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by

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Abstract

The Political Causes and Effects of Fiscal Adjustments

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In this dissertation, I examine whether attributes of governments and political systems affect the accumulation of government debt in wealthy democracies, and whether voters hold governments accountable for fiscal outcomes. I begin by reevaluating the conclusions of prior research using alternative samples and model specifications. I find no consistent support for the hypotheses advanced in the most-cited papers on the topic. In the subsequent two chapters, I reexamine the electoral effects of macroeconomic and fiscal outcomes. I again find that the conclusions of the most-cited prior studies fail to reproduce out of sample and specification. However, I show that voters generally reward incumbent parties of the chief executive for economic growth and expansionary fiscal policies.

Turning from electoral effects to policy outcomes, I show that government cohesion has no non-negligible effect on changes in pension generosity in response to population aging. I then examine the relationship between fiscal constraints and welfare retrenchment. I show that support for welfare state expansion in the electoral manifestos of competitive and mainstream political parties increases with the government budget balance. To illustrate the importance of political and economic context in shaping the particular character of fiscal adjustments, I complete my empirical analysis with a case study of the austerity measures taken by the Cameron administration in the United Kingdom. I conclude the dissertation by advocating for greater research transparency. Researchers should acknowledge that many estimates presented in social-scientific studies are products of arbitrary or strategically chosen assumptions concerning sampling, measurement, and model specification.

All the ladies and gentlemen, who made this all so probable

- Alex Chilton

Special thanks to Petri Rouvinen and the folks at the Research Institute of the Finnish Economy for hosting me during the summer in which the ideas for this dissertation were initially conceived

And to John Zysman, without whom I would not have completed the dissertation

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1. Introduction

In this chapter, I describe the motivation and structure of this inquiry into the political causes and effects of fiscal adjustments. I begin by introducing the topic and stating the methodological principles that have guided this study from my selection of research topic to my presentation of its conclusions and recommendations in this document. I then outline the progression of this more specific research project from my initial ambition to explain divergent national fiscal and social policy responses to the European sovereign debt crisis through my critique of existing research on the topic to my attempt to contribute to a more general theory of fiscal policymaking. In the final section of this chapter, I briefly introduce each successive chapter of the dissertation and explain how the chapters collectively constitute a coherent narrative that contributes to our knowledge of why governments choose particular policies and how voters respond to these policies and their economic effects.

Following the Great Recession of 2008, governments across the developed world have faced the common challenge of reducing budget deficits. Economists, policymakers, and citizens have argued over the appropriate timing and composition of fiscal adjustments: reductions in the government primary deficit through tax increases or spending cuts. Some economists have advocated expansionary fiscal (and monetary) policies to increase aggregate demand, while others have called for contractionary measures to reduce borrowing costs and encourage private investment. Yet most governments today agree that the long-term accumulation of government debt is economically suboptimal. For instance, the Stability and Growth Pact of the European Economic and Monetary Union stipulates that governments may not run a fiscal deficit of over 3% of gross domestic product (GDP), or have a debt-to-GDP ratio exceeding 60% of GDP. Although the academic and political debate over the appropriate design and implementation of fiscal adjustments remains contested, there is relative consensus that governments should take measures to reduce deficits when borrowing costs become unsustainable.

However, as political economists have long recognized, deficit reduction is a fundamentally political problem. Even when members of government and their supporters in parliament agree that some form of tax increases or spending cuts is necessary, they often disagree over the allocation of the costs of adjustment. Ideological differences between political parties may delay budgetary legislation, leading to economically suboptimal deficits. Electoral incentives may induce governments to reduce taxes or increase spending prior to elections.

Over the past several decades, political economists have attempted to explain why certain governments accumulate more debt than others, typically using data from high-income democracies. The shared assumption of political-economic analyses of budget deficits is that economic factors alone cannot explain fiscal outcomes (Alesina and Perotti 1994; Roubini and Sachs 1989). Prior to the emergence of positive political theories of deficits, the predominant economic model contended that governments generally maintain constant tax rates to maximize social welfare, leading to short-run variation but long-run stability in the level of public debt

(Barro 1979). Political economists argue instead that attributes of governments and political institutions affect the level and composition of expenditure and revenue.

Most published research tends to support three sets of claims. First, deficits increase with government fragmentation, with minority and coalition governments running higher deficits than majority and single-party governments (Alesina and Drazen 1991; Alesina and Perotti 1994; Franzese 2002; Perotti and Kontopoulos 2002; Roubini and Sachs 1989; for a dissenting opinion, see Sakamoto 2001). As the number of political actors contesting the allocation of the costs of a particular fiscal adjustment increases, the adjustment tends to be delayed, leading to debt accumulation (Alesina and Drazen 1991; Alesina and Perotti 1994).

Second, the ideology of parties in government influences fiscal outcomes (Alesina, Cohen, and Roubini 1993; Borrelli and Royed 1995; Perotti and Kontopoulos 2002), and this effect has increased rather than diminished in the "era of globalization" (Cusack 1997; Garrett 1998; for contrary evidence, see Cusack 1999). For instance, governments spending as a share of GDP increases with unemployment to a greater extent under left wing governments (Cusack 1999). Third, governments tend to run higher deficits in election years (Alesina, Cohen, and Roubini 1993), though this effect is apparently limited to countries in their first four election cycles after democratization (Brender and Drazen 2005).

In this dissertation, I challenge the general validity of all three of these theories. Revisiting the evidence, I find that the conclusions of the most-cited political theories of government debt accumulation depend on researchers' choices of sample and model specification. The estimated effect of political variables on fiscal outcomes invariably depends on the particular set of countries, years, and variables chosen. Even when it is possible to identify general trends, estimated effects often vary substantially across countries and time. The conclusions of prior studies generally fail to replicate outside of their precise sample and model specifications.

This dissertation provides evidence for an alternative narrative of the politics of fiscal adjustment. Contrary to existing research, but consistent with many observers' intuitions, I show that voters systematically punish governments for election-year reductions in the budget deficit. I also show that voters generally sanction incumbent parties of the chief executive, but not their junior coalition partners for changes in economic output during the term prior to the election. Moreover, political variables such as the number of parties in government and parliament do not explain variation in the extent to which voters hold incumbents accountable for macroeconomic conditions. The findings described in the previous two sentences contradict a highly-cited set of studies that claim that governments can reduce the electoral costs of budget cuts, specifically to welfare expenditure, by sharing policymaking authority with coalition partners.

Rejecting the validity of established theories, I turn to original tests of the political causes of fiscal adjustments. Having shown that government and parliamentary cohesion have no systematic effect on fiscal outcomes, I examine in Chapter Five the more specific case of pension reform. Prior studies have suggested that successful reductions in pension benefit generosity, and welfare retrenchment more generally, are more likely when governments can share the costs of reform with multiple actors. This implies that the probability of reform should increase with political fragmentation. I show that there is no substantive effect of fragmentation on the degree of reform. This result is consistent with my finding that government revenue, expenditures, and deficits do not systematically vary with political fragmentation. It is similarly consistent with my observation that attributes of government and parliament, including fragmentation, do not affect the extent to which voters sanction governments for fiscal adjustments and macroeconomic conditions.

In Chapter Six, I estimate the effect of deficits on political parties' electoral support for welfare expenditure. Later in this introduction, I will describe the motivation, estimation strategy, and conclusions of this and other chapters in greater detail. Although this study identifies several general determinants of fiscal outcomes, understanding why governments enact certain fiscal policies in specific cases requires closer attention to the politics of the particular country and time in which such policies are enacted.

Having examined the general conclusions of a series of statistical analyses, Chapter Seven illustrates the complexity of the politics of fiscal policy choices in particular cases. To show how economic and political context affects the policy choices taken by a particular government, I examine the austerity measures taken during the first two years of the coalition government in the United Kingdom. Some of the circumstances that motivated the Cameron administration to cut public expenditure, such as rising structural debt and distance from the subsequent election, can be derived from pooled analysis. However, the Coalition's fiscal adjustments are perhaps better understood as the product of a more specific confluence of factors. Facing the largest financial crisis in eighty years and an opposition that voters generally did not trust to manage the economy, the Conservative-Liberal Democratic government actively campaigned to win public support for unprecedented spending cuts.

I conclude with a brief chapter summarizing the findings of my study and providing suggestions for future research. I argue that researchers should precisely define the variables used in their analyses, explicate and defend their modeling assumptions whenever possible, and provide the data and code necessary to reproduce their analyses. To this end, I include appendices detailing the variables and statistical computing code necessary to derive the estimates included in all of the models of this dissertation.[1]

Motivation

Through a set of systematic empirical analyses, I attempt to identify a general logic of fiscal policymaking. With deficits at historically high levels in many countries following the Great Recession, understanding why certain governments are more likely than others to accumulate debt, and why certain governments are more likely to than others to raise taxes or cut spending when faced with a revenue shortfall are questions of considerable current importance. With voters defecting from mainstream incumbent parties to populist and extremist alternatives on the

[1] For data, please email the author at donnelly.patrick.t@gmail.com.

far left and right of the political spectrum, it is similarly important for researchers, policymakers, and citizens to understand how policy responses to fiscal crises involving substantial budget cuts affect support for parties in government.

Of course, this is not to suggest that fiscal austerity is the sole, or even primary motive for the decline in support for mainstream political parties in Europe and elsewhere. But as I will show in this study, voters are less likely to vote for political parties that enact fiscal adjustments prior to elections. Informal observation of Greek, Portuguese, and Spanish politics strongly suggests that far-left parties have succeeded in winning over anti-austerity voters. While opposition to austerity may be less central to the platforms of far-right parties, parties such as the United Kingdom Independence Party have become a clear alternative to voters disillusioned by the economic policies of center-right parties – in this case the Conservative Party.

Before proceeding, it is important to clarify the difference between fiscal adjustments and changes in the budget deficit. Fiscal adjustments refer more specifically to deliberate (rather than automatic) reductions in the government deficit of a particular magnitude, typically 1.5% of GDP (Alesina, Perotti, and Tavares 1998). In this study, I measure fiscal adjustments by taking annual differences in general government deficits and controlling for macroeconomic conditions in models estimating the causes or effects of adjustments.[2]

To explain these current developments, I draw from the available historical record of observations of annual changes in fiscal variables (1241 observations across 31 countries from 1961 through 2014) and elections (352 observations across 30 countries from 1944 through 2014). The research design adopted here facilitates falsifiability. Using data from countries and years outside of the sample in this dissertation, or data from subnational units in various countries, researchers can easily test the claims posited in this set of analyses. The variables included in the analysis are clearly defined and compiled from publicly-available primary data sources. The code used to compute estimates for every model in this dissertation is included in the appendix.

The Limitations of Prior Research

Explaining why certain countries but not others accumulated substantial debt following the 1973 oil shock and subsequent decline in economic growth was one of the most-studied research questions in the emerging field of political economics (Alesina and Perotti 1994). A consensus in both formal theory and statistical analysis began to emerge in the early 1990s that more cohesive governments were conducive to budgetary discipline and efficient fiscal adjustment (Alesina and Drazen 1991; Roubini and Sachs 1989). In some cases, less cohesive governments could adjust as well, but this typically required the adoption of budgetary procedures limiting the ability of

[2] Contrary to prior studies, I do not convert this continuous measure of change in deficit into a binary variable. Using a continuous rather than a binary variable increases the precision of my measurement of the deficit without any apparent costs.

political parties and spending ministers to block tax increases and spending cuts (Hallerberg and von Hagen 1999).

Around the same time that researchers began to publish studies asserting a negative relationship between political cohesion and deficits, economists and political scientists studying the relationship between economics and elections were investigating the evidence for “political business cycles.” If voters reward governments for economic conditions at the time of election, and electorally-motivated governments are able to influence short-term economic performance through fiscal and monetary policy, then economic activity should increase prior to elections (Nordhaus 1975). Although research eventually yielded no conclusive evidence for political business cycles, political economists detected electoral cycles in deficits and money supply, with governments favoring looser fiscal and monetary policies in election years (Alesina, Cohen, and Roubini 1992). A third set of studies has emphasized partisan differences in fiscal policies. Left-wing governments generally favor higher levels of taxes and spending than right-wing governments (Cusack 1997). Although “fiscal responsibility” is frequently associated with right-wing political rhetoric, governments led by left-wing chief executives tend to run more balanced budgets than administrations headed by right-of-center parties.

The sizeable number of existing studies on the topic creates the illusion that much is known about the political causes of government deficits. However, as I show in Chapter Two, none of the political variables identified as statistically significant predictors of deficits from five of the most-cited articles on the topic successfully replicate. To some extent, the failure of prior studies to replicate reflects the tenuous nature of the relationship between political and fiscal variables. Estimated effects of attributes of governments and parliaments on expenditure, revenue, and deficits differ substantially across countries and over time. Thus differences in the sample of observations may significantly affect estimates. Moreover, choices over the inclusion or exclusion of particular covariates and fixed effects may similarly affect whether certain variables are identified as statistically significant determinants of deficits.

The fact that most prior conclusions fail to replicate does not imply that it is impossible to extract general insights from time series cross-sectional (TSCS) data on national-level political and fiscal variables. On the contrary, to the extent that fiscal policies and fiscal adjustments follow a systematic but probabilistic political logic, this logic can only be identified through statistical analysis of the logic’s observable empirical implications. However, the fact that estimates of the relationships between these variables differ considerably across countries and time emphasizes the limitations of using general trends to explain specific policy choices. Although TSCS analysis may identify general trends in a sample of governments, understanding why a particular government enacts certain policies but not others requires additional consideration of the economic, political, and other variables that define the context in which the policies are enacted. Given the limited number of observations and large number of potentially relevant treatment and confounding variables, it is often impossible to precisely identify how characteristics of a country’s government and political system affect fiscal outcomes. My analysis of the British case in Chapter Seven addresses this shortcoming of pooled analysis by considering how the unique interaction of country and time-specific factors may influence policy choices.

Consider the relationship between government ideology and deficits. In Chapter Two, after controlling for potentially confounding economic and political variables, I show that administrations led by left-wing chief executives generally reduce the government deficit by 0.2% of GDP per year more than governments headed by right-of-center presidents and prime ministers. I now randomly select an observation from my sample. Since there are 1194 observations with available data on all covariates used to estimate the effect of ideology on the government deficit, I generate a random number from 1 to 1194 and choose the observation corresponding to this number when the available set of data are sorted first by country and then by year. The randomly-generated number (310) corresponds to Finland in 1976. In Finland in 1976, the government ran a surplus of 7.1% of GDP, an increase of 2.7% of GDP over the prior year. The predicted change in budget balance for this observation using the linear model from Chapter Two is a decrease of 0.07% of GDP over the prior year.

What accounts for the difference between the actual and predicted value? Even after including 14 covariates and year fixed effects terms, over 97% of the variation in government deficits remains unexplained. One possibility is that country-specific factors affect the outcome. However, including country fixed effects only slightly reduces the difference between the actual and predicted value in this particular case (from 2.8% of GDP to 2.7% of GDP). Another possibility is that the general measurement of variables in the model fails to accurately capture the specific nature of Finnish politics in 1976. One could compile a number of ad hoc explanations for why Finnish fiscal policy was tighter than predicted in 1976. Although Finland in 1976 was clearly a parliamentary system, Finnish president Urho Kekkonen held substantial power relative to parliament. Presumably this unique relationship affected the politics of fiscal policy. Or maybe the fact that an election was held in the prior year, combined with the low frequency of early parliamentary elections in Finland motivated the government to raise taxes by 4.1% of GDP over the previous year.

Although multiple regression may identify the general political causes and effects of changes in government taxes and spending, explaining specific fiscal outcomes requires more detailed attention to context. I address this issue in three ways throughout this study. When reassessing the conclusions of prior research, I show that the authors' conclusions almost always depend on the particular sample and variables chosen. In other words, prior studies tend to describe the general political dynamics of the countries and years included in the study, under a particular set of modeling assumptions, but frequently fail to explain the relationship between variables outside of the sample. Knowledge presented as general tends to be contextual at best.

When conducting original analyses, I similarly explicate the sampling and modeling assumptions used for each statistical model. Although I attempt to derive a general logic of the politics of fiscal adjustments, I acknowledge that my estimates are only as good as their modeling assumptions, and necessarily depend on the context in which the observations of the sample are embedded. In my chapter on the politics of adjustment in the United Kingdom during the first two years of the first Cameron ministry, I address the problem of context more explicitly by considering the numerous political and economic variables that may have influenced the policy choices taken in the design and implementation of the 2010 and 2011 budgets.

Progression of Research

I began this project in the fall of 2011, near the height of the European government debt crisis. At this time, governments – many in accordance with the requirements stipulated by the European Commission – were in the process of imposing unprecedented budget cuts on their citizens. At the recommendation of one of my advisors, I became interested in understanding whether prevailing theories in economics and political science could explain the variation in the magnitude of these austerity measures. In some cases, such as in the United Kingdom, the extent of expenditure reductions, particularly those to welfare programs, exceeded the level expected by such theories (e.g. Pierson 1996). Despite no immediate threat of sovereign default, the first Cameron ministry enacted substantial government spending cuts, targeting supposedly popular social benefits. In other cases, such as Greece, Ireland, Portugal, and Spain, relatively cohesive governments (in terms of the number of parties in office) accumulated massive debts, raising taxes and cutting spending only after being coerced by financial markets and the "troika" of the European Commission, European Central Bank, and International Monetary Fund.

These events prompted me to examine a large body of research on the political economy of budget deficits, in order to evaluate whether recent developments contradicted established conclusions. Attempts to explain variation in fiscal adjustment (reductions in the budget deficit) typically begin by asking either why governments delay economically optimal tax increases or spending cuts (the answer typically being political conflict over the distribution of the costs of adjustment). Alternatively, researchers may begin by asking why governments would implement politically unpopular budget cuts rather than accruing additional debt. Both inquiries suggest models in which differences in political factors lead governments facing similar economic circumstances to choose different fiscal policies. As I indicated in the prior section, these theories frequently fail to replicate.

The challenge for this dissertation has been to go beyond critiquing prior research to constructing an original, coherent narrative of why governments enact budget cuts that are apparently politically costly. The discipline of political science rewards novelty (or innovation, depending on whether or not one supports the practice). When articles are reviewed, dissertations approved, and presentations appraised without careful examination of the data supporting the claims advanced in these media, scholars whose work exhibit originality and apparent literacy in favored research methods will succeed irrespective of whether their claims are in fact consistent with the conclusions of objective data analysis.

Political scientists have long recognized the limitations of generalizing from specific cases. If the goal of a study is general knowledge of the relationship between political and other variables, it is necessary to examine a large number of observations. In cross-national research, this is typically done by pooling observations across countries and time. However, cross-national time series research designs are only as good as their assumptions. By explicitly stating and explaining the reasons for adopting my assumptions at every stage of my analysis, clearly defining the variables included in the study, and including the code necessary to reproduce my analysis, I hope that this dissertation will serve as a model for transparency and reproducibility in comparative political science research.

2. What Do We Really Know About the Politics of Fiscal Adjustments?

In this chapter, I reassess the validity of five of the six most-cited time series cross-sectional analyses of the political causes of national government deficits.[3] Each of these studies advances one of three sets of claims. One: deficits increase with political fragmentation. Two: left-wing governments tend to spend more than right-wing government without necessarily increasing taxes, potentially leading to higher deficits. Three: deficits increase in election years, but only in new democracies. For each model, I conduct three sets of tests. First, I re-estimate each model using the authors' sample and model specifications, subject to data availability. Second, I test for heteroscedasticity and country and year fixed effects, and estimate each model using the authors' sample and specification indicated by these tests. Third, I re-estimate each model using data from outside of the authors' sample. None of the 16 effects identified as statistically significant determinants of government revenue, expenditures, and deficits retain their direction and significance in each of the three re-estimations. This finding questions the validity of much of the conventional wisdom concerning the political causes of fiscal outcomes.

Since Roubini and Sachs' (1989) pioneering analysis of the relationship between government cohesion and changes in the net public debt to GDP ratio, hundreds of empirical studies have attempted to explain fiscal outcomes using attributes of governments, parliaments, and political systems.[4] Hypothesized political causes of deficits generally fall into three categories: measures of government and parliamentary ideology (Boix 2000; Borrelli and Royed 1995), political cohesion and stability (De Haan and Sturm 1994; Hallerberg 1997), and timing within the election cycle (Alesina, Cohen, and Roubini 1993; Brender and Drazen 2005). Taken together, these three categories provide a working model of the politics of fiscal adjustments. Governments pursue their policy preferences, measured by ideology, subject to institutional and electoral constraints: the former measured by characteristics of the political environment, the latter measured by the proximity of the subsequent election.

Additionally, a number of studies have estimated the effect of fiscal rules (Von Hagen and Harden 1995; Hallerberg and von Hagen 1997), economic and demographic factors (Blanchard et al. 1991; Woo 2003), and the composition of budgetary measures (Alesina and Ardagna 2010; Alesina and Perotti 1997) on fiscal outcomes, specifically the occurrence and durability of fiscal adjustments. In this chapter, I focus strictly on characteristics of the executive, legislature, and political institutions rather than the design of budgetary rules and procedures. I also do not attempt to estimate the macroeconomic effects of fiscal adjustments. The objective of this chapter – and this dissertation more generally – is to identify the political causes and effects of changes in government expenditures, revenues and deficits.

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[3] This chapter uses data from the "Political Causes of Fiscal Adjustments Dataset" described in Appendix B. For data, please email the author at donnelly.patrick.t@gmail.com.

[4] For an exhaustive list of these studies, see Appendix A.

To test for sensitivity to researcher degrees of freedom, I attempt to replicate the findings of five of the six most-cited analyses of the political determinants of government deficits. I present the results of these tests throughout the chapter, classifying each of the five studies into one of the three categories stated in the first paragraph: ideology, electoral budget cycles, and government cohesion and stability. I first select the three most-cited studies that estimate the effect of a political treatment variable on the level or change in the government deficit using observations pooled across countries and time. The authors of the most-cited study (Roubini and Sachs 1989) claim that the government budget balance increases with *political cohesion*. The authors of the second-most cited study (Brender and Drazen 2005) contend that *electoral budget cycles* are limited to countries that have not yet experienced five consecutive democratic elections. In the third most-cited study, Perotti and Kontopolous (2002) also estimate the relationship between cohesion and deficits but also evaluate whether government ideology is a significant predictor of changes in fiscal outcomes.

I skip the fourth most-cited study (Volkerink and De Haan 2001), which precedes Perotti and Kontopolous by a year in its examination of the relationship between fragmentation and fiscal outcomes, but examines the same general hypothesis that deficits decrease with cohesion with fewer citations. I then examine that most-cited study estimating the effect of *government stability* on deficits (De Haan and Sturm 1994). Finally, I attempt to replicate the conclusions of Edin and Ohlsson's (1991) article, which recodes Roubini and Sachs' index of political cohesion from a continuous variable to a factor variable with four levels.

