| 1986.YEAR | -2.279843 | .3830338 | -2.662877 | . |
| 1987.YEAR | -1.187134 | 1.31594 | -2.503074 | . |
| 1988.YEAR | -.9367038 | 1.60912 | -2.545823 | . |
| 1989.YEAR | -1.361196 | 1.174832 | -2.536028 | . |
| 1990.YEAR | -1.360534 | 1.679964 | -3.040498 | . |
| 1991.YEAR | -1.902106 | 1.135535 | -3.037641 | . |
| 1992.YEAR | -2.379411 | .5302984 | -2.90971 | . |
| 1993.YEAR | -2.479771 | .3489273 | -2.828698 | . |
| 1994.YEAR | -2.104486 | .6546261 | -2.759112 | . |
| 1995.YEAR | -1.94248 | .4203249 | -2.362805 | . |
| 1996.YEAR | -.1039032 | 1.978545 | -2.082449 | . |
| 1997.YEAR | 1.247969 | 3.285337 | -2.037369 | . |
| 1998.YEAR | 1.423756 | 3.383456 | -1.9597 | . |
| 1999.YEAR | 2.15213 | 3.835044 | -1.682915 | . |
| 2000.YEAR | 3.121968 | 4.918748 | -1.79678 | . |
| 2001.YEAR | 2.033435 | 3.977039 | -1.943604 | . |
| 2002.YEAR | .9738435 | 3.156896 | -2.183053 | . |
| 2003.YEAR | .7302827 | 3.181839 | -2.451556 | . |
| 2004.YEAR | 1.376675 | 4.01772 | -2.641045 | . |
| 2005.YEAR | 2.201886 | 4.592877 | -2.390991 | . |
| 2006.YEAR | 3.288604 | 5.383949 | -2.095345 | . |
| 2007.YEAR | 2.939215 | 5.126784 | -2.18757 | . |
| 2008.YEAR | 1.006168 | 3.257632 | -2.251464 | . |
| 2009.YEAR | -1.156248 | .8468451 | -2.003093 | . |
| 2010.YEAR | -2.790363 | -1.783501 | -1.006862 | . |

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(38) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 131.60
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)

Table 19 - Third extended model: Hausman test

A.6 Third extended model: country-specific effects

| Country | Country-specific effect on the budgetary balance |
|-----------------|---|
| Australia | -1.001405 |
| Belgium | 0.9804648 |
| Canada | -0.3216323 |
| Denmark | 3.777508 |
| Estonia | -0.3858116 |
| Finland | 2.92097 |
| France | -1.583573 |
| Germany | -1.982544 |
| Greece | -1.265043 |
| Iceland | -1.826021 |
| Ireland | 2.378612 |
| Italy | -1.025973 |
| Japan | -0.7175621 |
| Luxembourg | -0.2068146 |
| Netherlands | -1.425984 |
| New Zealand | 0.9606693 |
| Norway | 7.358631 |
| Portugal | -2.28407 |
| Slovak Republic | -3.356503 |
| Slovenia | -3.730716 |
| Spain | 0.4297993 |
| Sweden | 1.920406 |
| United Kingdom | -2.678373 |
| United States | -2.781562 |

Table 20 - Third extended model: country-specific effects

A.7 Fourth extended model: country-specific effects

| Country | Country-specific effect on the budgetary balance |
|-----------------|---|
| Australia | -0.5012517 |
| Belgium | 0.5853015 |
| Canada | -0.4031064 |
| Denmark | 4.406414 |
| Estonia | -1.018732 |
| Finland | 2.35712 |
| France | -1.573491 |
| Germany | -2.69104 |
| Greece | -2.522132 |
| Iceland | -1.842782 |
| Ireland | 2.419665 |
| Italy | -1.355032 |
| Japan | -0.6311918 |
| Luxembourg | -0.9301157 |
| Netherlands | -1.734515 |
| New Zealand | 1.074948 |
| Norway | 8.113956 |
| Portugal | -2.244774 |
| Slovak Republic | -3.479591 |
| Slovenia | -4.436327 |
| Spain | 0.6827837 |
| Sweden | 3.112851 |
| United Kingdom | -2.868027 |
| United States | -2.914344 |