For every model in each of the five studies, I examine the output from four regressions. I first list the authors' reported results based on their sample and model specification. I then use the data compiled in my dataset to re-estimate each model using the authors' model specifications and sample (subject to data availability). For the third set of models, I retain the authors' sample, test for heteroscedasticity and consistency between fixed effects models and pooled ordinary least squares, and report the results of the models suggested by the specification tests. For the last set of models, I retain the variables from the authors' original models but estimate their effects using all available data from outside of their sample. As with the third set of models, I report the results of the models specified in accordance with F tests for country and year fixed effects and Breusch-Pagan tests for heteroscedasticity.

Ideology: Are right-wing parties really more fiscally responsible?

Existing research tends to support the commonly-held notions that left-of-center governments have historically favored higher levels of taxation and spending (Cusack 1997), more countercyclical fiscal policies (Cusack 1999), and lower unemployment at the cost of higher inflation (Hibbs 1997), while right-of-center governments favor lower levels of taxation and spending, less countercyclical fiscal policies, and lower inflation at the cost of higher unemployment. While these observations may describe the general differences between leftleaning and right-leaning parties in a particular country at a particular time, the nature of partisan differences in macroeconomic management has changed from the immediate postwar era to the relatively "globalized" economy of the 1980s and 1990s.

Garrett (1998) contends that government ideology has remained a significant predictor of fiscal outcomes, even as international trade and capital mobility have increased over time. More generally, he argues that social democratic parties and labor unions have continued to shape economic policy and macroeconomic outcomes in an era of market globalization, and that the left has managed to retain political power while pursuing its economic objectives, broadly defined. However, Garrett and Mitchell (2001) find that the estimated effect of partisanship on government expenditure becomes insignificant after controlling for lagged values of the dependent variable. Kittel and Winner (2005) note that introducing a lagged dependent variable biases Garrett and Mitchell's estimates. The authors estimate a regression in first differences, using levels of left-wing and Christian democratic cabinet portfolios as "first differences of the cumulative measure" of partisanship, and find similarly inconclusive evidence of the effect of cabinet ideology on government spending.

Contemporaneously, Boix (1998) argues that the primary differences in macroeconomic policy between left-wing and right-wing parties have shifted from the tradeoffs between inflation and unemployment, and between Keynesian demand management and fiscal discipline to decisions over investment, with the left favoring direct government investment in physical and human capital, and the right favoring investment in the private sector. These divergent strategies are reflected in the respective fiscal policies of the left and the right: left parties maintain relatively high tax rates to fund public investment programs, and right parties cutting taxes to encourage private investment.

Table 2.1 describes the general partisan character of the level and composition of government revenue, expenditures, and budget balance from 1960 through 2014.[5]

[Table 2.1 here]

Left governments tax and spend significantly more than right governments ($p < .001$), but also run significantly lower deficits ($p < .05$). In addition to a host of additional potentially confounding variables, perhaps the most problematic issue with inferring a systematic relationship between party ideology and fiscal outcomes is the strong autocorrelation of levels of fiscal variables and their lagged annual values. Table 2.2 examines differences in partisan fiscal

[5] Using the party family classifications provided by ParlGov, I code governments as "left" when the party of the chief executive is social democratic, and "right" when the party of the chief executive is conservative or Christian democratic. I code agrarian-led governments as "right" while acknowledging that such governments are typically more left-wing than their conservative and Christian democratic counterparts. In Canada, I code the Liberal Party as "left." In all other countries, I code liberal parties as "right." For the United States, I code the Democratic Party as "left" and the Republican Party as "right." For South Korea, I code the Kim Dae-jung and Roh Moo-hyun presidencies as "left" and all others as "right."

policy using annual changes in revenue, expenditures, and budget balance under left-wing and right-wing administrations.

[Table 2.2 here]

Deficits tend to increase under right-wing governments and decrease under left-wing governments.[6] The difference is almost entirely due to the tendency of right-wing governments to increase spending to a greater extent than left-wing governments without raising the necessary revenue to balance the budget.

It is possible that partisan differences are merely reflections of other variables that correlate with ideology and fiscal outcomes. To examine whether this is the case, I specify a multiple regression model in which the response variable is either the change in government expenditures, disbursements, or net lending and the treatment variable is a binary indicator of whether or not the party of the chief executive is left wing, according to the aforementioned definition. I control for various government attributes: coalition and majority status, the number of ministers (*NOM*), and the effective number of parties in government (*ENPG*). I also control for characteristics of the broader political system: binary variables indicating whether or not the country is a "new democracy" (*NDEM*) in its first four electoral cycles, as well as whether seats in parliament are elected under majoritarian rules or proportionally allocated (*PR*), whether the country is a presidential (*PRES*) or parliamentary system, whether or not an election (*ELEC*) is held in the year, and the effective number of parties in parliament (*ENPP*). Additionally, I include economic and demographic control variables measuring the change in real GDP (*DGDP*), the rate of civilian unemployment (*UNP*), and the change in the dependency ratio (*DDR*).[7]

To determine whether to include country (CFE) or year fixed effects (YFE), I use F tests to check for consistency between pooled ordinary least squares (OLS) and country and year fixed effects models. If F tests are significant at $\alpha = 0.05$, I reject the null hypothesis of consistency and include fixed effects. For receipts, disbursements, and net lending, F tests reject the null hypothesis of consistency between pooled OLS and year fixed effects, but not between pooled OLS and country fixed effects. Although F tests indicate significant differences between pooled OLS and two-way fixed effects (TWFE) models for all three outcomes, there is no significant difference between two-way fixed effects and year fixed effects in each case. Thus I include year fixed effects but not country fixed effects in each of the three regressions. Breusch-Pagan tests fail to reject the null hypothesis of homoscedasticity for each of the year fixed effects model, and I thus report heteroscedasticity-consistent (HC) standard errors. Table 2.3 reports estimates of the effect of government ideology on fiscal outcomes.

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[6] The difference-in-means between left and right governments is statistically significant at $\alpha = 0.1$, but not $\alpha = 0.05$.

[7] The dependency ratio is the population younger than 15 and older than 64 divided by the population aged 15 through 64. Since the election-year binary variable is not coded for the nine observations in which a caretaker government holds office at the beginning of an election year prior to new elections being held, I drop these observations from the sample.

[Table 2.3 here]

Multiple regression analysis supports the prior observation that governments headed by left-of-center chief executives tend to favor tighter fiscal policies. This effect is driven by the tendency of left-wing governments both to increase revenue and decrease expenditures relative to right-wing governments, though neither the revenue nor expenditure effect is statistically significant in itself.

The coefficient on change in GDP indicates that fiscal policy is generally countercyclical in the sample of observations. Although receipts relative to GDP tend to decrease with growth in output, disbursements decrease to a greater extent with growth. Hence changes in net lending increase with change in GDP in the aggregate. Interestingly, net lending significantly increases with the unemployment rate. It is also interesting to note that political variables are largely insignificant. Governments tend to cut taxes and other receipts in election years, and deficits tend to increase to a greater extent in new relative to established democracies.

However, it is difficult to infer systematic relationships between attributes of governments and parliaments and fiscal outcomes. I later address this problem in greater detail, with particular attention to estimating the effect of political cohesion on deficits. First I take a closer look at the assumptions that have generated the conventional academic wisdom on this specific topic, examining the most-cited original cross-national time series analysis of the ideological causes of fiscal outcomes. I argue that the substantive conclusions of this article reflect the authors' sampling and model specification choices as much as they reflect the underlying relationship between ideology and deficits.

Replication 1: Perotti and Kontopoulos (2002)

In a 2002 article in the *Journal of Public Economics*, Perotti and Kontopoulos estimate the effect of government fragmentation on changes in government revenue, expenditures, and deficits. The authors claim that fragmentation and ideology are "significant and robust determinants of fiscal outcomes." The following models assess the validity of the authors' claims. As stated in the introduction, I compare the authors' reported output with one out-of-sample and two within-sample analyses.[8]

Although Perotti and Kontopoulos' study is the most-cited academic publication that estimates the effect of government ideology on fiscal outcomes,[9] the authors' primary goal is to test whether more fragmented governments tend to run higher deficits. I examine all of Perotti

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[8] Perotti and Kontopolous measure deficits using the cyclically-adjusted primary balance. However, they also control for residual business cycle effects by including a variable measuring the change in unemployment over the prior year. The authors note that "the results concerning the political variables changed only marginally" when using cyclically unadjusted data (p. 210).

[9] For a comprehensive list of studies, see Appendix A.

and Kontopolous' models here, including those that estimate the effects of fragmentation on deficits. I will explore the relationship between government fragmentation and deficits in greater detail later in this chapter. Perotti and Kontopolous examine four measures of government fragmentation. Two of the variables, *POL* (Roubini and Sachs 1989) and *TOG* (Woldendorp, Keman, and Budge 1993) combine several government attributes into a composite index. A third variable, *NSM* (Woldendorp, Keman, and Budge 1993) counts the number of spending ministers in the cabinet. A fourth variable, *NPC* (Woldendorp, Keman, and Budge 1993) counts the number of parties in the governing coalition.

Roubini and Sachs' *POL* variable ranks governments on a four-point index that increases with the level of fragmentation. *POL* takes the value 0 for unified governments in presidential systems and one-party majority governments in parliamentary systems, 1 for divided presidential governments and two-party parliamentary governments, 2 for parliamentary governments with three or more parties, and 3 for minority governments. A second measure of fragmentation, proposed by Woldendorp, Keman, and Budge (1993) classifies governments according to a six-point index with higher numbers indicating more fragmented governments. *TOG* takes the value 1 for single-party majority governments, 2 for minimal winning coalitions, 3 for surplus majority coalitions, 4 for single-party minority governments, 5 for multiparty minority governments, and 6 for caretaker governments. Table 2.4 presents general information on my replication of Perotti and Kontopoulos' study. Table 2.5 presents the results from the replication of Perotti and Kontopoulos' estimates of the effect of government fragmentation on changes in the general government deficit.[10]

[Tables 2.4 – 2.5 here]

Government fragmentation, as measured by *TOG*, has no significant effect on the change in the government deficit in any of the four models. Interestingly, the "within" sample of the replication data is larger than that of the authors' original sample. This is perhaps due to the replication data combining observations from multiple editions of the *OECD Economic Outlook*. Yet despite the considerable overlap between samples, the direction of the estimated coefficient of *TOG* differs. Although the other estimates differ substantially, the authors' estimated value of *TOG* is identical with that of the variable in the out-of-sample replication.

Perotti and Kontopoulos also estimate the effect of *POL* on changes in fiscal variables. In Tables 2.6 and 2.7, I present the results from their regressions of changes in revenue and expenditure on *POL*. Later in the chapter, I examine the relationship between *POL* and deficits using the models presented in Roubini and Sachs (1989).

[Tables 2.6 – 2.7 here]

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[10] Although Perotti and Kontopoulos use cyclically adjusted variables, the replication models use cyclically unadjusted measures of government revenue, expenditure, and deficits. Since Perotti and Kontopoulos claim that cyclical adjustment does not change their basic conclusions, I use the cyclically unadjusted deficit to maximize the number of observations within and outside of the authors' sample.

None of the four models in Table 2.6 show a significant effect of *POL* on changes in government expenditure. In Table 2.7, *POL* is a significant determinant of changes in government revenue in three of the four models. However, the estimated direction of the coefficients is inconsistent across models. In the authors' original sample, changes in revenue decrease with *POL*. The coefficient on *POL* is reversed in the within-sample replications, and insignificant in the out-of-sample replication.

Tables 2.8-2.10 display estimated effects of *NPC* and *NSM* on changes in deficits, expenditures, and revenue. In these models, Perotti and Kontopoulos also estimate the effect of government ideology on fiscal variables. Their measure of ideology, *ICG*, also borrowed from Woldendorp, Keman, and Budge (1993) is a five-point index equal to 1 if right-wing parties in government or in support of the government hold at least two-thirds of seats, 2 if right-wing and centrist parties each hold one-third to two-thirds of seats, 3 if centrist parties hold over half of seats, or if left-wing and right-wing parties "form a government not dominated by either side," 4 if left-wing and centrist parties hold one-third to two-thirds of seats, and 5 if left-wing parties in government or in support of government hold at least two-thirds of seats.

[Tables 2.8 – 2.10 here]

None of the treatment variables are significant predictors of changes in the deficit at $\alpha = 0.05$ in any of the four models (Table 2.8). Government expenditure significantly increases with the number of spending ministers in the authors' sample and model specification (Table 2.9). However, this estimated effect significant decreases in the out-of-sample replication. Although Perotti and Kontopolous report no significant predictors of changes in government revenue, the coefficient of *NPC* is positive and statistically significant in the within-sample replication using the model suggested by specification tests.

In the last set of their models that I examine, the authors interact *NPC*, *NSM*, and *ICG* with the variable measuring change in unemployment. Following Roubini and Sachs (1989), the authors' expectation is that deficits should increase with government fragmentation to a greater extent during economic "hard times." High levels of unemployment may induce revenue shortfalls. In response to declining revenue, governments may attempt to raise taxes or cut spending. However, disagreement over the costs of adjustment may lead to higher deficits when governments are fragmented (Alesina and Drazen 1991; Alesina and Perotti 1994). Tables 2.11-2.13 test this hypothesis.

[Tables 2.11 – 2.13 here]

In Table 11, Perotti and Kontopoulos' results are inconsistent with those of the replication models. The interaction of *NSM* and the change in unemployment is positive and statistically significant at $\alpha = .05$ when using the authors' data. However, the coefficient of the interaction term is negative in the out-of-sample model using the replication data. Other estimates are insignificant at conventional levels. In Table 2.12, the authors report four positive and statistically significant predictors of changes in the deficit. None of the estimated coefficients of these variables are positive and significant in any of the replication models.

Table 2.13 displays a negative and statistically significant interaction between *ICG* and the change in unemployment. This suggests that left-wing parties may be more likely to increase expenditure as unemployment increases. This finding is supported by other studies showing that left-wing parties favor relatively countercyclical or Keynesian fiscal policies (Cusack 1999; Garrett 1998). Yet only the authors' reported results are statistically significant.[11] Table 2.14 summarizes my reanalysis of Perotti and Kontopoulos' study.

[Table 2.14 here]

Excluding interactions with the high lagged debt-to-potential GDP variable, Perotti and Kontopoulos test for 30 effects of political treatment variables on fiscal outcomes across nine models. Of these 30 estimated effects, the authors report eight as statistically significant at $\alpha = .05$. However, none of these eight effects maintain the same direction and significance across all four types of models. In a later section of this chapter, I evaluate the relationship between fragmentation and deficits, considering the evidence for Perotti and Kontopoulos' hypotheses as well as those posited by Roubini and Sachs (1989). Here I briefly address the evidence for effects of ideology on fiscal variables. Nine of the 30 treatment variables measure ideology alone or in interaction with the change in unemployment.

Contrary to the authors' analysis of government fragmentation, in which they clearly expect more fragmented governments to spend more and run higher deficits, and support this intuition, primarily by borrowing from prior theoretical and empirical research, the authors have no strong prior expectations for the effect of ideology on fiscal variables. However, Perotti and Kontopoulos (p. 193) do state that "there would be nothing unreasonable with a finding that leftist governments like 'bigger' governments, i.e., larger expenditures and revenues, but not necessarily larger deficits." Elsewhere the authors suggest that left-wing governments may be more likely to increase spending when unemployment is high (p. 213). One possibility is that left-wing parties tend to support more countercyclical fiscal policy, in which left-wing parties would also favor higher deficits in "hard times." Alternatively, high levels of unemployment might amplify partisan differences, with left-wing parties spending but also taxing more than right-wing parties. The authors do not explicitly state which scenario they expect the data to support. Perotti and Kontopoulos are similarly agnostic as to whether they expect partisan differences to be limited to times in which unemployment is high.

The results presented in the article suggest that left-wing governments tend to increase spending more than right-wing governments ($p < .10$). However, in each of the three replication

[11] Perotti and Kontopoulos also interact NPC, NSM, and ICG with a binary variable coded as 1 for observations in the sample where the lagged debt-to-potential GDP is in the upper quintile. The authors find a positive and significant interaction of this variable with NSM, but not with the other two measures of fragmentation. Since I do not have data on the lagged debt-to-potential GDP, I do not attempt to replicate their estimates of these interactions.

models, the coefficient on *ICG* is negative. For the authors' sample of countries and years, in both the original and replication models, left-wing parties tend to favor more countercyclical fiscal policies. Yet this effect is statistically insignificant and does not hold in the out-of-sample replication. Perhaps this reflects changes in partisan strategies of macroeconomic management (Boix 1998), but it would be a bit reckless to speculate without further evidence.

Perotti and Kontopoulos report two other statistically significant estimates of treatment variables measuring government ideology. In the models using the authors' data, sample, and model specifications, left-wing governments appear to spend more than right-wing governments when unemployment is *low*. This conclusion does not retain its direction or statistical significance in any of the replication models. The authors' estimates also suggest that that left-wing parties may be more likely than right-wing parties to cut taxes in response to unemployment. This estimate retains its direction but loses its significance in the replication models.

The results of the models presented in this section suggest that government ideology has no clear effect on fiscal outcomes. Only one of the nine estimates maintains a consistent direction across the four models: the observation that left-wing parties tend to reduce taxes to a greater extent than right-wing parties when unemployment is high. However, this estimate is only statistically significant in the authors' data, sample, and specification. To the extent that my own data and model specification (Table 2.3) is credible, left-wing parties do appear to run lower deficits. Nevertheless, as this exercise has shown, seemingly arbitrary choices about sampling and data collection – and less arbitrary choices concerning model specification – may lead to substantially different conclusions. As Perotti and Kontopolous acknowledge in the first sentence of their conclusion, "it is hazardous to draw strong policy implications from the analysis of this paper." With this in mind, I turn to the issue of political budget cycles (PBCs), briefly reexamining and extending prior findings on how and why certain governments but not others cut taxes or increase spending in years prior to elections.

Election Cycle Effects: Why are there Political Budget Cycles in Some Countries but not others?

A central claim of this dissertation is that governments are constrained both by internal disagreement over the allocation of the costs of adjustment, and by the prospect of electoral sanctions. Before addressing how political fragmentation affects deficits, I examine how the perception of electoral reward or punishment for changes in expenditure or revenue may influence fiscal policy across the election cycle. In terms of citations, the most influential theory of the "political budget cycle" (PBC) is Rogoff (1990)'s argument that governments cut taxes or increase expenditures prior to elections to signal competence to voters in providing public goods. Subsequent empirical studies provide evidence for PBCs in high-income democracies, as well as in developing countries. However, Brender and Drazen (2005) argue that PBCs are limited to new democracies, which they define as countries in their first four election cycles following the transition to democracy.

In this section, I reexamine the evidence for the PBC hypothesis. I begin in Table 2.15 by comparing levels of government expenditures, revenues, and deficits in election years to fiscal outcomes in all other years.[12]

[Table 2.15 here]

Although governments tend to tax less in election years, they also tend to spend less. While deficits are generally lower in election years, the difference-in-means is not statistically significant. However, it is possible that governments systematically increase spending or cut taxes in election years, as reflected in the first differences of fiscal variables. I examine this possibility in Table 2.16.

[Table 2.16 here]

Deficits tend to increase in election years, and this effect is driven entirely by revenue measures. In fact, government spending tends to decrease in election years. None of these effects are significant at $\alpha = 0.05$, though the difference-in-means between election-year and non-election-year receipts is significant at $\alpha = 0.1$. With the inclusion of additional statistical controls (see Table 2.3), government revenue appears to decrease significantly in election years.

Replication 2: Brender and Drazen (2005)

The authors of the most-cited study of electoral budget cycles (Brender and Drazen 2005) claim that variation in fiscal outcomes between election years and other years is limited to democracies that have not yet held five democratic elections. Table 2.19 displays the within-sample and out-of-sample evidence for Brender and Drazen's hypothesis. In Tables 2.17 and 2.18, I display the results of specification tests for the models presented in Table 2.19. Table 2.20 summarizes the conclusions of my reanalysis of Brender and Drazen's study.

[12] I exclude nine elections held in years in which nonpartisan or technocratic governments governed on January 1 of the year, at which point elections had not yet been held to determine the composition of the next government: the criteria for identifying the party of the chief executive. The intuition is that caretaker governments should have no incentive for election-year fiscal manipulation. In fact, many technocratic governments have been appointed for the explicit purpose of restoring fiscal discipline while remaining insulated from the threat of electoral backlash, as well as from the otherwise politicized process of determining the level and composition of cuts among coalition partners. For instance, I exclude Greece in 2012, since the government on January 1 was a nonpartisan caretaker government appointed by the President following the collapse of the prior democratically-elected government, and elections were not held until May of that year. However, I include Austria in 2002, in which a caretaker government held office on January 1 following the reelection of the Austrian People's Party in November of the preceding year, but prior to its formation of a cabinet in February of that year.

[Tables 2.17 – 2.20 here]

Brender and Drazen's models suggest that governments tend to run higher deficits in election years, but that this effect is confined to new democracies. The authors present statistically significant evidence for electoral cycles in expenditures but not revenue in new democracies, as well as weaker ($p < .10$) evidence for electoral cycles in revenue but not expenditure in old democracies. However, none of these effects retain their significance in any of the replication models. Unlike the other four studies I examine, Brender and Drazen's analysis uses data from non-OECD countries. This may explain some of the discrepancies between the authors' reported results and my own estimates. Nonetheless, the models presented here cast doubt on the robustness of the electoral budget cycle hypothesis in general, and the "new democracy hypothesis" in particular.

In my final set of replications, I examine evidence for the most commonly-cited determinant of government deficits: variation in political cohesion. I also evaluate whether government stability – a variable closely related to cohesion – affects fiscal outcomes. As with ideology and electoral cycles, the results of the following tests provide little general evidence that cohesion and stability explain variation in government expenditure, revenue, and deficits.

Political Cohesion and Stability: Deficits as a Collective Action Failure?

Initial analysis of the political economy of government deficits contended that political conflict over the allocation of the costs of stabilization in response to declining economic growth led to rising deficits during the 1970s and 1980s. Assuming individuals' marginal utility of income decreases with income, governments should maintain constant tax rates as spending varies (Barro 1979). In practice, government debt relative to GDP generally increased across the developed world following the end of the post-World War II period of economic growth. This observation, combined with substantial cross-sectional variation in the deficits of high-income democracies, suggested that governments generally failed to follow the "tax smoothing" principle, allowing deficits to vary with spending while maintaining balanced budgets in the long run.

To explain cross-national and temporal variation in deficits, political economists began to explore how variation in attributes of governments and parliaments may lead to suboptimal fiscal outcomes. These studies generally argued that less cohesive governments tend to run higher deficits. When faced with the choice between budget cuts and accumulating additional government debt, each party voting on the budget will apparently choose the option that is less politically costly in the short run: delaying cuts at the expense of accruing debt. As the number of parties increases, stabilization is presumably further delayed (Alesina and Drazen 1991; Alesina and Perotti 1994). The empirical implication is that deficits should increase with various measures of political fragmentation.

Testing for political budget cycles is straightforward. Most tests of electoral cycles in fiscal outcomes simply compare election year levels or changes in expenditure, revenue, and deficits with their values in non-election years. To measure ideology, researchers typically use either the party family or the left-right position of the largest party in government or the party of the chief executive; or of all parties in government or parliament, weighted by their number of seats or cabinet portfolios. Measuring political fragmentation is trickier, and introduces additional researcher degrees of freedom.

The most theoretically ambitious attempt to define political fragmentation and estimate its effects on a variety of policy outcomes is Tsebelis' (1995, 2002) "veto players" approach. Drawing from an extensive tradition of research on political institutions and their effects, Tsebelis defines veto players as political actors whose support is necessary to change the status quo. Veto players include political parties in legislative chambers with substantial policymaking authority, as well as presidents in presidential systems. Tsebelis then argues that policy stability increases with the number of veto players and the ideological distance between them.

Each of the articles examined in this chapter attempt to estimate the effect of fragmentation on deficits measure fragmentation by combining three factors into a single index: the number of parties in the governing coalition, whether the majority of parties in parliament support the government, and whether the government is a presidential or parliamentary system. Each of these factors measures a qualitatively distinct veto player or set of veto players. Having already examined Perotti and Kontopolous' (2002) study of government fragmentation and fiscal outcomes, I now turn to the earliest and most-cited attempt to identify the political causes of deficits (Roubini and Sachs 1989).

Replication 3: Roubini and Sachs (1989)

Roubini and Sachs argue that deficits should be higher when governments are more fragmented. Alesina and Drazen (1991) suggest that deficit reduction resembles a "war of attrition," in which each party attempts to impose the costs of adjustment on the other after initially sustaining the political and economic costs associated with delaying socially optimal reforms. Alternatively, Roubini and Sachs claim that fiscal adjustment is analogous to a prisoners' dilemma. Although each of the coalition partners may support reductions in the deficit, parties have different preferences over which programs to trim and which to shield from budget cuts. Similarly, parties are likely to disagree over the composition of tax increases. The war of attrition, prisoners' dilemma, and veto players models all suggest that fragmented governments will be less likely to raise taxes or cut spending than more cohesive governments. To test their hypothesis that the budget balance increases with government cohesion, Roubini and Sachs regress the change in net government debt to GDP ratio on *POL*, a composite variable increasing with political fragmentation defined prior to my replication of Perotti and Kontopoulos (2002). Following

Table 2.21, which displays the sample and variables of Roubini and Sachs' study, Table 2.22 presents estimates of the effect of *POL* on the government deficit.

[Tables 2.21 – 2.22 here]

The results reported by Roubini and Sachs support their hypothesis that the government budget balance increases with political cohesion. However, the replication models using available data from the authors' sample show the government deficit increasing with political cohesion. Interestingly, the direction of the coefficient on *POL* in the out-of-sample replication is consistent with Roubini and Sachs' hypothesis, though only significant at $\alpha = 0.1$.

One implication of Roubini and Sachs' theory is that more cohesive governments should be more likely to raise taxes or cut spending when deficits are relatively high. To test this hypothesis, the authors interact *POL* with the lagged budget deficit. Although the authors find no statistically significant interaction between *POL* and the lagged deficit, the within-sample coefficient on the interaction term is positive and significant. Table 2.23 displays these results.

[Table 2.23 here]

Roubini and Sachs also claim that the effect of cohesion on deficits increases when economic growth is relatively low. Absent discretionary fiscal adjustments, low growth tends to reduce tax revenue and increase the ratio of spending to GDP. The authors use a fairly coarse measure to test this hypothesis, interacting *POL* with a binary variable equal to 1 if the observation falls in the "low growth" period of 1975 through 1985. In Table 2.24, I examine the evidence for this hypothesis using the authors' estimation strategy.

[Table 2.24 here]

Roubini and Sachs report a positive and statistically significant effect of *POL* on the change in government debt. I find similar effects in my within-sample replication, with the coefficient on *POLD* positive and statistically significant at $\alpha = 0.1$ in Column 2 and $\alpha = 0.01$ in Column 3. However, in the out-of-sample replication the coefficient on *POLD* is negative and statistically significant. The authors' results thus appear to be limited to the particular set of countries included in their sample. Table 2.25 summarizes the direction and significance of my reanalysis of Roubini and Sachs' models.

[Table 2.25 here]

For each treatment variable, the estimates are inconsistent across models. Yet the idea that political fragmentation inhibits fiscal adjustment remains intuitively appealing. One possibility, examined by Edin and Ohlsson (1991) is that coalition and minority governments affect deficits differently. Rather than treating *POL* as a continuous variable, Edin and Ohlsson estimate the effect of each value of *POL* individually. The authors find that the effects of *POL* are entirely limited to minority governments. In the following section, I test whether Edin and Ohlsson's conclusions hold upon closer examination.

Replication 4: Edin and Ohlsson (1991)

Edin and Ohlsson simply reclassify Roubini and Sachs' *POL* index from a continuous variable to a factor variable with four levels, *P0*, *P1*, *P2*, and *P3*, corresponding to *POL* = 0, *POL* = 1, *POL* = 2, and *POL* = 3, respectively. The sample, response, and control variables are identical between the two studies. Table 2.26 displays Edin and Ohlsson's estimates, along with those from my within-sample and out-of-sample reanalysis.

[Table 2.26 here]

Unsurprisingly, since the authors use the same data, sample, and model specification, Edin and Ohlsson find that the change in the net debt-to-GDP ratio tends to increase with political fragmentation.[13] However, only the coefficient on *P3*, the factor indicating minority government, is statistically significant.

Since their study is identical to Roubini and Sachs', apart from the coding of *POL* as either a continuous or categorical variable, Edin and Ohlsson's conclusions similarly fail to hold in within-sample and out-of-sample replications. In the within-sample models, each level of *POL* is associated with higher deficits. None of the coefficients are statistically significant. Yet in the out-of-sample regression, the budget balance increases with each level of *POL*, and the coefficient on the minority government variable is positive and statistically significant.

Like Roubini and Sachs, Edin and Ohlsson interact the cohesion index with a variable indicating whether the observation occurred between and including 1975 and 1985. Table 2.27 displays the set of regressions of the change in government net lending on the interaction of *P1*, *P2*, and *P3* with the 1975-85 binary variable (*P1D*, *P2D*, *P3D*).

[Table 2.27 here]

In the authors' estimates, only the interaction between the minority government variable and the 1975-85 indicator is statistically significant at $\alpha < 0.1$. In the within-sample replication, using the pooled ordinary least squares (OLS) model specification with no country or year fixed effects, I find a significantly larger estimated effect of cohesion on the budget balance during the "low growth" period of 1975-85. However, this effect is not limited to minority governments. Only the coefficient on *P2D* is statistically significant at conventional levels.

[13] Recall that cohesion decreases with the value of *POL*.

Since an F test (α = 0.05) rejects consistency between country fixed effects and pooled OLS models, I re-estimate the within-sample regression with fixed effects (Column 3). The coefficients on each of the interaction terms in the fixed effects model are positive and statistically significant (α = 0.01). The coefficients on *P1*, *P2*, and *P3* are of similar magnitude but negative, and also all significant at α = 0.01. This suggests that more cohesive governments tend to run higher deficits in the pre-1975 subset of observations. For 1975 through 1985, the effect of cohesion on deficits is negligible.

The out-of-sample replication yields entirely contrary estimates. The coefficients on the interaction terms for the countries not included in the Roubini-Sachs/Edin-Ohlsson sample are all negative and statistically significant at α = 0.1. In contrast, the coefficients on *P1*, *P2*, and *P3* are all positive and insignificant. Table 2.28 summarizes the findings of the Edin and Ohlsson replication. (I) indicates that the estimate is taken from the model with interaction terms.

[Table 2.28 here]

There is no clear evidence that coalition or minority government status affects the budget deficit. More generally, after examining three of the most-cited attempts to identify the fiscal consequences of political cohesion, there appears to be no systematic relationship between fragmentation and deficits.

Replication 5: *De Haan and Sturm (1994)*

In my final replication study (De Haan and Sturm 1994), I reassess the hypothesis that government stability affects fiscal outcomes. Government stability, measured by the frequency of government changes, is closely related to political cohesion: more cohesive governments are generally more durable. Table 2.29 examines the within-sample and out-of-sample evidence for the hypothesis that fiscal deficits increase with government turnover. Although De Haan and Sturm's sample is smaller – 12 European Community countries from 1981 through 1989, with data available on 72 of the 108 observations in the replication models – the authors use the same response and control variables as Roubini and Sachs (1989).

[Table 2.29 here]

Regardless of whether country fixed effects are included, the within-sample replications support the authors' reported estimates. For European Community countries in the 1980s, frequency of government turnover is positively and significantly associated with the change in the net debt-to-GDP ratio. However, this sample comprises a small fraction of observations with available data on the covariates included in the authors' model (72 of 895, or just over 8%). For other countries or years in the sample, government turnover remains positively, but not significantly (at $\alpha <$ 0.05) associated with the growth in debt.

De Haan and Sturm's *CHANGE* variable counts the number of government changes in the year of the observation. The authors also estimate the effect of government changes on the budget deficit using a variable indicating whether (1) or not (0) a government change occurred in the year (*CHANGED*). Table 2.30 displays estimates of the regression of the budget deficit on *CHANGED*.

[Table 2.30 here]

The results are largely consistent between Tables 2.29 and 2.30, though the coefficient on *CHANGED* is not statistically significant at conventional levels. Table 2.31 briefly summarizes my replication of De Haan and Sturm's study. Although the estimates are not all statistically significant, deficits increase with government turnover in all models.

[Table 2.31 here]

Original tests of the political causes of fiscal outcomes

Having illustrated the limitations of prior studies, I now conduct several original empirical analyses of the relationship between fiscal and political variables. The following models estimate the effects of presidential vs. parliamentary systems, majority vs. minority governments, surplus majority government status, and the number of parties in government on changes in government receipts, disbursements, and deficits. In each model, I include the usual set of control variables: change in GDP, rates of unemployment and inflation, and an election year indicator. Tables 2.32-2.34 present results of the regression analyses.[14]

[Tables 2.32 – 2.34 here]

The models indicate weak to nonexistent general effects of government characteristics on fiscal outcomes. No estimates are significant at $\alpha = 0.10$. The models explain very little variation in changes in revenue, expenditure, and deficits, much of which is accounted for by change in GDP and unemployment. The coefficients on the economic variables are remarkably stable across models.

Perhaps estimates of the relationship between cohesion and deficits depend on the years of the observations included in the sample. In other words, it is possible that the politics of fiscal

[14] In Table 2.33, note that an F test rejects the null hypothesis of consistency between country fixed effects and pooled OLS for the regression of change in disbursements on the presidential system indicator. However, I exclude country fixed effects since presidential or parliamentary status does not vary within countries for this sample.

adjustment has shifted over time. Political factors conducive to balanced budgets and efficient adjustment in the 1970s may no longer be effective today. To explore this possibility further, I examine variation over time in the estimated effect of party cohesion on deficits. I use the effective number of parties in government and parliament to measure interparty cohesion. With a better sense of variation in the relationship between cohesion and deficits, I develop and test a set of hypotheses to explain why these effects have changed over time.

Tables 2.35-2.36 display variation over time in the OLS regressions of fiscal outcomes on the effective number of parties in parliament and government, controlling for growth, unemployment, inflation, and election year status. To control for the potentially confounding effect of government ideology, I also include a variable indicating whether or not the party of the chief executive is left-of-center.[15] I divide the observations in the sample into deciles, rounded to the nearest whole year.

[Tables 2.35 – 2.36 here]

Even after dividing the sample into deciles by period, there is still little evidence of any clear relationship between political cohesion and annual changes in fiscal variables. It thus appears likely that the estimates of the models of Roubini and Sachs (1989) and other earlier studies are the product of the inclusion of a particular combination of countries and periods.[16]

Where does this leave us?

The goal of most contemporary political science research is to identify general causal relationships between variables. Consider the February 2016 issue of the *American Political Science Review*, the most recent edition of the most prominent journal in the discipline at the time of this chapter draft. The publication featured 13 articles: one formal model, three normative political theory essays, and nine statistical analyses (APSA 2016). Each of the statistical analyses defined a set of hypotheses concerning the general effect of one variable on another and tested these hypotheses using particular data and methods. Contrast this with the May 6, 2016 issue of *Science*, the most recent issue of the highest-impact peer-reviewed scientific journal at the time of this draft, where only one of the four research articles primarily attempted to identify a general causal relationship. The other three articles either described or classified a set of natural phenomena (AAAS 2016).

To test for hypothesized causal relationships, economists and political scientists examine correlations between treatment and response variables in a sample of data. In each of the five

[15] This variable differs from the prior coding of the left chief executive variable, and equals 0 for all observations of Swiss governments with multiparty chief executives. Following Roubini and Sachs' model, I had excluded this variable from initial estimates of the relationship between cohesion and deficits.
[16] The exclusion of Greece, Spain, and Portugal certainly alters estimates of the effect of fragmentation on deficits, particularly in recent years.

studies examined in this chapter, the authors construct their sample by pooling observations across countries and time. As the models in this chapter have shown, it is often necessary to include country and year fixed effects terms to obtain consistent estimates. However, even after including fixed effects, estimates often differ substantially across samples. In other words, estimated effects derived from particular samples do not generalize.

This casts serious doubt on whether effects are correctly identified in the first place. Relationships between political and economic variables are generally noisy, poorly measured, and embedded in particular environments. This does not imply that it is impossible to identify statistically significant relationships between variables given a particular sample and a particular set of modeling assumptions. To take three examples from this dissertation: voters reward economic growth (but do not sanction junior coalition partners), voters prefer election-year fiscal expansions (holding macroeconomic effects constant), and political parties decrease support for welfare state expansion when deficits are high (but only competitive and mainstream political parties).

The substantial contextual variation in estimates is enough to make any reasonable researcher seriously question the utility of pooled cross-national time series regression analysis. But do alternative research methods solve this problem? Even if it were possible to randomly assign the treatment variables of interest in this dissertation, the problem of contextual variation would still remain. Presumably an exogenous fiscal shock in Luxembourg would have different effects from an exogenous fiscal shock in Poland. As I will show in my examination of the comparative economic voting literature, most attempts to explain variation in effects across countries and time are unconvincing.

If the most-cited research in a branch of political economics with data regularly compiled, publicly-available, and measured in accordance with explicit standards is not credible, the outlook for political science as a whole is not promising. Nonetheless, I hope that this chapter and the remainder of the dissertation will marginally improve on some of the issues with contemporary research in the discipline. By beginning with an attempt to replicate prior findings, I reject the common practice of building on existing research without examining firsthand whether the conclusions of such research actually hold under reasonable modeling and sampling assumptions.

Estimates of the causes and effects of government deficits reflect a multitude of sampling, measurement, and specification assumptions on the part of the researcher. The best I can do as a researcher is to explicate these assumptions, and to provide reasonable justifications for each assumption chosen. Throughout this dissertation, I carefully document the data sources, measurement of variables, and code used to produce the estimates displayed in the tables.

Conclusion

In this chapter, I have critically reexamined the effect of three sets of variables on fiscal outcomes. Rather than rejecting the validity of prior arguments on the basis of their failure to explain a selective set of cases, as appears to be common practice in literature reviews, I test hypotheses derived from each general explanation on the available data. I find evidence for partisan differences in fiscal policy, but not in changes in the size of government under left and right-wing governments. Instead, I find that left-wing parties tend to favor reductions in the fiscal deficit by increasing taxes and cutting spending.

Reexamining evidence for political budget cycles, I find significant electoral cycles in receipts but not disbursements or deficits. The explanation that political cycles are limited to new democracies does not appear credible. Similarly, the most-cited explanation of political determinants of variation in deficits (Roubini and Sachs 1989) does not replicate. Using a number of indicators, I find no significant relationship between parliamentary or government cohesion and deficits. The difference between prior estimates and those presented in this chapter appear to hinge on the exclusion of particular countries. Year effects are significant in most models, but it is difficult to detect a general trend in the relationship between cohesion and deficits.

It is difficult to derive general political determinants of fiscal adjustments. The politics of deficit reduction is likely to depend on the particular politics of the country and time in which the adjustment occurs. However, the constraints facing governments choosing whether or not to impose costs on voters are certainly real. I examine these constraints in the next two chapters.

Table 2.1 Mean fiscal outcomes by ideology of party of chief executive (annual levels) [17]

	Revenue	Expenditures	Balance
Left	42.60 (N = 459)	44.67 (N = 459)	- 2.02 (N = 473)
Right	39.85 (N = 732)	42.48 (N = 732)	- 2.60 (N = 752)
Nonpartisan	34.02 (N = 33)	36.51 (N = 33)	- 1.47 (N = 39)
Total	40.73 (N = 1224)	43.14 (N = 1224)	- 2.35 (N = 1264)

Table 2.2 Mean fiscal outcomes by ideology of party of chief executive (annual changes)

	Revenue	Expenditures	Balance
Left	0.21 (N = 452)	0.10 (N = 452)	0.12 (N = 470)
Right	0.19 (N = 713)	0.29 (N = 713)	- 0.10 (N = 733)
Nonpartisan	0.45 (N = 32)	0.40 (N = 32)	0.04 (N = 38)
Total	0.20 (N = 1197)	0.22 (N = 1197)	- 0.01 (N = 1241)

[17] For 40 observations, data on government deficits are not disaggregated into receipts and disbursements. Also note that 39 observations are coded as neither "left" nor "right," nine of which are governments with nonpartisan chief executives, and 30 of which are Swiss governments headed by a Federal Council representing one left-wing and multiple right-wing parties. The nine governments headed by a caretaker administration on January 1 of the calendar year, prior to elections being held to select a democratically-elected government are Finland 1964, Greece 1990, Greece 2012, Italy 1994, Italy 1996, Italy 2012, Italy 2013, Portugal 1976, and Portugal 1979.

Table 2.3 Mean fiscal outcomes by ideology of party of chief executive (annual changes)

	Revenue	Expenditures	Balance
Left	0.05 (0.06)	- 0.14 (0.09)	0.20 (0.09) **
Nonpartisan	n/a	n/a	n/a
Coalition	- 0.09 (0.09)	0.05 (0.12)	- 0.03 (0.08)
Majority	- 0.07 (0.09)	- 0.10 (0.12)	0.03 (0.13)
NOM	- 0.01 (0.01)	- 0.00 (0.01)	- 0.01 (0.01)
ENPG	0.06 (0.10)	0.05 (0.10)	0.02 (0.13)
NDEM	0.13 (0.18)	0.59 (0.18) ***	- 0.41 (0.08) ***
PR	- 0.02 (0.10)	- 0.05 (0.12)	0.03 (0.07)
PRES	0.04 (0.22)	0.03 (0.23)	- 0.02 (0.09)
ELEC	- 0.16 (0.06) **	- 0.01 (0.15)	- 0.14 (0.15)
ENPP	0.01 (0.06)	- 0.02 (0.06)	0.02 (0.08)
DGDP	- 0.09 (0.02) ***	- 0.25 (0.03) ***	0.15 (0.03) ***
UNP	- 0.02 (0.01) *	- 0.06 (0.02) ***	0.03 (0.01) **
DDR	- 0.04 (0.05)	0.03 (0.09)	- 0.07 (0.08)
Adj. (within) R^2	0.04	0.07	0.03
N	1133	1133	1165
Country fixed effects	No	No	No
Year fixed effects	Yes	Yes	Yes
F-test (CFE, OLS)	1.27	1.47 *	0.67
F-test (YFE, OLS)	3.16 ***	3.11 ***	3.85 ***
BP test	57.48 ***	41.25 ***	38.87 ***

Heteroscedasticity-consistent standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.4 Replication of Perotti and Kontopoulos 2002 (General Information)

Within-sample (Tables 5, 8-13): Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK, USA; 1960-95 (Greece, Spain, and Portugal only included for years of democratic government)

Out-of-sample (Tables 5, 8-13): All countries within-sample from 1996-2014, plus Czech Republic, Estonia, Hungary, Iceland, Israel, Korea, Luxembourg, New Zealand, Poland, Slovak Republic, Slovenia

Within-sample (Tables 6-7): United States, France, Germany, Japan, United Kingdom, Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Sweden, Ireland; 1960-85

Out-of-sample (Tables 6-7): All countries within-sample from 1986-2014, plus Australia, Canada, Czech Republic, Estonia, Greece, Hungary, Iceland, Israel, Korea, Luxembourg, New Zealand, Poland, Portugal, Slovak Republic, Slovenia, Spain, Switzerland

Response variables:

DDEF	Change in general government deficit over prior year, percentage of GDP
DEXP	Change in general government expenditure over prior year, percentage of GDP
DREV	Change in general government revenue over prior year, percentage of GDP

Treatment variables:

TOG	Woldendorp-Keman-Budge index of government cohesion
POL	Roubini-Sachs index of government cohesion
NPC	Number of parties in governing coalition
NSM	Number of spending ministers in cabinet
ICG	Ideological complexion of government

Control variables:

DDEF_1	Lagged change in general government deficit over prior year, percentage of GDP
DUNP	Change in unemployment rate over prior year
INF	Inflation rate, current year

Table 2.5 Replication of Perotti and Kontopoulos 2002 (TOG, Deficit)

Dependent variable: change in general government deficit over prior year, percentage of GDP

DV	DDEF	DDEF	DDEF	DDEF
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE
TOG	**0.03 (0.08)**	**- 0.05 (0.07)**	**- 0.03 (0.02)**	**0.03 (0.04)**
DDEF_1	- 0.16 (0.03) ***	- 0.02 (0.04)	- 0.01 (0.04)	- 0.33 (0.09) ***
DUNP	0.25 (0.07) ***	- 0.60 (0.08) ***	- 0.58 (0.09) ***	- 0.27 (0.14) *
INF	- 0.10 (0.03) ***	- 0.05 (0.02) **	- 0.02 (0.01) *	- 0.00 (0.03)
R^2	0.22	0.11	0.10	0.13
Adj. R^2		0.10	0.10	0.12
N	424	561	561	613
F test (CFE)			0.36	0.25
F test (YFE)			2.66 ***	5.73 ***
BP test			16.25 ***	39.96 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.6 Replication of Perotti and Kontopoulos 2002 (POL, Expenditure)

Dependent variable: change in general government expenditure over prior year, percentage of GDP

DV	DEXP	DEXP	DEXP	DEXP
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE
POL	**0.00 (0.00)**	**- 0.13 (0.09)**	**0.09 (0.06)**	**0.03 (0.06)**
DDEF_1	- 0.11 (0.05) **	- 0.09 (0.09)	- 0.07 (0.09)	- 0.28 (0.08) ***
DUNP	- 0.10 (0.11)	- 0.52 (0.10) ***	- 0.49 (0.08) ***	- 0.43 (0.10) ***
INF	- 0.02 (0.04)	0.00 (0.02)	0.02 (0.02)	- 0.02 (0.01)

R^2	0.33	0.09	0.10	0.12
Adj. R^2		0.08	0.09	0.12
N	175	266	266	873
F test (CFE)			0.94	0.86
F test (YFE)			3.70 ***	4.39 ***
BP test			13.85 ***	70.92 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.7 Replication of Perotti and Kontopoulos 2002 (POL, Revenue)

Dependent variable: change in general government revenue over prior year, percentage of GDP

DV	DREV	DREV	DREV	DREV
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	OLS, HCSE	YFE, HCSE
POL	**- 0.40 (0.19) ** **	**0.17 (0.09) ** **	**0.15 (0.05) *** **	**- 0.00 (0.04)**
DDEF_1	0.17 (0.06) ***	- 0.02 (0.06)	- 0.02 (0.04)	0.01 (0.02)
DUNP	0.10 (0.14)	- 0.04 (0.10)	- 0.09 (0.09)	- 0.04 (0.06)
INF	0.13 (0.05) **	0.08 (0.01) ***	0.04 (0.01) ***	- 0.00 (0.01)
R^2	0.06	0.05	0.06	0.00
Adj. R^2		0.04	0.06	0.00
N	175	266	266	873
F test (CFE)			0.80	1.34
F test (YFE)			0.94	2.28 ***
BP test			17.11 ***	75.75 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.8 Replication of Perotti and Kontopoulos 2002 (NPC, NSM, ICG, Deficit)

Dependent variable: change in general government deficit over prior year, percentage of GDP

DV	DDEF	DDEF	DDEF	DDEF
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE
NPC	**0.11 (0.10)**	**0.06 (0.09)**	**0.01 (0.04)**	**0.01 (0.05)**
NSM	**0.12 (0.06)**	**0.02 (0.03)**	**0.01 (0.01)**	**- 0.00 (0.01)**
ICG	**0.07 (0.06)**	**- 0.02 (0.08)**	**- 0.02 (0.05)**	**- 0.15 (0.09) ***
DDEF_1	- 0.15 (0.03) ***	- 0.02 (0.05)	- 0.01 (0.04)	- 0.33 (0.09) ***
DUNP	0.25 (0.07) ***	- 0.60 (0.09) ***	- 0.58 (0.09) ***	- 0.28 (0.14) **
INF	- 0.08 (0.03) ***	- 0.06 (0.02) ***	- 0.03 (0.01) *	- 0.00 (0.03)
R^2	0.23	0.12	0.11	0.13
Adj. R^2		0.10	0.10	0.12
N	424	558	558	609
F test (CFE)			0.41	0.24
F test (YFE)			2.73 ***	5.61 ***
BP test			16.27 **	40.32 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.9 Replication of Perotti and Kontopoulos 2002 (NPC, NSM, ICG, Expenditure)

Dependent variable: change in general government expenditure over prior year, percentage of GDP

DV	DEXP	DEXP	DEXP	DEXP
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE	TWFE, HCSE
NPC	**0.12 (0.07)**	**0.17 (0.07) ****	**0.09 (0.05) ****	**- 0.02 (0.06)**
NSM	**0.19 (0.05) *****	**0.03 (0.03)**	**0.01 (0.01)**	**- 0.02 (0.01) ***
ICG	**0.08 (0.04) ***	**- 0.09 (0.10)**	**- 0.01 (0.07)**	**- 0.08 (0.09)**

DDEF_1	- 0.04 (0.02) *	- 0.02 (0.05)	- 0.01 (0.04)	- 0.33 (0.07) ***
DUNP	0.12 (0.06) **	- 0.55 (0.10) ***	- 0.54 (0.07) ***	- 0.34 (0.08) ***
INF	- 0.07 (3.12) ***	0.00 (0.02)	0.02 (0.01)	- 0.03 (0.03)
R^2	0.33	0.12	0.12	0.15
Adj. R^2		0.11	0.11	0.14
N	424	528	528	609
F test (CFE)			1.04	0.62
F test (YFE)			4.07 ***	4.57 ***
BP test			10.79 *	50.28 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.10 Replication of Perotti and Kontopoulos 2002 (NPC, NSM, ICG, Revenue)

Dependent variable: change in general government revenue over prior year, percentage of GDP

DV	DREV	DREV	DREV	DREV
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE
NPC	**0.01 (0.08)**	**0.09 (0.07)**	**0.10 (0.03) *** **	**- 0.02 (0.04)**
NSM	**0.08 (0.05)**	**0.00 (0.02)**	**- 0.01 (0.01) ***	**- 0.02 (0.01) *** **
ICG	**0.01 (0.04)**	**- 0.10 (0.07)**	**- 0.00 (0.05)**	**0.06 (0.04)**
DDEF_1	0.12 (0.03) ***	0.01 (0.04)	0.01 (0.04)	0.00 (0.02)
DUNP	- 0.12 (0.06) *	0.05 (0.06)	0.04 (0.06)	- 0.06 (0.08)
INF	0.04 (0.03)	0.06 (0.01) ***	0.05 (0.01) ***	- 0.02 (0.02)
R^2	0.11	0.03	0.04	0.02
Adj. R^2		0.03	0.04	0.02
N	424	528	528	605
F test (CFE)			0.92	0.84
F test (YFE)			1.56 **	2.19 ***
BP test			21.19 ***	72.64 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.11 Replication of Perotti and Kontopoulos 2002 (Interactions, Deficit)

Dependent variable: change in general government deficit over prior year, percentage of GDP

DV	DDEF	DDEF	DDEF	DDEF
Data	Authors'	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE
NPC	**0.08 (0.10)**	**0.04 (0.08)**	**- 0.00 (0.04)**	**0.02 (0.05)**
NSM	**0.07 (0.06)**	**0.02 (0.03)**	**0.01 (0.01)**	**- 0.00 (0.01)**
ICG	**0.05 (0.09)**	**- 0.02 (0.10)**	**- 0.02 (0.06)**	**- 0.15 (0.08) ***
NPC*DUNP	**0.08 (0.05) ***	**- 0.05 (0.03) ***	**- 0.05 (0.03) ***	**- 0.06 (0.08)**
NSM*DUNP	**0.08 (0.03) *****	**- 0.04 (0.02) ****	**- 0.04 (0.02) ***	**- 0.01 (0.02)**
ICG*DUNP	**0.04 (0.04)**	**0.12 (0.12)**	**0.12 (0.12)**	**- 0.13 (0.12)**
DDEF_1	- 0.15 (0.03) ***	- 0.02 (0.05)	- 0.01 (0.04)	- 0.33 (0.09) ***
DUNP	- 0.95 (0.41) **	- 0.17 (0.58)	- 0.12 (0.61)	0.38 (0.52)
INF	- 0.10 (0.03) ***	- 0.05 (0.02) ***	- 0.02 (0.01) *	- 0.01 (0.04)
R^2	0.24	0.13	0.12	0.14
Adj. R^2		0.11	0.11	0.13
N	424	558	558	609
F test (CFE)			0.42	0.23
F test (YFE)			2.71 ***	5.61 ***
BP test			19.86 **	42.40 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.12 Replication of Perotti and Kontopoulos 2002 (Interactions, Expenditure)

Dependent variable: change in general government expenditure over prior year, percentage of GDP

DV	DEXP	DEXP	DEXP	DEXP
Data	Authors'	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE

NPC	**0.10 (0.07)**	**0.13 (0.07) ***	**0.06 (0.05)**	**0.00 (0.06)**
NSM	**0.17 (0.05) *****	**0.02 (0.03)**	**0.00 (0.01)**	**- 0.02 (0.01)**
ICG	**0.09 (0.04) ****	**- 0.08 (0.10)**	**- 0.00 (0.06)**	**- 0.07 (0.09)**
NPC*DUNP	**0.07 (0.04) ****	**- 0.12 (0.05) *****	**- 0.11 (0.04) ****	**- 0.15 (0.08) ****
NSM*DUNP	**0.06 (0.03) ****	**- 0.02 (0.02)**	**- 0.02 (0.02)**	**0.00 (0.02)**
ICG*DUNP	**0.04 (0.04)**	**0.08 (0.09)**	**0.07 (0.09)**	**- 0.15 (0.08) ***
DDEF_1	- 0.15 (0.03) ***	- 0.03 (0.06)	- 0.02 (0.05)	- 0.33 (0.07) ***
DUNP	- 0.95 (0.41) **	- 0.09 (0.51)	- 0.13 (0.53)	0.39 (0.44)
INF	- 0.10 (0.03) ***	0.01 (0.02)	0.02 (0.01) **	- 0.03 (0.03)
R^2	0.24	0.14	0.13	0.16
Adj. R^2		0.12	0.12	0.15
N	424	528	528	605
F test (CFE)			1.10	0.63
F test (YFE)			4.10 ***	4.53 ***
BP test			20.92 **	51.84 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.13 Replication of Perotti and Kontopoulos 2002 (Interactions, Revenue)

Dependent variable: change in general government revenue over prior year, percentage of GDP

DV	DREV	DREV	DREV	DREV
Data	Authors’	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	TWFE, HCSE	TWFE, HCSE	YFE, HCSE	YFE, HCSE
NPC	**0.02 (0.08)**	**0.07 (0.07)**	**0.08 (0.04) ****	**- 0.01 (0.04)**
NSM	**0.10 (0.05) ***	**0.01 (0.02)**	**- 0.01 (0.01)**	**- 0.02 (0.01) ****
ICG	**0.04 (0.05)**	**- 0.11 (0.07)**	**- 0.00 (0.06)**	**0.07 (0.04) ***
NPC*DUNP	**- 0.01 (0.05)**	**- 0.06 (0.04)**	**- 0.05 (0.04)**	**- 0.10 (0.05) ****
NSM*DUNP	**- 0.02 (0.02)**	**0.01 (0.01)**	**0.02 (0.01)**	**0.02 (0.01)**
ICG*DUNP	**- 0.08 (0.04) ****	**- 0.05 (0.07)**	**- 0.06 (0.06)**	**- 0.04 (0.07)**
DDEF_1	0.11 (0.02) ***	- 0.00 (0.04)	0.00 (0.04)	0.00 (0.02)
DUNP	0.38 (0.37) **	0.11 (0.47)	0.04 (0.44)	0.08 (0.47)
INF	0.04 (0.03)	0.06 (0.01) ***	0.05 (0.01) ***	- 0.02 (0.02)

R^2	0.11	0.04	0.05	0.03
Adj. R^2		0.04	0.05	0.03
N	424	528	528	605
F test (CFE)			0.92	0.92
F test (YFE)			1.61 **	2.19 ***
BP test			21.52 **	90.30 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.14 Summary of Replication of Perotti and Kontopoulos (2002)

Unless specified as change in expenditure (Exp) or revenue (Rev), the dependent variable is the annual change in the general government deficit as a percentage of GDP. (I) indicates a model in which the authors interact political treatment variables with the change in unemployment.

Sample Data Model	Hypothesized Effect	Within Authors' Authors'	Within Replication Authors'	Within Replication Spec. Tested	Out-of-sample Replication Spec. Tested
IV (DV)					
TOG	+	+	-	-	+
POL (Exp)	+	+	-	+	+
POL (Rev)	agnostic	- **	+ **	+ ***	-
NPC	+	+	+	+	+
NSM	+	+	+	+	-
ICG	agnostic	+	-	-	- *
NPC (Exp)	+	+	+ **	+ **	-
NSM (Exp)	+	+ ***	+	+	+
ICG (Exp)	+	+ *	-	-	-
NPC (Rev)	agnostic	+	+	+ ***	-
NSM (Rev)	agnostic	+	+	- *	- ***
ICG (Rev)	agnostic	+	-	-	+
NPC (I)	agnostic	+	+	-	+
NSM (I)	agnostic	+	+	+	-
ICG (I)	agnostic	+	-	-	- *
NPCD	+	+ *	- *	- *	-
NSMD	+	+ ***	- **	- *	-
ICGD	+	+	+	+	-

NPC (I/Exp)	agnostic	+	+ *	+	+
NSM (I/Exp)	agnostic	+ ***	+	+	-
ICG (I/Exp)	agnostic	+ **	-	-	-
NPCD (Exp)	+	+ **	- ***	- **	- **
NSMD (Exp)	+	+ **	-	-	+
ICGD (Exp)	+	+	+	+	- *
NPC (I/Rev)	agnostic	+	+	+ **	-
NSM (I/Rev)	agnostic	+ *	+	-	- **
ICG (I/Rev)	agnostic	+	-	-	+ *
NPCD (Rev)	agnostic	-	-	-	- **
NSMD (Rev)	agnostic	-	+	+	+
ICGD (Rev)	agnostic	- **	-	-	-

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.15 Mean fiscal outcomes in election and other years (annual levels) [18]

	Revenue	Expenditure	Balance
Election	40.56 (N = 341)	43.09 (N = 341)	- 2.48 (N = 354)
No Election	40.80 (N = 875)	43.13 (N = 875)	- 2.26 (N = 902)
Total	40.73 (N = 1224)	43.14 (N = 1224)	- 2.35 (N = 1264)

Table 2.16 Mean fiscal outcomes in election and other years (annual changes)

	Revenue	Expenditure	Balance
Election	0.10 (N = 334)	0.15 (N = 334)	- 0.06 (N = 349)

[18] In Tables 15 and 16, "Total" includes caretaker administrations not used to estimate election year effects.

No Election	0.23 (N = 855)	0.24 (N = 855)	0.01 (N = 884)
Total	0.20 (N = 1197)	0.22 (N = 1197)	- 0.01 (N = 1241)

Table 2.17 Replication of Brender and Drazen 2005 (Model information, within-sample)

	Adjusted R^2	N	F test (CFE)	F test (YFE)	BP test	Model
Bal/All	0.46	814	2.25 ***	3.63 ***	18.17 ***	TWFE, HCSE
Bal/New	0.40	99	1.17	0.50	4.46	OLS
Bal/Old	0.60	715	1.87 ***	5.58 ***	19.08 ***	TWFE, HCSE
Exp/All	0.68	776	2.15 ***	4.83 ***	22.10 ***	TWFE, HCSE
Exp/New	0.80	96	1.67	0.75	9.62	OLS
Exp/Old	0.77	680	2.66 ***	7.21 ***	17.25 ***	TWFE, HCSE
Rev/All	0.76	776	2.78 ***	2.39 ***	12.05 *	TWFE
Rev/New	0.90	96	1.19	0.97	21.66	OLS, HCSE
Rev/Old	0.76	686	2.97 ***	2.30 ***	10.30	TWFE

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.18 Replication of Brender and Drazen 2005 (Model information, out-of-sample)

	Adjusted R^2	N	F test (CFE)	F test (YFE)	BP test	Model
Bal/All	0.28	399	2.55 ***	7.31 ***	13.58 **	TWFE, HCSE
Bal/New	0.20	22	4.95 **	0.65	3.77	CFE
Bal/Old	0.27	376	2.44 ***	7.25 ***	13.12 **	TWFE, HCSE
Exp/All	0.33	399	3.68 ***	5.49 ***	19.27 ***	TWFE, HCSE
Exp/New	0.11	22	3.67 **	0.73	4.92	CFE
Exp/Old	0.32	376	3.68 ***	5.42 ***	19.22 ***	TWFE, HCSE

Rev/All	0.49	399	2.48 ***	3.38 ***	28.81 ***	TWFE, HCSE
Rev/New	0.66	22	2.26	1.62	6.76	OLS
Rev/Old	0.47	376	2.30 ***	3.47 ***	31.16 ***	TWFE, HCSE

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.19 Replication of Brender and Drazen 2005 (General Information and Estimates)

Within-sample: All countries, 1960-2001, minus Greece 1960-66

Out-of-sample: All countries within-sample from 2002-14, plus Greece 1960-66

Response variables:

Bal	Budget balance
Exp	Level of government expenditures
Rev	Level of government revenue

Treatment variable:

ELE Equal to 1 if election is held in the particular year, 0 otherwise

Control variables:

Lagged dependent variable; sum of imports and exports divided by GDP; percentage of population aged 65 or older; percentage of population aged 15 to 64; deviation of GDP from its country-specific trend, calculated using the Hodrick-Prescott filter

Subsets

All	Full sample
New	Countries that have not held five consecutive democratic elections prior to the year of observation
Old	Countries that have held five consecutive democratic elections prior to the year of observation

Treatment variable equals 1 if observation is in an election year, 0 otherwise

Data	Authors'	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	CFE, HCSE	CFE, HCSE	see Table 3	see Table 4
DV/Subset				
Bal/All	**- 0.35 (0.12) *** **	**- 0.17 (0.14)**	**- 0.18 (0.14)**	**- 0.04 (0.20)**
Bal/New	**- 0.87 (0.27) *** **	**- 0.32 (0.83)**	**- 0.23 (0.84)**	**1.27 (0.79)**
Bal/Old	**- 0.11 (0.13)**	**- 0.14 (0.12)**	**- 0.18 (0.10) * **	**- 0.04 (0.20)**
Exp/All	**0.09 (0.19)**	**0.09 (0.15)**	**0.09 (0.15)**	**- 0.19 (0.16)**
Exp/New	**0.75 (0.29) ** **	**0.18 (0.64)**	**- 0.07 (0.97)**	**- 0.77 (0.86)**
Exp/Old	**- 0.13 (0.15)**	**0.11 (0.12)**	**0.12 (0.12)**	**- 0.24 (0.18)**
Rev/All	**- 0.25 (0.17)**	**- 0.09 (0.08)**	**- 0.13 (0.09)**	**- 0.26 (0.10) *** **
Rev/New	**- 0.15 (0.24)**	**- 0.26 (0.13) * **	**- 0.27 (0.14) * **	**0.43 (0.43)**
Rev/Old	**- 0.22 (0.12) * **	**- 0.05 (0.09)**	**- 0.09 (0.09)**	**- 0.30 (0.10) *** **

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.20 Summary of Replication of Brender and Drazen (2005)

Treatment variable equals 1 if observation is in an election year, 0 otherwise

Sample	Hypothesized	Within	Within	Within	Out-of-sample
Data	Effect	Authors'	Replication	Replication	Replication
Model		Authors'	Authors'	Spec. Tested	Spec. Tested
DV/Subset					
Bal/All	-	- ***	-	-	-
Bal/New	-	- ***	-	-	+
Bal/Old	=	-	-	- *	+
Exp/All	+ (?)	+	+	+	-
Exp/New	+ (?)	+ **	+	-	-

Exp/Old	= (?)	-	+	+	-
Rev/All	- (?)	-	-	-	- ***
Rev/New	- (?)	-	- *	- *	+
Rev/Old	= (?)	- *	-	-	- ***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.21 Replication of Roubini and Sachs (General Information)

Within-sample: United States, France, Germany, Japan, United Kingdom, Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Sweden, Ireland; 1960-85

Out-of-sample: All countries within-sample from 1986-2014, plus Australia, Canada, Czech Republic, Estonia, Greece, Hungary, Iceland, Israel, Korea, Luxembourg, New Zealand, Poland, Portugal, Slovak Republic, Slovenia, Spain, Switzerland

Response variable: General government deficit to GDP ratio

Treatment variables:

POL	Index of political cohesion
POLD	Interaction of POL and a variable equal to 1 if observation took place between 1975 and 1985 (0 otherwise)
DBYLPOL	Interaction of POL and lagged general government deficit to GDP ratio

Control variables:

DBYL	Lagged government deficit to GDP ratio over prior year
DUB	Difference between unemployment rate in current year and average unemployment rate over the prior eight years
DRB	Change in borrowing costs (see Appendix; Roubini and Sachs 1989, p. 931)
DGR	Difference between GDP growth rate in current year and average growth rate over the prior three years
DUJAP	Interaction of *DUB* and a variable equal to 1 if observation occurred in Japan (0 otherwise)

Table 2.22 Roubini and Sachs – Replication (Table 7, Model 2, p. 922)

Dependent variable: general government deficit to GDP ratio

Sample	Within	Within	Within	Out-of-sample
Data	Authors'	Replication	Replication	Replication
Model	OLS	OLS	CFE	TWFE, HCSE
DBYL	0.70 (0.04) ***	0.94 (0.03) ***	0.75 (0.05) ***	0.68 (0.06) ***
DUB	0.16 (0.08) **	0.23 (0.08) ***	0.40 (0.09) ***	0.22 (0.07) ***
DRB	0.82 (0.24) ***	0.46 (0.18) **	0.44 (0.17) **	- 0.17 (0.13)
DGR	- 0.45 (0.06) ***	- 0.22 (0.05) ***	- 0.17 (0.05) ***	- 0.15 (0.05) ***
DUJAP	2.74 (1.30) **	2.48 (1.77)	3.25 (1.68) *	dropped
POL	**0.004 (0.001) *** **	**- 0.001 (0.001)**	**- 0.002 (0.002)**	**0.002 (0.001) ***
R^2	0.67	0.90	0.71	0.57
Adjusted R^2		0.86	0.64	0.50
N		179	179	716
F test (CFE)			3.31 ***	2.41 ***
F test (YFE)			1.47 *	3.64 ***
BP test			14.07 **	30.20 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.23 Roubini and Sachs – Replication (Table 7, Model 3, p. 922)

Dependent variable: general government deficit to GDP ratio

Sample	Within	Within	Within	Out-of-sample
Data	Authors'	Replication	Replication	Replication
Model	OLS	OLS	CFE, HCSE	TWFE, HCSE
DBYL	0.66 (0.07) ***	0.67 (0.09) ***	0.48 (0.13) ***	0.66 (0.08) ***
DUB	0.15 (0.08) *	0.25 (0.08) ***	0.44 (0.12) ***	0.21 (0.07) ***
DRB	0.86 (0.25) ***	0.49 (0.18) ***	0.47 (0.20) **	- 0.17 (0.13)
DGR	- 0.45 (0.06) ***	- 0.21 (0.05) ***	- 0.17 (0.07) **	- 0.15 (0.05) ***
DUJAP	3.02 (1.31) **	3.20 (1.74) *	3.93 (0.46) ***	dropped
POL	**0.004 (0.001) *** **	**- 0.005 (0.001) *** **	**- 0.006 (0.003) ** **	**0.002 (0.001)**

DBYLPOL	**0.03 (0.03)**	**0.001 (0.000) *****	**0.001 (0.001) ****	**0.000 (0.000)**
R^2	0.68	0.91	0.73	0.57
Adjusted R^2		0.86	0.65	0.50
N		179	179	716
F test (CFE)			3.43 ***	2.34 ***
F test (YFE)			1.42	3.70 ***
BP test			15.89 **	32.41 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.24 Roubini and Sachs – Replication (Table 7, Model 4, p. 922)

Dependent variable: general government deficit to GDP ratio

Sample	Within	Within	Within	Out-of-sample
Data	Authors'	Replication	Replication	Replication
Model	OLS	OLS	CFE, HCSE	CFE, HCSE
DBYL	0.68 (0.04) ***	0.93 (0.03) ***	0.73 (0.05) ***	0.70 (0.06) ***
DUB	0.10 (0.08)	0.27 (0.09) ***	0.42 (0.12) ***	0.31 (0.08) ***
DRB	0.76 (0.24) ***	0.46 (0.18) **	0.44 (0.20) **	- 0.16 (0.18)
DGR	- 0.44 (0.05) ***	- 0.21 (0.05) ***	- 0.16 (0.06) **	- 0.36 (0.05) ***
DUJAP	2.77 (1.25) **	3.61 (1.90) *	4.38 (0.49) ***	0.45 (0.45)
POL	**0.001 (0.002)**	**- 0.005 (0.002) ****	**- 0.007 (0.003) *****	**0.001 (0.001)**
POLD	**0.005 (0.002) ****	**0.004 (0.003) ***	**0.006 (0.002) *****	**- 0.004 (0.002) ****
R^2	0.68	0.90	0.72	0.63
Adjusted R^2		0.85	0.64	0.60
N		179	179	716
F test (CFE)			3.62 ***	2.43 ***
F test (YFE)			1.56 *	excluded
BP test			19.44 **	32.10 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.25 Summary of Replication of Roubini and Sachs (1989)

Sample Data Model	Hypothesized Effect	Within Authors' Authors'	Within Replication Authors'	Within Replication Spec. Tested	Out-of-sample Replication Spec. Tested
IV (DV)					
POL	+	+ ***	-	-	+ *
POL (DBY)	+ (?)	+ ***	- ***	- **	+
DBYPOL	+	+	+ ***	+ **	+
POL (POLD)	<< POLD (+?)	+	- **	- ***	+
POLD	+	+ **	+ *	+ ***	- **

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.26 Edin and Ohlsson (1991) Replication (Table 1, Column 3, p. 1600)

Dependent variable: general government deficit to GDP ratio
Reference group: P0

Data Sample Model	Original Within OLS	Replication Within OLS	Replication Within CFE	Replication Out-of-sample TWFE, HCSE
DBYL	0.71 (0.04) ***	0.94 (0.03) ***	0.76 (0.05) ***	0.66 (0.06) ***
DUB	0.19 (0.08) **	0.23 (0.08) ***	0.42 (0.09) ***	0.22 (0.07) ***
DRB	0.85 (0.24) ***	0.46 (0.18) **	0.44 (0.17) **	- 0.17 (0.13)
DGR	- 0.45 (0.06) ***	- 0.21 (0.05) ***	- 0.17 (0.05) ***	- 0.15 (0.05) ***
DUJAP	2.55 (1.29) **	2.52 (1.77)	3.20 (1.69) *	dropped
P1	**0.003 (0.003)**	**- 0.003 (0.004)**	**- 0.004 (0.005)**	**0.005 (0.003)**
P2	**0.003 (0.004)**	**- 0.002 (0.003)**	**- 0.003 (0.006)**	**0.008 (0.005)**
P3	**0.017 (0.005) *** **	**- 0.005 (0.003)**	**- 0.008 (0.006)**	**0.007 (0.003) ** **
R^2	0.69	0.90	0.72	0.57
Adj. R^2		0.85	0.64	0.50
N		179	179	716
F test (CFE)			3.23 ***	2.37 ***
F test (YFE)			1.45	3.59 ***

BP test			16.42 *	34.38 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.27 Edin and Ohlsson (1991) Replication (Table 1, Column 4, p. 1600)

Dependent variable: general government deficit to GDP ratio
Reference groups: P0, P0D

Data	Original	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	OLS	OLS	CFE, HCSE	CFE, HCSE
DBYL	0.69 (0.05) ***	0.93 (0.03) ***	0.74 (0.05) ***	0.70 (0.06) ***
DUB	0.14 (0.08) *	0.25 (0.09) ***	0.43 (0.13) ***	0.30 (0.08) ***
DRB	0.80 (0.25) ***	0.45 (0.18) **	0.43 (0.21) **	- 0.16 (0.18)
DGR	- 0.44 (0.05) ***	- 0.21 (0.05) ***	- 0.17 (0.06) ***	- 0.36 (0.05) ***
DUJAP	2.67 (1.28) **	4.05 (1.95) **	4.58 (0.34) ***	0.40 (0.12) ***
P1	**0.001 (0.003)**	**- 0.010 (0.008)**	**- 0.013 (0.003) *****	**0.001 (0.005)**
P2	**- 0.000 (0.000)**	**- 0.011 (0.006) ****	**- 0.013 (0.004) *****	**0.005 (0.006)**
P3	**0.005 (0.009)**	**- 0.014 (0.007) ****	**- 0.020 (0.007) *****	**0.003 (0.003)**
P1D	**0.004 (0.005)**	**0.010 (0.009)**	**0.013 (0.002) *****	**- 0.010 (0.005) ***
P2D	**0.007 (0.008)**	**0.014 (0.007) ****	**0.014 (0.004) *****	**- 0.020 (0.006) *****
P3D	**0.018 (0.010) ***	**0.012 (0.008)**	**0.017 (0.005) *****	**- 0.011 (0.004) *****
R^2	0.69	0.90	0.73	0.63
Adj. R^2		0.83	0.63	0.60
N		179	179	716
F test (CFE)			3.45 ***	2.39 ***
F test (YFE)			1.60 *	excluded
BP test			25.22 **	36.72 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.28 Summary of Replication of Edin and Ohlsson (1991)

Sample Data Model	Hypothesized Effect	Within Authors' Authors'	Within Replication Authors'	Within Replication Spec. Tested	Out-of-sample Replication Spec. Tested
IV (DV)					
P1	+	+	-	-	+
P2	+	+	-	-	+
P3	+	+ ***	-	-	+ **
P1 (I)	<< P1D (+?)	+	-	-	+
P2 (I)	<< P2D (+?)	-	- **	- ***	+
P3 (I)	<< P3D (+?)	+	- **	- ***	+
P1D	+	+	+	+ ***	- *
P2D	+	+	+ **	+ ***	- ***
P3D	+	+ *	+	+ ***	- ***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.29 De Haan and Sturm (1994) Replication (Table 3, Model 4, p. 163)

Within-sample: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, UK; 1981-89

Out-of-sample: All countries within-sample before 1981 and after 1989, plus Australia, Austria, Canada, Czech Republic, Estonia, Finland, Hungary, Iceland, Israel, Japan, Korea, New Zealand, Norway, Poland, Slovak Republic, Slovenia, Sweden, Switzerland, and the United States

Dependent variable: general government deficit to GDP ratio

Data Sample Model	Original Within OLS	Replication Within OLS	Replication Within CFE	Replication Out-of-sample TWFE, HCSE
DBYL	0.59 (0.08) ***	0.85 (0.05) ***	0.50 (0.10) ***	0.71 (0.06) ***
DUB	1.12 (0.26) ***	0.21 (0.06) ***	0.38 (0.08) ***	0.20 (0.07) ***
DRB	0.25 (0.21)	0.82 (0.29) ***	0.65 (0.31) **	- 0.17 (0.12)
DGR	- 0.33 (0.21)	- 0.18 (0.12)	- 0.05 (0.12)	- 0.12 (0.04) ***

CHANGE	**1.19 (0.50) ****	**0.85 (0.27) *****	**0.63 (0.27) ****	**0.14 (0.10)**
Adj. R^2	0.54	0.79	0.55	0.52
N		72	72	823
F test (CFE)			2.47 **	2.57 ***
F test (YFE)			1.34	3.76 ***
BP test			5.97	34.89 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.30 De Haan and Sturm (1994) Replication (Table 3, Model 5, p. 163)

Dependent variable: general government deficit to GDP ratio

Data	Original	Replication	Replication	Replication
Sample	Within	Within	Within	Out-of-sample
Model	OLS	OLS	CFE	TWFE, HCSE
DBYL	0.58 (0.08) ***	0.85 (0.05) ***	0.51 (0.10) ***	0.71 (0.06) ***
DUB	1.13 (0.27) ***	0.21 (0.06) ***	0.39 (0.08) ***	0.20 (0.07) ***
DRB	0.26 (0.20)	0.84 (0.29) ***	0.67 (0.31) **	- 0.17 (0.12)
DGR	- 0.35 (0.21) *	- 0.22 (0.12) *	- 0.08 (0.11)	- 0.12 (0.04) ***
CHANGED	**0.86 (0.72)**	**1.07 (0.35) *****	**0.77 (0.35) ****	**0.11 (0.11)**
Adj. R^2	0.52	0.79	0.55	0.52
N		72	72	823
F test (CFE)			2.45 **	2.58 ***
F test (YFE)			1.41	3.76 ***
BP test			5.39	35.25 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.31 Summary of Replication of De Haan and Sturm (1994)

Dependent variable: general government deficit to GDP ratio

Sample Data Model	Hypothesized Effect	Within Authors’ Authors’	Within Replication Authors’	Within Replication Spec. Tested	Out-of-sample Replication Spec. Tested
IV					
CHANGE	+	+ **	+ ***	+ **	+
CHANGED	+	+	+ ***	+ **	+

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.32 Effects of government attributes on fiscal outcomes (receipts, annual changes)

Presidential	0.08 (0.24)			
Majority		- 0.07 (0.06)		
Surplus maj.			- 0.00 (0.07)	
N Parties				0.02 (0.03)
GDP chg.	- 0.09 (0.02) ***	- 0.09 (0.02) ***	- 0.09 (0.02) ***	- 0.09 (0.02) ***
Unemp.	- 0.02 (0.01) *	- 0.02 (0.01) *	- 0.02 (0.01) *	- 0.02 (0.01) *
Inflation	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Election year	- 0.15 (0.06) **	- 0.16 (0.06) **	- 0.16 (0.06) **	- 0.16 (0.06) **
Model	YFE, HCSE	YFE, HCSE	YFE, HCSE	YFE, HCSE
N	1156	1156	1156	1153
Adjusted R^2	0.04	0.04	0.04	0.04
F test (CFE)	1.18	1.12	1.15	1.14
F test (YFE)	3.03 ***	3.02 ***	3.02 ***	3.01 ***
BP test	82.72 ***	80.50 ***	85.44 ***	81.23 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.33 Effects of government attributes on fiscal outcomes (disbursements, annual changes)

Presidential	0.19 (0.36)			
Majority		- 0.11 (0.14)		
Surplus maj.			0.12 (0.13)	
N Parties				0.01 (0.03)
GDP chg.	- 0.23 (0.03) ***	- 0.28 (0.04) ***	- 0.28 (0.04) ***	- 0.23 (0.03) ***
Unemp.	- 0.04 (0.02) **	- 0.12 (0.04) ***	- 0.12 (0.04) ***	- 0.05 (0.02) **
Inflation	- 0.00 (0.01)	- 0.03 (0.02) *	- 0.03 (0.02) *	- 0.00 (0.01) **
Election year	- 0.01 (0.15)	- 0.01 (0.15)	0.00 (0.14)	- 0.02 (0.15)
Model	YFE, HCSE	TWFE, HCSE	TWFE, HCSE	TWFE, HCSE
N	1156	1156	1156	1153
Adjusted R^2	0.06	0.07	0.07	0.06
F test (CFE)	1.79 ***	1.77 ***	1.77 ***	1.75 ***
F test (YFE)	3.49 ***	3.50 ***	3.50 ***	3.48 ***
BP test	12.22 **	14.31 **	14.62 **	14.09 **

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.34 Effects of government attributes on fiscal outcomes (budget balance, annual changes)

Presidential	- 0.12 (0.12)			
Majority		- 0.01 (0.09)		
Surplus maj.			- 0.02 (0.08)	
N Parties				0.01 (0.03)
GDP chg.	0.14 (0.02) ***	0.14 (0.02) ***	0.13 (0.02) ***	0.14 (0.02) ***
Unemp.	0.03 (0.01) **	0.03 (0.01) **	0.03 (0.01) **	0.03 (0.01) **
Inflation	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Election year	- 0.14 (0.15)	- 0.14 (0.15)	- 0.14 (0.15)	- 0.14 (0.15)
Model	YFE, HCSE	YFE, HCSE	YFE, HCSE	YFE, HCSE
N	1194	1194	1194	1191
Adjusted R^2	0.02	0.02	0.02	0.02
F test (CFE)	0.99	0.97	0.98	0.96
F test (YFE)	4.19 ***	4.20 ***	4.20 ***	4.17 ***

BP test	12.00 **	13.22 **	15.21 ***	13.64 **

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.35 Parliamentary fragmentation and fiscal outcomes (annual changes) by period

Period	N (Balance)	Revenue	Expenditures	Balance
1961-1970	117	0.08 (0.08)	0.09 (0.09)	- 0.04 (0.09)
1971-1977	115	0.15 (0.09) *	0.03 (0.09)	0.11 (0.10)
1978-1983	119	- 0.01 (0.08)	0.15 (0.09) *	- 0.17 (0.11)
1984-1988	109	0.11 (0.08)	- 0.05 (0.11)	0.14 (0.12)
1989-1993	124	0.08 (0.07)	- 0.01 (0.16)	0.02 (0.15)
1994-1997	110	- 0.07 (0.08)	- 0.13 (0.20)	0.06 (0.21)
1998-2001	122	- 0.04 (0.07)	- 0.17 (0.10)	0.12 (0.12)
2002-2005	124	- 0.06 (0.06)	- 0.09 (0.09)	0.03 (0.10)
2006-2009	124	- 0.06 (0.09)	- 0.10 (0.14)	0.04 (0.17)
2010-2014	127	- 0.01 (0.05)	0.15 (0.17)	- 0.16 (0.18)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.36 Government fragmentation and fiscal outcomes (annual changes) by period

Period	N	Revenue	Expenditures	Balance
1961-1970	117	0.13 (0.10)	0.06 (0.11)	0.04 (0.12)
1971-1977	115	0.46 (0.15) ***	0.13 (0.16)	0.32 (0.17) *
1978-1983	119	- 0.13 (0.12)	0.07 (0.15)	- 0.19 (0.17)
1983-1988	109	0.12 (0.14)	- 0.04 (0.20)	0.10 (0.19)
1989-1993	125	0.08 (0.12)	- 0.04 (0.27)	0.04 (0.26)
1994-1997	111	- 0.23 (0.13) *	- 0.12 (0.33)	- 0.11 (0.34)
1998-2001	122	0.00 (0.11)	- 0.29 (0.16) *	0.29 (0.19)
2002-2005	124	- 0.11 (0.10)	- 0.04 (0.15)	- 0.07 (0.16)
2006-2009	124	- 0.04 (0.14)	- 0.24 (0.22)	0.19 (0.28)
2010-2014	127	0.02 (0.07)	0.24 (0.25)	- 0.22 (0.26)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3. Electoral Constraints: Economic Voting in Comparative Perspective

In the preceding chapter, I showed that the conclusions of prior statistical analyses of the political causes of government deficits fail to replicate.[19] None of the 15 estimated effects identified as statistically significant in five of the most-cited studies of the political causes of deficits retain the same direction and significance across three models: a within-sample test using the authors' model specification, a within-sample test using the model identified using specification tests for fixed effects and heteroscedasticity, and an out-of-sample test using the model identified using the same specification tests. The fact that prevailing theories of the political economy of fiscal adjustments find no consistent empirical support leads me in the following two chapters to reassess one of the critical assumptions of these theories: that deficits are politically costly. In this chapter, I conduct a series of original statistical analyses to identify the correct specification for how voters generally sanction governments for macroeconomic outcomes. The results of these analyses elucidate how voters respond to costly economic policies.

To explain why political parties in government collectively choose to enact or delay fiscal adjustments, it is necessary to understand both the legislative and electoral constraints on the policymaking process. By legislative constraints, I refer to the arrangement of partisan and institutional veto players necessary to pass budgetary legislation. Much of the literature on the determinants of fiscal adjustments focuses on legislative constraints, the prevailing argument being that more cohesive governments are more likely to balance budgets. However, as the previous chapter has shown, deficits increase significantly with government cohesion.

In this chapter, I propose an alternative explanation based on voters' responses to economically costly budgetary measures. One possibility is that voters are less likely to assign responsibility to governments for the economic effects of fiscal adjustments when legislative authority is dispersed among numerous political parties. The empirical implication is that the elasticity of incumbent government vote share to economic conditions should decrease with the number of parties necessary to pass legislation.

Prior research suggests that this is the case. Powell and Whitten (1993) hypothesize that economic voting effects are limited to governments with high "clarity of responsibility." The authors posit five factors that may enable voters to sanction governments for economic outcomes: voting cohesion of the parties in government, inclusiveness of the legislative committee system, the absence of an opposition party controlling a second legislative chamber, majority control of the legislature, and single-party control of government. They find significant economic voting effects in countries with generally higher clarity of responsibility, but not in countries where responsibility for policymaking is less clear.

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[19] This chapter uses data from the "Economic Voting Dataset" described in Appendix A. For data, please email the author at donnelly.patrick.t@gmail.com.

Similarly, Pierson (1996) argues that governments are more likely to cut welfare benefits – an apparently costly form of fiscal adjustment – when they can include multiple political actors in the policymaking process, such as coalition partners or opposition parties. The idea is that voters are less likely to hold the government accountable for retrenchment when responsibility for cuts is broadly shared. These two articles suggest a contrary logic of fiscal adjustment, whereby political fragmentation may in fact enable governments to reduce the electoral costs associated with economically costly budgetary measures.

It is important to keep in mind that the argument presented in this chapter does not assume that fiscal adjustments are generally economically costly. The macroeconomic effects of fiscal policies are contested among economists[20], and it is not the objective of this dissertation to evaluate the conditions under which budgetary expansions or contractions lead to increases or decreases in economic output. What is certain is that fiscal adjustments impose direct costs on groups of voters, frequently leading to conflict over the allocation of costs among the parties that represent such voters. It is also not necessary to assume that political parties and their members in parliament or government are purely vote-seeking. Yet political parties rely on electoral support to govern, and thus are presumably concerned with how voters respond to costly policy measures.

What's the correct specification?

I begin by evaluating the electoral effects of changes in GDP per capita for incumbent parties in government. Before evaluating whether economic voting effects are in fact weaker in more fragmented political systems, I critically examine several assumptions in modeling the macroeconomic determinants of incumbent government vote share. Researchers have numerous degrees of freedom in specifying economic voting models. Should one assume that voters hold governments accountable for changes in macroeconomic conditions since the prior election? Or, as experimental and observational evidence from the United States suggests (Achen and Bartels 2004; Healy and Lenz 2014), is it reasonable to assume that voters are myopic, discounting or even ignoring economic conditions more than six months or a year prior to the election?

Another specification choice – one directly relevant to the relationship between political cohesion and economic voting effects – is whether to use the change in vote share for all parties in government, or merely for the party of the chief executive, to measure electoral effects. Researchers have also used other variables to estimate the electoral consequences of budget deficits, such as a binary indicator of incumbent chief executive reelection, or changes in cabinet composition. Besides being infinitely less precise than the continuous measure of the change in incumbent vote share, these variables do not directly capture how voters respond to fiscal policies or their effects.

[20] See Alesina and Ardagna 2010; Giavazzi and Pagano 1990; Guajardo, Leigh, and Pescatori 2011.

There are also a number of ways to measure something as straightforward as economic growth. Economists compute economic performance as gross national product (GNP) or gross domestic product (GDP), using either producer output, income, or expenditures. Economic growth can then be defined as the change in GNP or GDP, in levels or logged levels, on a nominal or real basis, relative to international levels or to within-country trends, in aggregate or per capita terms, on a quarterly or annual basis. Due to lack of sufficient space and time, I cannot examine every measure. Presumably using the income rather than the expenditure approach does not matter much for estimating electoral consequences. However, other choices are likely to be more consequential.

Using real GDP per capita (*DYPC*), calculated by the OECD using the expenditure approach, I first examine the issue of time horizons. My intuition, supported by prior research, is that voters in a particular election weigh economic outcomes more heavily as the distance between the economic outcome and the election decreases. The response variable here is change in vote share over the prior election for the incumbent party of the chief executive. Table 1 presents bivariate regressions. For each variable, *DYPC_q**a***, ***a*** refers to the number of quarters prior to the election.

[Table 3.1 here]

The estimates do not provide clear-cut evidence for voter myopia. Growth in the quarter of election appears to have little effect on reelection prospects. This is less puzzling once one considers that half of the quarter (on average) should occur after elections, that many voters may decide whether to support the incumbent prior to the quarter of election, and that growth rates are typically reported after the quarter, and thus after the election. Hence voters may not have information on aggregate macroeconomic outcomes, even if they have information on the state of their personal finances. More surprisingly, it appears that growth in the seventh, fourteenth, and seventeenth quarters prior to the election are stronger predictors of incumbent reelection prospects than growth in any of the six quarters prior to election.

In the following table, I estimate multiple regressions in which the predictor variables are quarterly growth rates for the twelve quarters prior to the election. I also control for the lagged change in incumbent vote share, incumbent vote share in the prior election, the length of the incumbent's term in office in quarters, growth in the two prior quarters, and country and year fixed effects when necessary.[21] Table 3.2 presents estimates of the effects of growth rates in the twelve quarters prior to the election on the change in the vote share of the incumbent party of the chief executive. Again, there does not appear to be particularly strong evidence for voter myopia.

[Table 3.2 here]

[21] When F tests reject the null hypothesis of consistency between country or year fixed effects and pooled OLS ($\alpha < .05$), I include fixed effects. When Breusch-Pagan tests reject the null hypothesis of homoscedasticity, I compute heteroscedasticity-consistent standard errors.

In the final set of regressions, I examine the relationship between annual change in GDP and incumbent party vote share. Apart from only including one annual lag of GDP, I include the same control variables as in Table 3.2. *Lag DPctCE* is the lagged dependent variable: the change in incumbent vote share during the prior election cycle. *DYPC_y**b*** is the change in GDP per capita over the prior year at ***b*** years prior to the election. The annual data similarly indicates that voters sanction incumbents for changes in GDP per capita at all stages of the election cycle.

[Table 3.3 here]

In most models, country fixed effects are significant, suggesting the presence of substantial differences in economic voting effects across countries. In the following section, I explore this cross-national heterogeneity in greater detail, providing a series of tests of the general hypothesis that economic voting effects increase with political cohesion.

Before turning to explaining cross-national variation, I examine potential differences in three specifications of the dependent variable: a binary indicator of incumbent party reelection (*REELECT*), change in vote share of the incumbent party of the chief executive (*DPctCE*), and change in vote share for all parties in government (*DPctGov*). To examine whether voters sanction coalition partners for changes in economic conditions, I subtract incumbent party vote share from incumbent government vote share to calculate change in vote share for coalition partners (*DPctCP*). Table 3.4 presents the results of the analysis using election-term changes in GDP per capita. Table 3.5 presents the same models using election-year changes with one annual lag.

[Tables 3.4 – 3.5 here]

The reelection indicator captures the same general effect as the variable measuring change in incumbent party vote share, with reelection prospects increasing with change in GDP per capita. However, election year effects are insignificant at $\alpha < 0.05$ when *REELECT* is the response variable. Interestingly, voters do not reward junior coalition partners for growth in GDP per capita. In fact, junior coalition partners appear to benefit from low growth, presumably from voters defecting from the party of the chief executive.

This finding has considerable importance for understanding the dynamics of fiscal adjustment under coalition governments. The fact that reasonably informed junior coalition partners need not fear electoral backlash for potentially negative economic effects of fiscal adjustments weakens the plausibility of the claim that stabilizations tend to be delayed under coalition governments. Of course, delayed stabilization may still occur if coalition partners fail to agree on a deficit reduction package that satisfies their policy preferences. However – as the prior chapter has shown – to the extent that distributional conflict among coalition partners over the allocation of the costs of fiscal adjustments does occur, it is not reflected in generally higher deficits among coalition governments. In reality, the opposite is the case: coalition governments tend to run lower deficits. The observation that minor coalition partners are not punished for budget cuts – and may even benefit from adjustments – provides a plausible electoral mechanism in support of this general fiscal policy outcome.

Reassessing Powell and Whitten 1993

I now turn to cross-national variation in economic voting effects. The clarity of responsibility hypothesis remains the most cited explanation of why voters sanction governments in some countries but not others. I thus begin by attempting to replicate Powell and Whitten's findings. I expand Powell and Whitten's sample from 102 elections in 19 democracies to 336 elections in 30 democracies.[22]

Powell and Whitten (PW) begin by estimating a "basic economic model" (see Powell and Whitten 1993, p. 396), in which the change in vote share for parties in government is a function of the inflation rate (measured as the change in consumer prices), unemployment rate, change in GDP, and the vote share of governing parties in the previous election. For the first three columns, the dependent variable is the change in incumbent government vote share over the prior election. For the fourth column, the dependent variable is the change in vote share for the party of the chief executive. The *prior vote %* variable refers to government vote share in the first three columns, and the vote share for the chief executive's party in the fourth column. Table 6 presents these estimates.

[Table 3.6 here]

In the expanded sample, an F test rejects the null hypothesis of consistency between country fixed effects and pooled OLS. For comparison to Powell and Whitten's estimates, I first present results from the pooled OLS model. The coefficients on inflation and lagged government vote share in the expanded sample are relatively consistent with the estimates reported by Powell and Whitten for their more limited sample. The effects of economic growth and unemployment are somewhat stronger after incorporating more recent observations.[23] After substituting vote share of the party of the chief executive for government vote share, the coefficients on growth and

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[22] Following Powell and Whitten, I use data from legislative elections for parliamentary systems; unlike the authors, I use presidential election data for the United States. Contrary to the authors, I exclude Switzerland from my data, since the Swiss chief executive includes representatives from all four major parties for each election cycle in the dataset. The multiparty nature of the Swiss Federal Council prevents the estimation of the electoral consequences for a single party of the chief executive. The fact the four largest parties are all represented in government regardless of electoral outcomes also impedes the estimation of the electoral consequences for all parties in government.

[23] Stronger effects may be the product of excluding Switzerland, where economic voting effects are likely to be relatively weak due to all major parties serving in government with no partisan chief executive. In the United States, substituting presidential elections for elections to the House of Representatives may lead to more substantial estimates of the coefficients on unemployment and change in GDP. However, there remains the possibility that the inclusion of observations from additional countries, primarily those in the former Eastern Bloc increases the magnitude of the estimated effects of growth and unemployment.

unemployment increase slightly in magnitude than those in the pooled OLS model. The t-statistics of both estimates are statistically significant at conventional levels.

Powell and Whitten's "political model" includes five variables based on the aforementioned criteria defining clarity of responsibility: party cohesion (*Party Frag.*), sharing of committee chairs with opposition parties (*Opp. Chair*), opposition control of a politically consequential second chamber (*Bicam. Opp.*), minority government (*Min. Gov.*), and the number of parties in government (*N. Parties*).[24] Table 3.7 provides estimates of the effects of political variables on change in incumbent vote share. Apart from minority government effects, estimates are largely consistent between Powell and Whitten's sample and the expanded sample.

[Table 3.7 here]

Powell and Whitten's final model divides the sample into countries with "less clear" and "clearer" responsibility. The authors compute average values of the five indicators for each country, with each variable worth one point, and divide the sample at the relatively large gap between Sweden (more clear responsibility) and Germany (less clear responsibility). Here, the authors define the government size variable (*Coal. Part.*) as simply the number of parties in government minus 1 (Powell and Whitten 1993, p. 406). I simply code single-party governments as 0 and coalition governments as 1. I code values of each variable for all observations in which available election year data is available on all economic and political variables in Table 3.7. Table 3.8 presents Powell and Whitten's aggregate clarity of responsibility scores, along with my own calculations.[25] Although the ranking of countries changes, the division of countries into "clearer" and "less clear" responsibility is consistent with my calculations in the extended time series.

[Table 3.8 here]

Table 3.9 presents economic voting effects in the limited and expanded samples, using this division of countries by clarity of responsibility. In their estimates, but not in their prior model of the general effects of macroeconomic conditions on incumbent government vote share, Powell and Whitten measure growth, inflation, and unemployment relative to international averages. The authors also estimate conditional partisan effects, interacting unemployment and inflation

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[24] In each case, clarity of responsibility decreases with the value of the variable. *Party Frag.* and *Opp. Chair* refer to general attributes of countries' political systems, and do not vary by year within each country, except for *Opp. Chair* in Denmark before and after 1973. *Bicam. Opp.* only varies within countries with a strong second chamber (Australia and Germany). The United States has a strong second chamber, but Powell and Whitten do not include divided governments in presidential systems as cases of bicameral opposition. However, I code instances of divided government in the United States as minority governments, following Powell and Whitten's (1993, p. 401) definition of *Min. Gov.* as "the government's command of a secure legislative majority." I code these variables for the countries in Powell and Whitten's sample only, reducing the number of observations in the expanded sample from 336 to 284.

[25] Again, I exclude Switzerland from my sample for the aforementioned reasons.

with a variable indicating right-wing government status. The authors' intuition is that voters reward right-wing governments for lower levels of inflation, and reward left-wing governments for lower unemployment rates. I also include these interaction terms in my model. Interestingly, the authors include an additional binary variable measuring minority government status, one of the components of the clarity of responsibility index.[26]

[Table 3.9 here]

Although the difference in the estimated effects of unemployment on vote share is greater in the expanded sample, the difference in the coefficients on economic growth is far less substantial between countries with clearer and less clear responsibility. It is also impossible to infer from these models whether within-country changes in the clarity of responsibility affect the extent to which voters sanction governments for macroeconomic outcomes. Without within-country variation, estimates may be confounded by unobserved country-specific factors.

Original tests of government cohesion and economic voting

Moving from my reassessment of Powell and Whitten's conclusions to original analysis, I substitute the phrase "parliamentary cohesion" for "clarity of responsibility." While the authors sufficiently distinguish between the two concepts, the hypothesis that voters are more likely to hold governments responsible for macroeconomic conditions when government clarity of responsibility is sufficiently high is in itself circular. Moreover, using "parliamentary cohesion" engages the analysis with studies of the relationship between cohesion and fiscal adjustment: the initial objective of this investigation and most-cited cause of government deficits.[27]

To estimate the effect of cohesion on the sensitivity of government vote share to economic conditions, I first regress the change in incumbent vote share on the interaction between party cohesion of the legislature and change in GDP (*DGDP*). I then test whether government strength relative to parliament affects the extent to which voters sanction governments for changes in GDP, both in general and holding parliamentary cohesion fixed. To measure parliamentary cohesion, I estimate the effective number of parties using share of seats in parliament. Before interacting parliamentary cohesion with change in GDP, I separate governments into four factors, *ENP1*, *ENP2*, *ENP3,* and *ENP4,* ranked by increasing effective number of parties in government.[28] To measure government strength relative to parliament, I divide the effective number of parties in government using share of seats in government by the effective number of parties in parliament, and index observations by quartile of this ratio (*GPQ1*, *GPQ2*, *GPQ3*,

[26] See Powell and Whitten (1993, p. 407)
[27] See for instance Alesina and Drazen 1991; Alesina and Perotti 1994; Perotti and Kontopoulos 2002; Roubini and Sachs 1989.
[28] Since 166 of the 352 observations are single-party governments, I code all 166 as ENP1, and assign the remaining 186 equally among the other three factors.

GPQ4). I use the change in vote share for the party of the chief executive as the dependent variable in all three models. Table 3.10 presents the results.

[Table 3.10 here]

In Model 1, I find no statistically significant evidence that economic voting effects increase with parliamentary cohesion. Incumbent parties of the chief executive generally lose fewer votes when the effective number of parties in parliament is greater. However, the coefficients on the interaction terms are mixed, with the only statistically significant interaction term indicating that the sensitivity of incumbent government vote share to economic growth *increases* with government cohesion. Model 2 shows that incumbents tend to lose more votes between elections when more parties are in government relative to the opposition. Yet these effects are statistically insignificant. Parties of the chief executive tend to lose more votes when the ratio of parties in government to parliament is higher, though these estimates are similarly insignificant. Model 3 reports estimates largely consistent with those in Models 1 and 2. There is no clear relationship between economic voting effects and either parliamentary cohesion or the cohesion of government relative to parliament.

Although interactions between change in GDP and indicators of fragmentation are inconsistent and generally insignificant, estimates from Models 1-3 suggest that parliamentary fragmentation may weaken the extent to which voters withdraw support from incumbents between elections, particularly when more parties are in government relative to parliament. Table 3.11 presents estimates of the relationships between change in incumbent vote share and the effective number of parties in government (*ENPG*) and parliament (*ENPP*) in the year of election.

[Table 3.11 here]

When measuring fragmentation with the continuous variables *ENPG* and *ENPP*, the data indicates that voters are in fact more likely to defect from incumbents to opposition parties or minor coalition partners in more fragmented systems. Again, the t-statistics are not statistically significant at conventional levels.

Having cast doubt on the claim that party cohesion of government and parliament increases the extent to which voters sanction governments in general and for macroeconomic conditions, I examine other dimensions of political fragmentation: minority and coalition government status and the number of parties in government. Table 3.12 reports estimated effects of these variables. Table 3.13 interacts the minority and coalition variables with election-year change in GDP.

[Tables 3.12 – 3.13 here]

In all four models in which the variable is included, macroeconomic voting effects are stronger among minority governments. Similarly, the change in vote share between elections tends to be greater when minority governments are in office. T-statistics on each of the six estimates are insignificant at conventional levels. The extent to which voters sanction the party of the chief executive is also greater in coalition governments, though economic voting effects are slightly weaker. Estimated coalition effects are similarly insignificant.

To conclude the analysis of the relationship between parliamentary and government cohesion and changes in incumbent party vote share, I find little to no evidence that the ability of voters to sanction incumbents is weaker in less cohesive governments. However, it is important to note that voters generally assign responsibility to the party of the chief executive rather than junior coalition partners. There is weaker evidence that coalition partners may even benefit from poor economic conditions, as voters defect from primary coalition partners to other parties in the coalition (Table 3.4).

Despite these largely negative findings, it is clear that economic conditions impose significant constraints on governing parties, regardless of the specific characteristics of the government or parliament. Voters hold governments accountable for macroeconomic outcomes across their entire term in office. There is little that governments can do to avoid backlash for poor economic performance. General voting effects are stronger in minority and coalition governments, adding coalition partners only increases the expected magnitude of electoral sanctions, and in any event voters appear to assign full responsibility to the party of the chief executive rather than coalition partners.

In the final section of this chapter, I turn from testing hypotheses to exploring variation in economic voting across countries and time. Although I cannot use exploratory data analysis to confirm why voters sanction governments in some countries and periods but not others, this approach may provide more suggestive evidence to elucidate the electoral constraints facing governments. Despite the limitations of the exploratory approach for causal inference – it is obviously incorrect statistical practice to test hypotheses suggested by the data – describing variation across countries and time is in itself interesting, useful for understanding the politics of fiscal adjustment, and may suggest hypotheses to be tested with other data. In particular, insights from the data on the electoral consequences of macroeconomic conditions may generate hypotheses to test using the data on changes in fiscal variables. Table 3.14 presents estimates of economic voting in cross-national perspective.

[Table 3.14 here]

Each country sample has relatively few observations, ranging from two in South Korea (making within-country statistical analysis impossible for the country in these models) to 21 in Australia and Denmark. A cursory look at the data suggests a few explanations for cross-national variation in economic voting, each of which may help in the generation of hypotheses concerning the electoral effects of fiscal policies. Effects appear stronger in nascent democracies: the coefficients on election-year change GDP are greatest in Hungary, Poland, Slovenia, and Slovakia. This observation is consistent with Brender and Drazen (2005)'s finding that political budget cycles are limited to democracies in their first four elections. Brender and Drazen argue that voters in new democracies are less informed and experienced, and are thus more likely to be fooled by fiscal manipulation.

However, it is possible that stronger effects in new democracies are merely a reflection of the electoral context in post-Eastern Bloc countries. Perhaps economic voting is more salient during transitions to market economies. Nonetheless, the estimates for Greece, Spain, and Portugal suggest that the new democracy effect is not limited to the experience of Central and Eastern Europe in the 1990s. One possibility is that party systems tend to be more weakly institutionalized in these countries. Voters may be more likely to defect from incumbents when voters' allegiances to governing parties is weak and new alternatives regularly arise at each subsequent election.

Effects also appear weaker in federal systems, with the notable exception of the United States. In Austria, Belgium, Canada, and Germany, change in incumbent government vote share tends to decline with change in GDP. The intuition here is straightforward: voters are more likely to assign responsibility to local, regional, and provincial governments when macroeconomic policy is legislated and enacted at the subnational level. Fiscal federalism appears to be a strong candidate for explaining variation in the extent to which voters sanction incumbents at the national level for fiscal adjustments. The data also suggests variation between Eurozone and non-euro countries, with effects apparently weaker among the former set. Fiscal federalism is a less credible mechanism here: relatively little revenue is collected at the supranational level. More plausibly, the broader role of the European Union in coordinating macroeconomic policy among member states may lead voters to assign less responsibility to governments for economic outcomes.

Moving from exploratory data analysis on cross-national patterns in economic voting to developing and testing a theory of fiscal adjustment, it is also important to consider the effects that adjustments may have on economic voting. Relatively large changes in taxes and spending may lead voters to increasingly reward or punish governments, not (only) for changes in fiscal variables per se, but on their broader macroeconomic consequences. Table 3.15 presents comparisons of economic voting effects in old and new democracies, federal and unitary systems, and Eurozone and non-euro countries. For each estimate, I control for prior vote percentage and swing and the length of the incumbent's term in office.

[Table 3.15 here]

The differences in estimates between old and new democracies suggests a voting dynamic in support of political budget cycles. Whereas term-length estimates are slightly stronger in old democracies, election-year estimates are much stronger in new democracies. To the extent that governments have the macroeconomic management tools at their disposal, incumbents have greater electoral incentives to increase the election-year rate of economic growth in new democracies.

The observation that election-year voting effects are weaker in federal systems does not hold for term-length changes in GDP per capita. One possibility is that voters in federal systems attribute responsibility to subnational governments for short-term economic conditions, for which it is easier to observe the immediate relationship between fiscal policies and macroeconomic outcomes. However, voters may be more likely to sanction central governments for longer-term economic performance, which is perhaps more likely to be the product of policies set at the national level.

Similarly, the observation of weaker short-term economic voting effects among countries that have adopted the euro does not hold for term-length changes. Perhaps voters find it more difficult to sanction governments when short-term macroeconomic conditions are affected by monetary policies set by the European Central Bank and fiscal policies are designed to meet targets set by the European Commission. As with voters in federal systems, voters in countries in the Economic and Monetary Union may take a longer view toward economic outcomes when sanctioning national governments. Again, these hypotheses are entirely speculative, and require confirmation in a separate sample.

Before turning to the electoral effects of fiscal adjustments, I briefly examine variation in economic voting effects across time. I divide the sample into five periods: prior to 1970 (63 observations), 1970-79 (62 observations), 1980-89 (63 observations), 1990-99 (67 observations), 2000-07 (66 observations), and 2008-15 (61 observations). As with the prior models, I control for prior vote percentage and swing and the length of the incumbent's term in office. Table 3.16 presents the results.

[Table 3.16 here]

Interestingly, economic voting effects are relatively weak throughout the first decades of the sample. Only in the 1980s do effects become significant, a puzzling trend that appears to contradict the shift in voters away from traditional class-based politics toward the adoption of "postmaterialist" values in their voting behavior. During the Great Recession, voters appear to have sanctioned governments for term-length rather than election-year macroeconomic performance. This may be due to the ability of governments to convince voters that contractionary economic outcomes in the short-term are justified by recovery in subsequent years. Estonia under the Reform Party is perhaps the clearest politically successful example of this strategy. I will return to this issue of temporal variation in estimated effects when examining the electoral effects of fiscal adjustments.

Conclusion

What have we learned from this exploration of economic voting effects? And how do the conclusions of this series of statistical models suggest hypotheses for constructing a theory of how voters respond to fiscal adjustments? At the most general level, the analysis shows that voters reward incumbents for growth and punish them when the economy performs poorly. This finding remains after correcting for changes in population by using change in GDP per capita. Voters also clearly punish governments for unemployment. Interestingly, prior research that indicates that voters sharply discount prior economic performance when evaluating incumbent governments does not generally hold across countries and time.

I find no statistically significant differences in economic voting effects between majority and minority governments, single-party and coalition governments, fragmented and cohesive governments and parliaments, and governments that are more or less cohesive relative to the opposition. Instead, I find that voters assign responsibility to the party of the chief executive but not coalition partners. This suggests that coalition partners should not fear electoral backlash for economically costly policies. Delay over fiscal adjustments in coalition governments is likely to occur through disagreement over policy preferences rather than unwillingness to impose costly measures on constituents.

The “clarity of responsibility” hypothesis finds little support in the expanded sample, and no support using alternative measures of government and parliamentary cohesion. However, exploratory analysis suggests other factors may explain variation in economic voting. Election-year effects are weaker in established democracies, federal systems, and countries that have adopted the euro. These variables may help to explain why voters sanction governments for fiscal policies to different degrees in different countries during different periods. I turn to this issue in the next chapter.

Table 3.1 Electoral effects of change in quarterly GDP per capita (bivariate regressions)

Dependent variable: change in vote share, incumbent party of chief executive

	Estimate (Standard Error)	Number of Observations
DYPC_q0	0.03 (0.07)	351
DYPC_q1	0.23 (0.08) ***	351
DYPC_q2	0.16 (0.07) **	352
DYPC_q3	0.08 (0.08)	348
DYPC_q4	0.14 (0.07) *	343
DYPC_q5	0.15 (0.07) **	338
DYPC_q6	0.16 (0.08) **	333
DYPC_q7	0.25 (0.09) ***	314
DYPC_q8	0.11 (0.08)	304
DYPC_q9	0.04 (0.07)	290
DYPC_q10	0.19 (0.09) **	283
DYPC_q11	0.19 (0.08) **	271
DYPC_q12	0.07 (0.08)	245
DYPC_q13	0.16 (0.09) *	208
DYPC_q14	0.27 (0.11) **	195
DYPC_q15	0.04 (0.12)	163
DYPC_q16	- 0.18 (0.13)	88
DYPC_q17	0.27 (0.20)	46
DYPC_q18	- 0.16 (0.15)	38
DYPC_q19	0.16 (0.31)	29
DYPC_q20	0.22 (0.27)	17

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.2 Electoral effects of change in quarterly GDP per capita (multiple regressions)

Dependent variable: change in vote share, incumbent party of chief executive

	Estimate (SE)	F test (CFE)	F test (YFE)	BP test	Adj. R^2 / N	
DYPC_q0	0.05 (0.04)	1.42 *	0.92	13.96 **	0.14	342
DYPC_q1	0.25 (0.07) ***	1.41 *	0.90	14.16 **	0.14	339
DYPC_q2	0.13 (0.08) *	1.67 **	0.86	12.37 *	0.17	335
DYPC_q3	0.11 (0.05) **	1.58 **	0.79	14.78 **	0.18	328
DYPC_q4	0.26 (0.08) ***	1.71 **	0.77	16.19 **	0.18	326
DYPC_q5	0.13 (0.09)	1.88 ***	0.78	18.91 ***	0.20	311
DYPC_q6	0.19 (0.11) **	1.94 ***	0.82	17.64 ***	0.19	301
DYPC_q7	0.34 (0.10) ***	1.89 ***	0.89	13.74 **	0.15	287
DYPC_q8	0.13 (0.09)	1.75 **	0.89	11.37 *	0.10	280
DYPC_q9	0.07 (0.07)	1.62 **	0.86	9.31	0.10	268
DYPC_q10	0.13 (0.10)	1.49 *	0.82	8.43	0.10	243
DYPC_q11	0.26 (0.11) **	1.53 *	0.95	9.00	0.09	206
DYPC_q12	0.05 (0.09)	1.51	1.00	8.94	0.09	193

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.3 Electoral effects of change in annual GDP per capita (multiple regressions)

Dependent variable: change in vote share, incumbent party of chief executive

DYPC_y0	0.34 (0.15) **			
DYPC_y1	0.72 (0.24) ***	0.63 (0.26) **		
DYPC_y2		0.41 (0.19) **	0.67 (0.27) **	
DYPC_y3			0.23 (0.17)	0.86 (0.50) *
DYPC_y4				0.18 (0.45)
Lag DPctCE	0.04 (0.08)	- 0.00 (0.08)	0.05 (0.10)	0.09 (0.20)
Prior vote %	- 0.43 (0.08) ***	- 0.32 (0.09) ***	- 0.26 (0.08) ***	- 0.45 (0.21) **
# Quarters	- 0.35 (0.13) ***	- 0.26 (0.29)	- 0.31 (0.31)	2.53 (1.38) *
F test (CFE)	2.42 ***	2.05 ***	1.87 **	0.96
F test (YFE)	0.86	0.78	1.06	2.24
BP test	17.49 ***	16.16 ***	8.12	3.60

Adj. R^2	0.22	0.15	0.13	0.22
N	312	267	160	31

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.4 Electoral effects of change in GDP per capita, election term

Dependent variables:

REELECT = binary indicator of reelection of party of chief executive
DpctCE = change in vote share of party of chief executive over prior election
DpctGov = change in vote share of parties in government over prior election
DPctCP = change in vote share of junior coalition partners over prior election

	REELECT	DPctCE	DpctGov	DPctCP
DYPC	0.04 (0.01) ***	1.12 (0.23) ***	1.03 (0.22) ***	- 0.32 (0.33)
Lag DpctCE	0.00 (0.00)	0.03 (0.07)	0.03 (0.08)	0.07 (0.11)
Prior vote %	0.01 (0.00)	- 0.36 (0.07) ***	- 0.23 (0.07) ***	0.11 (0.08)
# Quarters	0.00 (0.01)	- 0.23 (0.08) ***	- 0.28 (0.12) **	0.13 (0.17)
F test (CFE)	1.81***	2.35 ***	2.26 ***	1.28
F test (YFE)	0.78	0.81	0.91	1.61 **
BP test	8.87 *	14.51 **	8.07 *	3.76
Adj R^2	0.06	0.20	0.10	0.03
N	325	325	325	166

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.5 Electoral effects of change in GDP per capita, election year

	REELECT	DpctCE	DpctGov	DPctCP
DYPC_0	0.02 (0.01) *	0.34 (0.15) **	0.25 (0.18)	- 0.69 (0.35) *
DYPC_1	0.01 (0.01)	0.72 (0.24) ***	0.71 (0.20) ***	0.01 (0.43)
Lag DpctCE	0.00 (0.00)	0.04 (0.08)	0.02 (0.08)	- 0.07 (0.11)
Prior vote %	0.01 (0.00) **	- 0.43 (0.08) ***	- 0.26 (0.08) ***	0.18 (0.08) **
N. Quarters	- 0.00 (0.01)	- 0.35 (0.13) ***	- 0.36 (0.17) **	0.14 (0.24)
F test (CFE)	1.62 **	2.42 ***	2.15 ***	1.17
F test (YFE)	0.88	0.86	0.89	1.60 **
BP test	5.49	17.49 ***	5.35	3.78
Adj. R^2	0.05	0.22	0.11	0.06
N	312	312	312	159

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variables:

REELECT = binary indicator of reelection of party of chief executive
DpctCE = change in vote share of party of chief executive over prior election
DpctGov = change in vote share of parties in government over prior election
DPctCP = change in vote share of junior coalition partners over prior election

Table 3.6 Economic determinants of change in government vote share (election year)

	PW 1993	Expanded	Expanded (CFE)	Expanded (CE)
Inflation	- 0.01 (0.10)	0.03 (0.06)	0.09 (0.04) **	0.03 (0.03)
Unemp.	- 0.16 (0.12)	- 0.46 (0.11) ***	- 0.38 (0.21) *	- 0.51 (0.19) ***
GDP change	0.12 (0.17)	0.30 (0.15) **	0.41 (0.15) ***	0.49 (0.13) ***
Prior vote %	- 0.09 (0.04) **	- 0.25 (0.04) ***	- 0.36 (0.06) ***	- 0.42 (0.07) ***
Intercept	2.62 (2.63)	9.42 (2.33) ***	n/a	n/a
DV	DPctGov	DpctGov	DpctGov	DpctCE
Model	OLS	OLS	CFE, HCSE	CFE, HCSE
N	102	336	336	336

Adj. R^2	0.03	0.14	0.15	0.21
F test (CFE)	n/a	n/a	2.02 ***	1.73 **
F test (YFE)	n/a	n/a	0.90	0.88
BP test	n/a	n/a	12.87 **	16.91 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.7 Political determinants of change in government vote share (election year)

	PW 1993	Expanded	Expanded (CE)
Party Frag.	2.14 (0.88) **	2.72 (1.25) **	2.38 (1.08) **
Opp. Chair	3.10 (1.09) ***	2.24 (1.00) **	1.14 (0.78)
Bicam. Opp.	2.52 (1.60)	1.27 (1.54)	1.88 (1.25)
Min. Gov.	3.16 (1.37) **	- 0.15 (1.06)	1.02 (0.80)
N. Parties	0.61 (0.43)	0.40 (0.36)	- 0.61(0.42)
Prior vote %	- 0.11 (0.05) **	- 0.23 (0.05) ***	- 0.21 (0.05) ***
Lag DPctCE	- 0.17 (0.08) **	- 0.11 (0.07)	- 0.11 (0.06) *
Intercept	0.09 (2.23)	6.31 (2.37) ***	6.05 (2.65) **
DV	DPctGov	DPctGov	DPctCE
Model	OLS	OLS	OLS
N	102	284	284
Adj. R^2	0.26	0.12	0.13
F test (CFE)	n/a	0.88	0.90
F test (YFE)	n/a	0.90	0.87
BP test	n/a	10.32	12.21 *

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.8 Clarity of government responsibility, country averages

	(PW)	Party Frag.	Opp. Chair	Bicam Opp.	Min.	Coal. Part.	**Mean**
(Clearer responsibility)							
New Zealand	0	0	0	0	0.45	0.27	**0.73**
Greece	0	0	0	0	0.09	0	**0.09**
France	0.1	0	0	0	0.09	1.45	**1.55**
Britain	0.2	0	0	0	0	0	**0**
Canada	0.3	0	0	0	0.47	0	**0.47**
Australia	0.4	0	0	0.81	0.10	0	**0.90**
Ireland	0.7	0	0	0	0.45	0.91	**1.36**
United States	1.0	1	0	0	0.69	0	**1.69**
Japan	1.0	1	0	0	0.13	0.50	**1.63**
Austria	1.2	0	1	0	0.13	0.69	**1.81**
Sweden	1.4	0	1	0	0.87	0.47	**2.33**
(Less Clear Responsibility)							
Germany	2.6	0	0	0.53	0	1	**2.58**
Belgium	2.6	0	1	0	0	2.93	**3.93**
Denmark	2.8	0	0.71	0	0.95	1.21	**2.89**
Norway	2.8	0	1	0	0.64	0.93	**2.57**
Italy	3.2	1	0	0	0.30	3	**4.30**
Netherlands	3.2	0	1	0	0.06	2	**3.06**
Finland	3.3	0	0	0	0.07	2.71	**2.79**
Switzerland	5.0	n/a	n/a	n/a	n/a	n/a	**n/a**

Table 3.9 Election year economic voting effects, divided by clarity of responsibility

Dependent variable: change in incumbent government vote share

	Less clear responsibility		Clearer responsibility	
	PW	Expanded	PW	Expanded
Chg. in GDP	0.07 (0.35)	0.44 (0.29)	0.49 (0.19) **	0.49 (0.11) ***
Inflation	- 0.30 (0.30)	0.09 (0.22)	0.17 (0.17)	0.15 (0.10)
Inf.* Right	0.03 (0.64)	0.84 (0.40) **	- 0.56 (0.27) **	- 0.11 (0.15)
Unemp.	- 0.23 (0.30)	0.21 (0.27)	- 0.61 (0.18) ***	- 0.46 (0.27) *
Unp.* Right	0.57 (0.55)	0.47 (0.41)	0.71 (0.33) **	- 0.19 (0.35)
Min. Gov.	2.06 (2.42)	- 3.67 (1.98) *	4.42 (1.74) **	1.62 (1.23)
Prior vote %	- 0.16 (0.07) **	- 0.33 (0.08) ***	- 0.11 (0.08)	- 0.24 (0.05) ***
Lag DPctCE	- 0.40 (0.16) **	- 0.05 (0.14)	- 0.18 (0.08) **	- 0.10 (0.05) *
Intercept	6.14 (4.06)	11.83 (4.72) **	- 8.27 (3.81) **	7.29 (2.92) **
Model	OLS	OLS	OLS	OLS, HCSE
N	41	100	61	154
Adjusted R^2	0.21	0.24	0.30	0.20
F test (CFE)	n/a	0.23	n/a	1.24
F test (YFE)	n/a	1.83	n/a	0.93
BP test	n/a	8.06	n/a	18.84 **

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.10 Parliamentary cohesion and economic voting effects (election year)

	Model 1	Model 2	Model 3
DGDP	0.56 (0.17) ***	0.83 (0.30) ***	0.83 (0.30) ***
ENP2	0.37 (1.24)		2.44 (3.49)
ENP3	- 3.80 (1.58) **		- 1.24 (4.23)
ENP4	- 0.63 (1.74)		2.20 (4.80)
DGDP * ENPQ2	- 0.04 (0.34)		0.05 (0.66)
DGDP * ENPQ3	0.66 (0.28) **		0.97 (0.86)
DGDP * ENPQ4	- 0.21 (0.22)		0.55 (1.01)

GPQ2		- 0.15 (1.63)	- 0.31 (1.65)
GPQ3		- 1.28 (1.76)	- 2.19 (1.86)
GPQ4		- 2.43 (1.73)	- 3.66 (1.86) *
DGDP * GPQ2		- 0.41 (0.37)	- 0.44 (0.38)
DGDP * GPQ3		0.01 (0.39)	- 0.35 (0.79)
DGDP * GPQ4		- 0.25 (0.37)	- 1.00 (1.00)
Prior vote %	- 0.36 (0.06) ***	- 0.38 (0.06) ***	- 0.37 (0.06) ***
Lag DPctCE	0.01 (0.06)	0.04 (0.06)	0.02 (0.06)
N Quarters	- 0.27 (0.10) ***	- 0.27 (0.10) **	- 0.24 (0.10) **
Model	CFE, HCSE	CFE	CFE
N	352	352	352
Adjusted R^2	0.19	0.19	0.20
F test (CFE)	1.71 **	1.86 ***	1.82 ***
F test (YFE)	0.95	0.94	0.98
BP test	18.62 **	15.27	19.16

Reference groups: ENP1, GPQ1

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.11 Political cohesion and change in incumbent vote share

Dependent variable: change in vote share, party of chief executive

ENPG	- 0.52 (0.45)		- 0.27 (0.58)
ENPP		- 0.44 (0.39)	- 0.35 (0.49)
Prior vote %	- 0.18 (0.05) ***	- 0.20 (0.05) ***	- 0.20 (0.06) ***
Lag DPctCE	- 0.11 (0.06) *	- 0.11 (0.06) **	- 0.11 (0.06) *
N Quarters	- 0.24 (0.07) ***	- 0.25 (0.07) ***	- 0.24 (0.07) ***
Model	OLS, HCSE	OLS, HCSE	OLS, HCSE
N	368	368	368
Adjusted R^2	0.10	0.10	0.10
F test (CFE)	1.47 *	1.50 *	1.49 *
F test (YFE)	0.99	0.95	0.98
BP test	17.82 ***	15.27***	18.39 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.12 Comparative voting effects of minority, coalition, and multiparty governments

Dependent variable: change in vote share, party of chief executive

Minority	- 0.66 (1.20)			- 0.66 (0.93)
Coalition		- 1.31 (1.31)		- 0.21 (1.10)
N Parties			- 0.51 (0.39)	- 0.55 (0.42)
Prior vote %	- 0.29 (0.07) ***	- 0.32 (0.07) ***	- 0.19 (0.05) ***	- 0.20 (0.05) ***
Lag DPctCE	- 0.03 (0.07)	- 0.02 (0.07)	- 0.11 (0.06) *	- 0.11 (0.06) *
N Quarters	- 0.29 (0.09) ***	- 0.26 (0.09) ***	- 0.23 (0.09) ***	- 0.25 (0.08) **
Model	CFE, HCSE	CFE, HCSE	OLS, HCSE	OLS, HCSE
N	369	369	368	368
Adjusted R^2	0.12	0.12	0.11	0.11
F test (CFE)	1.51 **	1.52 **	1.45 *	1.48 *
F test (YFE)	0.94	0.94	1.04	1.03
BP test	16.97 ***	14.71 ***	14.46 ***	18.26 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.13 Economic voting effects of minority, coalition, and multiparty governments (election year)

Dependent variable: change in vote share, party of chief executive

DGDP	0.54 (0.12) ***	0.68 (0.15) ***	0.54 (0.13) ***
Minority	- 1.44 (1.52)		- 1.81 (1.59)
Coalition		- 1.09 (1.43)	- 1.59 (1.26)
DGDP * Minority	0.36 (0.25)		0.39 (0.24)
DGDP * Coalition		- 0.10 (0.20)	- 0.03 (0.18)
Prior vote %	- 0.34 (0.08) ***	- 0.37 (0.08) ***	- 0.37 (0.08) ***
Lag DpctCE	- 0.00 (0.07)	0.01 (0.07)	0.01 (0.07)
N Quarters	- 0.27 (0.09) ***	- 0.25 (0.09) ***	- 0.26 (0.09) ***
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE
N	352	352	352
Adjusted R^2	0.17	0.17	0.18

F test (CFE)	1.63 **	1.67 **	1.64 **
F test (YFE)	0.89	0.90	0.88
BP test	18.62 ***	16.91 ***	20.13 ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.14 Economic voting effects by country (bivariate regressions)

Dependent variable: change in incumbent vote share, party of chief executive

	Independent variable (election year, change)		Independent variable (term, change)	
Country	GDP	GDPPC	GDP	GDPPC
Australia	0.48 (0.46)	0.48 (0.45)	0.19 (0.66)	0.16 (0.71)
Austria	- 0.16 (0.74)	- 0.23 (0.75)	0.29 (1.06)	0.36 (1.10)
Belgium	- 0.25 (0.58)	- 0.16 (0.66)	- 0.57 (0.58)	- 0.70 (0.72)
Canada	- 0.79 (1.36)	- 1.04 (1.51)	2.20 (1.11)	2.61 (1.23)
Czech Rep.	1.19 (1.27)	1.35 (1.31)	1.62 (1.42)	1.88 (1.33)
Denmark	- 0.38 (0.70)	- 0.29 (0.74)	- 1.03 (0.80)	- 0.97 (0.86)
Estonia	- 0.76 (13.10)	- 1.48 (21.75)	0.55 (0.56)	0.54 (0.55)
Finland	0.05 (0.23)	0.03 (0.23)	0.57 (0.42)	0.53 (0.41)
France	2.10 (1.11) *	2.16 (1.33)	0.78 (1.58)	0.67 (1.73)
Germany	- 0.06 (0.33)	0.09 (0.30)	0.78 (0.67)	1.16 (0.59)
Greece	0.80 (0.42) *	0.83 (0.42) *	0.85 (0.66)	1.01 (0.65)
Hungary	8.35 (2.00) **	8.48 (1.80) **	5.52 (1.49) *	5.49 (2.05)
Iceland	0.40 (0.35)	0.34 (0.31)	1.02 (0.61)	0.79 (0.59)
Ireland	0.90 (0.94)	0.45 (0.93)	2.17 (0.63) ***	1.91 (0.61) ***
Israel	- 1.77 (2.38)	- 1.82 (2.43)	- 5.94 (2.77) *	- 6.79 (0.08) *
Italy	0.19 (0.41)	0.15 (0.43)	0.73 (0.59)	0.12 (0.59)
Japan	0.26 (0.47)	0.38 (0.53)	0.38 (0.53)	0.27 (0.59)
Korea	- 8.21 (n/a)	- 8.29 (n/a)	- 14.51 (n/a)	- 13.45 (n/a)
Luxembourg	- 0.20 (0.30)	- 0.24 (0.29)	- 0.61 (0.58)	- 0.90 (0.60)
Netherlands	0.14 (0.83)	0.20 (0.89)	- 0.08 (0.91)	0.05 (1.04)
New Zealand	0.50 (0.41)	0.55 (0.44)	0.40 (0.71)	0.76 (0.88)
Norway	0.16 (0.58)	0.12 (0.55)	1.10 (0.82)	0.89 (0.78)
Poland	6.46 (1.72) **	6.43 (1.76) **	8.60 (5.37)	7.43 (5.74)
Portugal	1.58 (1.08)	1.88 (1.09)	3.20 (1.15) **	3.47 (1.08) **

Slovakia	1.96 (1.23)	1.91 (1.23)	1.82 (1.77)	1.99 (1.77)
Slovenia	5.50 (4.50)	4.19 (4.47)	3.14 (2.23)	2.95 (1.71)
Spain	1.27 (1.51)	1.01 (1.53)	2.57 (1.45)	2.37 (1.47)
Sweden	0.21 (0.44)	0.10 (0.46)	- 0.16 (0.57)	- 0.39 (0.56)
UK	0.66 (0.56)	0.72 (0.57)	- 0.09 (0.77)	- 0.08 (0.90)
US	1.54 (1.19)	1.51 (1.22)	0.93 (1.63)	2.21 (2.35)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.15 Economic voting in cross-national perspective

Dependent variable: change in incumbent vote share, party of chief executive

	Independent variable (election year, change)		Independent variable (term, change)	
	GDP	GDPPC	GDP	GDPPC
Old Dem.	0.45 (0.12) ***	0.46 (0.13) ***	0.81 (0.16) ***	0.88 (0.17) ***
New Dem.	1.42 (0.90)	1.42 (0.93)	0.61 (1.36)	0.78 (1.25)
Federal	0.32 (0.30)	0.43 (0.31)	0.81 (0.41) *	1.05 (0.46) **
Unitary	0.53 (0.14) ***	0.52 (0.15) ***	0.79 (0.19) ***	0.79 (0.19) ***
Eurozone	0.34 (0.37)	0.25 (0.39)	1.57 (0.46) ***	1.54 (0.46) ***
Non-euro	0.49 (0.14) ***	0.51 (0.14) ***	0.63 (0.18) ***	0.65 (0.19) ***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.16 Economic voting effects over time

	Dependent variable: change in incumbent vote share, party of chief executive			
	Independent variable (election year, change)		Independent variable (term, change)	
	GDP	GDPPC	GDP	GDPPC
Pre-1970	0.20 (0.27)	0.16 (0.27)	- 0.35 (0.38)	- 0.42 (0.38)
1970-79	- 0.12 (0.25)	- 0.07 (0.26)	- 0.56 (0.42)	- 0.42 (0.44)
1980-89	0.62 (0.33) *	0.65 (0.33) *	1.23 (0.46) ***	1.38 (0.46) ***
1990-99	0.36 (0.31)	0.51 (0.32)	0.83 (0.41) **	0.99 (0.41) **
2000-07	0.73 (0.48)	0.68 (0.50)	0.51 (0.55)	0.49 (0.53)
2008-15	0.17 (0.45)	- 0.07 (0.48)	2.26 (0.63) ***	1.71 (0.75) **

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4. The Electoral Effects of Fiscal Policies

Do voters reward or punish incumbent governments for expansionary budgetary measures – cutting taxes and increasing government spending – in the years prior to elections? Similarly, do voters sanction governments for contractionary fiscal policies? Do the electoral consequences of fiscal adjustments depend on the balance of expenditure and revenue measures? Are voters biased toward protecting social expenditure from the costs of adjustment? Does the extent to which voters sanction incumbent parties for changes in fiscal outcomes depend on whether the government is composed of a single party or coalition of parties, or whether or not the party in government commands a majority of seats in parliament? Do voters sanction right-wing parties differently? Are the electoral effects of budgetary measures different between incumbent governments in new and established democracies, and between those facing reelection under majoritarian and proportional electoral rules? Examining national-level data on fiscal and electoral outcomes, I address each of these questions in turn, while acknowledging the need for further research at every stage of the analysis.[29] Each question lends itself to a wide range of observational and experimental research designs at cross-national, single-country, and subnational levels. My contribution here is simply to identify whether or not changes in the level and composition of government expenditure and revenue are associated with changes in incumbent party vote share in national elections.

We know remarkably little about the relationship between fiscal policies and electoral outcomes. This is unfortunate given the current practical relevance of the topic. One can easily concoct alternative narratives to explain the fates of incumbent parties in countries that have implemented austerity measures to combat the borrowing costs associated with rising government debt. Following the May 2012 election, observers of Greek politics argued that voters punished both the opposition New Democracy and (in particular) the ruling PASOK party (which lost 119 of its 160 seats in parliament) in the 2012 elections for agreeing to deep cuts in government spending and tax increases mandated by creditors (*Financial Times* 2012; *Spiegel Online* 2012; *The Telegraph* 2012). However, in the prior election, the ruling New Democracy party lost 61 seats following an *increase* in the fiscal deficit from -6.7% of GDP to -15.3% of GDP over the prior two years (ParlGov 2015; OECD 2015). Perhaps it was not the increase (in 2009) or decrease (in 2012) in the deficit that led voters to defect from the two dominant Greek parties, but rather low economic growth and high unemployment spurred by a steep decline in foreign credit during the global financial crisis of 2008 and 2009.

During the same time period, a different set of political developments took place in the United Kingdom. In 2010, Bank of England governor Mervyn King predicted that the winner of the general election would be "out of power for a whole generation" due to the severity of budget cuts (*The Guardian* 2010a). The following week, Labour lost 91 seats – a year removed from an

[29] This chapter uses data from the "Economic Voting Dataset" described in Appendix A. For data, please email the author at donnelly.patrick.t@gmail.com.

unprecedented (given available data) increase in the budget deficit from -5.0% to -11.0% of GDP (ParlGov 2015; OECD 2015). Five years later, the Conservative Party was reelected following a similarly unprecedented succession of austerity measures.

Which narrative is correct? Do voters reward or punish governments for budget cuts? Are voters indifferent to fiscal policies, sanctioning governments instead for changes in economic output and unemployment? Or do the electoral consequences of fiscal adjustments depend on the broader economic and political context? In Greece, a member of the European Economic and Monetary Union, a center-left single-party government facing an immediate shortage of credit presided over austerity measures mandated by international lending organizations. In the United Kingdom, a monetarily sovereign country with the ability to borrow at relatively low rates, a center-right coalition government presided over austerity measures without conditions imposed by foreign creditors. Given this contextual variation, it is necessary to expand the sample of observations far beyond these two cases in order to identify the electoral effects of changes in government revenue and expenditure.

Three prior studies have used time-series cross-sectional analysis on national-level data to identify electoral effects, of which two measure electoral consequences using election results. Only one uses change in incumbent party vote share to measure the extent to which voters sanction incumbents. Brender and Drazen (2008) claim that the probability of incumbent reelection in developed countries increases with the change in the budget deficit. Alesina, Carloni, and Lecce (2013) contend that voters in OECD member states do not systematically punish governments for implementing fiscal adjustments. However, using vote share rather than a binary indicator of reelection or change in cabinet ideology, Nyman (2014) finds that incumbents' electoral prospects decrease with the structural budget balance. As I will show later in this chapter, the basic results of these studies fail to replicate using a sample of available data on fiscal variables and elections in high-income democracies. Moreover, none of the studies attempt to estimate the effect of election-year changes in fiscal variables on changes in government vote share – arguably the effect which best identifies the electoral consequences of budgetary expansions and contractions.

The lack of research on the fiscal determinants of incumbent reelection prospects weakens the credibility of theories that assume that governments are necessarily, generally, or conditionally punished for either fiscal adjustment or welfare retrenchment. A classic formulation of the "political budget cycle" theory contends that governments will attempt to maximize vote share using expansionary fiscal policy prior to elections, offset by contractionary fiscal policy after elections (Rogoff 1990). This theory in turn assumes that voters favor expansionary policies but have short retrospective time horizons. To be precise, voters may reward expansionary fiscal policies not because voters favor spending and oppose taxes per se, but also because expansionary fiscal policies may indirectly increase the personal income of the median voter by increasing aggregate demand. This assumes in turn that short-term output increases with the budget deficit, which may not be true in general (Giavazzi and Pagano 1990), or for expenditure-based adjustments (Alesina and Ardagna 2010), though subsequent research from the International Monetary Fund (Guajardo, Leigh, and Pescatori 2011) casts doubt on the validity of the "expansionary fiscal contraction" hypothesis.

One of the most-cited articles in the cross-national study of social policy asserts that governments perceive welfare retrenchment as electorally costly, and thus avoid claiming responsibility for cuts (Pierson 1996). This assumes that voters punish governments for cuts to social programs, an assumption which subsequent research has challenged (Armingeon and Giger 2008; Giger and Nelson 2010), using data on changes in benefit generosity as coded in Scruggs (2004) rather than the level of expenditure. However, it is unclear whether the retrenchment in question takes the form of fiscal adjustment (a reduction in social expenditure without a corresponding increase in non-social expenditure or reduction in taxation), a revenue-neutral reduction in social expenditure offset by a corresponding reduction in taxation, or a revenue-neutral reduction in social expenditure offset by a corresponding increase in non-social expenditure. These three forms of retrenchment have plausibly distinct electoral consequences, each of which I will attempt to identify in the analysis.

Data and sample

In this section, I describe two ways in which researchers have measured electoral outcomes. The most-cited study of the electoral effects of deficits uses a binary measure of incumbent electoral success. An alternative approach, frequently used to identify the electoral effects of macroeconomic conditions, calculates the change in vote share between elections for the incumbent party. I advocate using the change in vote share, which is more accurate and precise than the binary measure. To support this claim, I give specific instances in which the binary variable erroneously measures electoral success or failure. Later, I will show more generally that using the binary measure tends to produce biased estimates of the electoral consequences of deficits.

The sample consists of 355 democratic elections contested between 1948 and May 2015. For a detailed description of the sample, and of other variables included in the analysis, see Appendix 4. Table 4.1 lists the election years and number of observations for all countries in the sample. Table 4.2 presents descriptive statistics of each of the variables used in the statistical models.

[Tables 4.1-4.2 here]

The response variable in each model is a measure of incumbent party electoral performance: either a binary indicator of reelection (*Reelect*), equal to 1 if the party of the incumbent chief executive is reelected and 0 otherwise; or a continuous measure of change in incumbent vote share (*DPct*). Nyman (2014) suggests that incumbent governments may be more likely to implement unpopular fiscal measures when they perceive that their loss in vote share will not cost them reelection. This assumes that governments can adequately identify the prospective electoral costs or benefits of fiscal policies and will enact preferred policies subject to the constraint of reelection, rather than choosing the policies that they perceive will maximize vote share.

By measuring the extent to which voters expand or withdraw support for incumbent parties, rather than whether or not voters' change in support for incumbents leads to reelection, *DPct* is an infinitely more precise measure of incumbent electoral performance than *Reelect*. To take the most extreme examples, using the *Reelect* variable as a measure of incumbent party success or failure would indicate that voters "rewarded" the Progressive Conservative Party of Canada in 1962 with a withdrawal of support of 16.4% of total votes, enough to sustain an eight-month minority government after governing with over 78% of seats in the House of Commons during the prior term! At the other extreme, voters "punished" Fidesz in the 2002 Hungarian elections with an increase in vote share of 12.9%, insufficient to overcome a similar increase in vote share for the opposition MSZP at the expense of minor parties. The Hungarian example highlights a limitation of estimating changes in vote share using support for the party of the chief executive, rather than all parties in government.

Besides more precisely measuring voters' reactions to changes in the level and composition of government expenditure and revenue, *DPct* more accurately captures the direct electoral consequences of fiscal expansions and contractions. Bargaining over the allocation of cabinet portfolios affects whether or not the incumbent party retains power following parliamentary elections in multiparty systems. In some cases, such as Italy throughout the 1980s, the dominant party (e.g. Christian Democracy) may agree to support a government headed by a prime minister of a party with substantially less electoral support (e.g. the Italian Socialist Party).

Moreover, when incumbent parties have a large initial degree of support – such as the Liberal Democratic Party during much of postwar Japanese history – using a binary reelection indicator is unlikely to capture variation in incumbent electoral support, and may inaccurately suggest that voters are not sanctioning incumbent governments for their policies. In contrast, *DPct* simply measures the extent to which voters extend or withdraw support for the incumbent party. Perhaps for this reason, economic voting models tend to use change in incumbent vote share rather than binary indicators of reelection to measure electoral outcomes (Lewis-Beck and Stegmaier 2000; Paldam 1991; Powell and Whitten 1993).

In the next section, I replicate the basic models of Brender and Drazen (2008), and Nyman (2014). I do not replicate Alesina, Carloni, and Lecce's models, which estimate the annual effect of changes in the (structural) budget balance on changes in cabinet ideology. In this chapter, I am strictly interested in the effect of fiscal expansion or contraction on electoral performance in subsequent elections. However, Alesina et al. identify variables which may confound the relationship between changes in the budget deficit and changes in electoral outcomes, two of which I include as control variables in my analysis. The authors include dichotomous political variables indicating whether or not the incumbent administration is a coalition government (*Coal_gov*) or majority government (*Maj_gov*), as well as a continuous variable measuring the number of (continuous) years that the incumbent has held office, including the current year.

In some cases, the prime minister is initially elected with the support of a majority of members of parliament, but later loses majority support while retaining office prior to the subsequent election. In other cases, minority governments gain majority support between elections. Some cabinets gain and lose majority support more than once during an election cycle. In coding the majority government variable, I measure majority status at the end of each quarter, except for *q2*, in which majority status is measured at the time of election. If an election is called immediately after a government loses majority support, I code the government at *t2* as a majority government. Additionally, since voters may be less likely to support incumbents with a longer tenure in office (Romer 2013), I include a variable in each of my original models measuring government duration in quarters (*nQ*).

Brender and Drazen (2008) argue that systematic political budget cycles are limited to new democracies (see also Brender and Drazen 2005), and thus define a binary variable for all observations in the first four post-transition election cycles. I include this variable in my dataset. The authors also include a majoritarian electoral system variable in their models to control for potentially heterogeneous effects between governments (indirectly, in parliamentary systems) elected under plurality rule and proportional representation. Each of these variables is measured at the time of the second election for each election cycle.

Nyman (2014) includes a variable indicating whether or not the party in government (presumably that of the chief executive) is right-wing. Nyman argues that voters are less likely to punish right-wing as opposed to less-wing parties for contractionary fiscal policies, since the distributional costs of fiscal adjustment are typically borne by lower-income citizens. The assumption is that right-wing parties are more likely to benefit electorally for fiscal policies that benefit higher-income voters, while the reelection prospects of left-wing parties increase when budgetary measures lead to a more equal distribution of income or wealth. Similarly, if voters *reward* governments for contractionary fiscal policies, right-wing parties may electorally benefit to a greater extent than their left-wing counterparts for implementing fiscal adjustments.

Voters may also be more likely to punish right-wing governments for tax increases than left-wing governments. If right-wing parties typically prefer lower taxes and lower government spending, voters may withdraw their support for right-wing governments for breaking promises outlined in their electoral platforms. The possibility of partisan effects may thus justify inclusion of a variable indicating partisan identification, and in any event the inclusion of such a variable is necessary to replicate Nyman's basic model. I code an incumbent party as right-wing (*Rwing*) if it is defined in the Manifesto Project Database (MPD) (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2014a) as liberal, Christian democratic, conservative, or nationalist. I make one correction to the MPD's coding, classifying the Portuguese Social Democratic Party as right-wing. For electoral alliances, I classify the government as right-wing if a majority of members of parliament in the alliance belong to right-wing parties.

Replication

Following the approach taken in Chapters Two and Three, I first attempt to replicate the conclusions of Brender and Drazen's analysis. In Models 1 and 2, the authors include variables measuring the change in central government budget balance from the third and fourth year prior to election to the two years prior to election (*BALCH_trm*), the election year change in budget balance (*DNL_0*), and the change in GDP per capita over the chief executive's term in office (*DGDPPC_trm*). The authors include binary variables indicating whether or not elections were held under majoritarian electoral rules (*Maj_t2*), or were one of the first four elections held since democratic transition (*Ndem_t2*). Model 1 is estimated without country fixed effects. Model 2 is estimated with fixed effects. The response variable in both models (*Reelect*) indicates whether or not the party of the chief executive is reelected. As in Brender and Drazen (2008), both Models 1 and 2 are estimated by logistic regression (logit) with heteroscedasticity-consistent standard errors.

Following Nyman (2014), I examine whether substituting a variable measuring the difference in incumbent vote share between elections for the binary reelection indicator changes the estimated effects of fiscal variables on reelection prospects. Since incumbents with a higher initial vote share are more likely to lose votes between elections, I include a variable (*Pct_t1*) measuring incumbent vote share from the previous election. I estimate Model 3 using ordinary least squares regression with country-level fixed effects and heteroscedasticity-consistent standard errors. Table 4.3 presents my initial replication of Brender and Drazen's models.[30]

[Table 4.3 here]

Table 4.3 provides additional support for Brender and Drazen's claim that the probability of incumbent reelection increases with the change in GDP per capita. However, the authors' conclusion that deficits inhibit reelection does not replicate for the sample of countries examined here. Using both the binary and continuous measure of electoral performance, I find instead that inter-election changes in the budget balance have no significant effect on reelection prospects. More notably, the change in incumbent vote share decreases with the budget balance, directly contradicting the authors' finding that voters in developed countries "do not like deficits, particularly in election years" (Brender and Drazen 2008, p. 2215).

One possibility is that the authors' findings are sensitive to the selection of countries and time period. Brender and Drazen define countries (more restrictively) as "developed" if they were members of the OECD prior to 1974. Hence they include Mexico and Turkey in their sample of developed countries, but exclude South Korea and the former Eastern Bloc countries. Their sample covers many of the same elections from 1961 to 2003, but includes observations for which OECD data is not available, and excludes observations after 2003.

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[30] I report R^2 as 1 – RSS/MSS for the logit models, and the adjusted R^2 for the fixed effects regressions.

In Models 4 through 7, I replicate Brender and Drazen's estimates of the electoral consequences of changes in the government budget balance, controlling for election-year changes in economic output. Again, I find that voters generally favor looser fiscal policies in the year of election. Changes in the budget balance over the course of the election term have no significant effect on reelection. Models 8 through 11 add alternative statistical controls but yield the same conclusions.

[Tables 4.4 – 4.5 here]

Nyman's basic model estimates the effect of term-length changes in the *structural* budget balance on the change in incumbent vote share. Controlling for the partisan composition of government and changes in GDP and unemployment, Nyman finds that an increase in the general government budget balance over the course of the election cycle – with and without cyclical adjustment – significantly corresponds to a decline in incumbent vote share (but does not significantly affect the probability of reelection). Table 4.6 presents the estimates from my reanalysis of Nyman's models.

[Table 4.6 here]

Replicating Nyman's models, I find no statistically significant relationship between the change in the (cyclically-adjusted) budget balance and the change in the incumbent government's vote share. The coefficients are weaker, perhaps due to the inclusion of additional observations and revision of prior observations from the more recent edition of the *OECD Economic Outlook*. Nyman clusters standard errors at the country level, and I report heteroscedasticity-consistent standard errors, but this cannot explain the variation in the coefficients between the authors' estimates and the ones reported here.

Following replication of two prior studies, it is not evident that term-length changes in the budget balance affect reelection prospects. In the following section, I provide new tests of the hypothesis that fiscal expansions or contractions over the course of an incumbent's term in office significantly affects the change in incumbent party vote share. I again find no evidence that changes in the budget balance from the prior election or change in party of the chief executive to the current election corresponds significantly to an increase or decline in incumbent vote share. However, I find consistent evidence that voters punish contractionary fiscal policies in election years.

Term-length vs. election-year estimates

As the replication of Brender and Drazen's models shows (using change in incumbent vote share rather than a binary measure of reelection), the electoral consequences of changes in the government budget balance depend critically on whether fiscal expansions or contractions occur in the year of election or earlier in the term. This finding is consistent with a host of prior studies on the macroeconomic determinants of electoral outcomes, which tend to show that voters are highly myopic: they reward or punish incumbents for economic conditions in the year of election while discounting prior changes in national, regional, or personal income. Interestingly, election-term changes in GDP correspond significantly to changes in incumbent vote share in replication of Brender and Drazen's model, but election-year growth has no statistically significant effect when controlling for term-length effects.

Political economists have used evidence of voter myopia (or assumed its existence) to explain the presence of political business cycles and budget cycles. If voters discount economic conditions at times that are relatively distant from the following election, then governments have an incentive to implement expansionary fiscal (and monetary) policies prior to elections and contractionary policies immediately after elections. Governments should thus cut taxes and expand spending prior to elections, increasing voters' take-home income (in the short run) and (more controversially) expanding national income through increasing aggregate demand. In return, voters reward governments for expansionary policies. In the following models, I provide additional evidence that voters reward election-year fiscal expansions. The effects are consistent across alternative model specifications, using both uncorrected and cyclically-adjusted measures of general government net lending.

[Table 4.7 here]

Table 4.7 shows that election-term changes in the budget deficit do not significantly affect the vote share of incumbent governments. Although the coefficients on the net lending variables are all negative, the standard errors are too large to conclude that term-length changes in the deficit reduces incumbent vote share. In Model 1, I estimate term-length effects using general government net lending (receipts less disbursements), controlling for changes in GDP. Model 2 adds additional economic and political controls. Model 3 presents the bivariate regression of incumbent vote share on the change in cyclically-adjusted net lending. In Model 4, I add control variables measuring the effect of potentially confounding differences in political institutions and government characteristics. Model 5 includes economic controls. Although cyclical adjustment attempts to account for the effect of changes in output on net lending, the inclusion of economic control variables has no effect on the substantive findings of any of the models in the analysis.

In these models, and in subsequent specifications, I include control variables measuring incumbent vote share in the prior election (*Pct_t1*). Incumbent governments elected with a larger vote share tend to lose more votes in subsequent elections. To account for unobserved potentially confounding cross-country variation, I estimate all models using country fixed effects. I include a variable measuring the time of election, but exclude year fixed effects, which would substantially reduce the number of degrees of freedom in each model. Fortunately, Hausman tests reject the null hypothesis of consistency between models that include and exclude country fixed effects ($p < 0.001$), but not between models that include and exclude year fixed effects.

Table 4.8 presents election-year estimates of changes in general government net lending on incumbent vote share. The results are consistent across all models: voters reward governments for expansionary fiscal policies in the year of election. In Tables 4.9 and 4.10, I replace *DNL_trm* and *DCANL_trm* with variables measuring lagged changes in the fiscal deficit. Vote share increases significantly with the election-year deficit in each model ($p < 0.05$), except for Table 4.10, Model 5, in which including three-year lags for the cyclically-adjusted deficit increases the standard errors such that the estimated effect of *DCANL_0* is significant only at $\alpha < 0.1$. However, including a third-year lag slightly increases the magnitude of *DCANL_0*.

[Tables 4.8 – 4.10 here]

Heterogeneous effects of changes in receipts, disbursements, and social expenditure

Alesina, Carloni, and Lecce (2013) claim that governments that reduce deficits through cuts in government spending tend to survive longer than governments that reduce deficits through tax increases. Although I find no evidence that voters reward governments for fiscal adjustments – and consistently find that voters punish contractionary fiscal policies in election years – it is possible that voters respond differently to tax versus spending measures when sanctioning incumbents. To test for potentially heterogeneous effects of expenditure-based and revenue-based fiscal adjustments, I examine the relationship between election-term and election-year changes in expenditure and revenue (as a share of GDP) and incumbent vote share. I present the results in Table 4.11.

[Table 4.11 here]

Table 4.11 shows no statistically significant estimated effects of term-length changes in government receipts or disbursements on incumbent vote share. Voters do not generally oppose higher taxes to the extent that higher taxes correspond to higher government spending over the course of the term (Model 1). However, voters generally oppose term-length tax hikes used to fund fiscal contractions (Model 3). Voters tend to reward governments for increasing spending, regardless of whether the spending leads to higher taxes or fiscal expansion (Models 2-4), though the association is not statistically significant at conventional levels.

The estimated magnitudes of term-length fiscal variables become substantially weaker once controlling for election-year measures (Model 5). In election years, the incumbent vote share increases with disbursement-based changes in the budget balance. Voters generally reward (punish) tax-based fiscal expansions (contractions), but the estimated effect is not statistically significant. Table 4.12 presents estimates of the effects of changes in election-year revenue and expenditure on vote share, controlling for lagged changes in fiscal variables.

[Table 4.12 here]

Estimated election-year effects on the change in incumbent vote share remain positive and significant for changes in disbursements and negative for changes in receipts (significant at $\alpha < .05$ in Model 3). Prior annual changes in fiscal variables have no significant effect on incumbent vote share once controlling for election-year changes in receipts and disbursements.

Voters may plausibly evaluate changes in social (or welfare) expenditure differently than changes in other forms of government expenditure (Pierson 1996). Yet recent research has demonstrated no significant general effect on incumbent vote share of changes in replacement rates for sick pay, unemployment insurance, and public pensions (Armingeon and Giger 2008; Giger and Nelson 2010). However, as the analyses in this chapter have suggested, there is no clear prior reason to suppose that voters sanction incumbents for *term-length* changes in expenditure. Moreover, it is unclear whether voters in fact respond differently to changes in social expenditure in comparison to changes in other government disbursements. Table 4.13 examines term-length effects of changes in social expenditure. I use data from the OECD's (2015d) *Social Expenditure Database*, which includes public spending on pensions, active labor market programs, disability and unemployment insurance, family, health, housing, and survivors' benefits, and "other social policy areas" (comprising 3% of social expenditure at the OECD level).

[Table 4.13 here]

The association between changes in incumbent party vote share and term-length changes in social expenditure is remarkably weak, regardless of whether contemporaneous changes in government receipts are allowed to vary (Model 1) or fixed (Model 2). However, once changes in government receipts and disbursements are both fixed, changes in social expenditure are negatively associated with changes in incumbent vote share ($p < 0.1$ in Model 3; $p < 0.05$ in Model 4). Voters generally reward governments for election-term expansions in non-social expenditure, but punish governments for increasing welfare expenditure at the expense of reductions in non-welfare government disbursements. These effects remain after controlling for election-year changes in fiscal variables (Model 5). In contrast, incumbent vote share tends to increase with election-year expansions in social expenditure, though the estimates are insignificant at $\alpha < 0.05$ and do not persist after controlling for two and three-year lagged changes in social expenditure. I present these estimates in the following table.

[Table 4.14 here]

Interaction effects

The remaining models examine interaction effects between characteristics of the incumbent government and political system and fiscal variables identified as significant determinants of changes in incumbent vote share. I include four fiscal variables: change in election-year net lending, cyclically-adjusted net lending, and disbursements (holding change in receipts constant); and change in election-term welfare spending (holding change in receipts and disbursements constant). I interact each fiscal variable with binary indicators of whether or not the government facing reelection at *t2* is a coalition (*Coal_gov*), holds a majority of seats in the lower house of parliament (*Maj_gov*), is right-wing (*Rwing*); and whether or not the elections at *t2* are one of the first four elections held after the country's transition to democracy (*Ndem_t2*), or are conducted under majoritarian electoral rules (*Maj_t2*).

Models 1 and 2 in Tables 4.15-4.18 evaluate the interaction of each fiscal variable with minority and coalition government indicator variables. Prior research has shown that voters are less likely to sanction incumbent governments for changes in macroeconomic conditions in political systems with lower "clarity of government responsibility." When legislative and executive power is dispersed among coalition partners, or when governments rely on the support of opposition parties to pass legislation (including the government budget), voters may find it more difficult to attribute credit or blame to the party of the chief executive. A related argument suggests that governments can reduce the political costs associated with welfare retrenchment by sharing responsibility for reforms with a range of political actors. Similarly, voters may be less likely to reward or punish minority and coalition governments for changes in the level or composition of revenue and expenditure. I present these estimates in the following tables.

[Tables 4.15 – 4.18 here]

Interestingly, voters generally punish the party of the chief executive in coalition governments – but not in single-party administrations – for election-year reductions in the budget deficit. At the very least, this evidence casts doubt on the applicability of the "clarity of responsibility" and "blame sharing" hypotheses to explaining variation in the extent to which voters sanction governments for fiscal adjustments. Voters do appear to punish the chief executive's party in coalition governments less than single-party governments for term-length changes in welfare spending, holding other expenditure measures constant (Table 4.18). However, voters generally reward governments for cutting welfare spending rather than non-welfare disbursements over the course of the election cycle. Rather than helping primary coalition partners to spread the blame for supposedly unpopular welfare cuts, sharing legislative responsibility with coalition partners apparently inhibits the ability of such parties to claim credit for popular reforms. Unfortunately, the standard error of the interaction term is too large for the effects to be significant at conventional levels. The estimated effects are similar for minority governments, though also insignificant.

Electoral punishment for fiscal adjustments is generally confined to governments facing reelection under proportional electoral rules (Tables 4.15-4.17, Model 3). Yet majoritarian systems may enable governments to claim credit for election-term reductions in welfare expenditure (Table 4.18, Model 3). Contrary to Brender and Drazen (2005; 2008), I find no significant evidence that voters sanction changes in the level and composition of government expenditure and revenue differently in new democracies (Tables 4.15-4.18, Model 4). Nor do voters evaluate governments headed by right-wing parties differently than other administrations (Tables 4.15-4.18, Model 5).

Conclusion

Academic and popular discussion of the political consequences of fiscal austerity suffers from a lack of evidence-based analysis. In this chapter, I have attempted to evaluate the electoral effects of changes in fiscal policy at the national level. The findings challenge the conclusions of prior empirical research and the assumptions of prevailing theories of fiscal adjustment and welfare retrenchment. Drawing from a larger number of observations than previous studies, controlling for a wider range of potentially confounding variables, and more accurately and precisely measuring electoral outcomes, I find no significant evidence that voters sanction incumbent governments for term-length changes in the fiscal deficit. However, voters generally punish governments for election-year reductions in the deficit, particularly when fiscal contractions involve spending cuts.

Welfare programs appear no more popular than other forms of disbursements, and governments appear to lose (gain) votes by expanding (cutting) welfare spending at the expense (benefit) of other categories of expenditure over the course of their term in office. I also find no evidence that electoral punishment for fiscal contractions is weaker under governments in which the party of the chief executive shares legislative and executive power with coalition partners and opposition parties. To the contrary, systematic electoral punishment is limited entirely to coalition and minority governments.

Further research is necessary to identify a causal relationship between election-year fiscal contractions (expansions) and declining (increasing) incumbent party vote share. Precise identification of causality is inhibited by the fact that observed discretionary changes in fiscal variables are not randomly assigned. A number of variables outside the researcher's control affect the degree to which governments implement fiscal expansions or contractions.[31] Although the evidence presented in this chapter indicates that voters tend to reward looser fiscal policy in election years, the relationship between fiscal and electoral outcomes varies considerably across countries and time. While this chapter describes the general relationship between fiscal and electoral outcomes, understanding why voters reward or punish governments in particular cases requires more detailed contextual analysis.

[31] See Chapter Two on the political causes of budget deficits.

Table 4.1 Sample of countries

Number of observations	327
Number of countries	30
Period (Election Years)	1944-2015

Country (number of observations) / Election years

Australia (21)	1961 – 2013
Austria (16)	1962 – 2013
Belgium (16)	1961 – 2014
Canada (17)	1962 – 2011
Czech Republic (5)	1998 – 2013
Denmark (19)	1973 – 2011
Estonia (3)	2003 – 2011
Finland (14)	1962 – 2011
France (11)	1967 – 2012
Germany (15)	1961 – 2013
Greece (13)	1961 – 2009
Hungary (5)	1998 – 2014
Iceland (15)	1983 – 2013
Ireland (14)	1981 – 2011
Israel (7)	1999 – 2013
Italy (11)	1963 – 2008
Japan (17)	1963 – 2014
Korea (2)	2007 – 2012
Luxembourg (11)	1989 – 2013
Netherlands (16)	1971 – 2012
New Zealand (17)	1987 – 2014
Norway (14)	1965 – 2013
Poland (5)	1997 – 2011
Portugal (11)	1979 – 2011
Slovakia (6)	1998 – 2012
Slovenia (5)	2000 – 2014
Spain (10)	1979 – 2011
Sweden (16)	1964 – 2014
United Kingdom (13)	1964 – 2010
United States (17)	1964 – 2012

Table 4.2 Descriptive Statistics

Political variables (binary, N = 327)

Variable	Mean	Std. Dev.	0	1
Coal_gov	0.54	0.50	150	177
Maj_gov	0.68	0.47	105	222
Ndem_t2	0.08	0.28	300	27
Rwing	0.56	0.50	145	182
Maj_t2	0.29	0.46	231	96
Reelect	0.58	0.49	136	191

Other variables (N = 327)

Variable	Mean	Std. Dev.	Min	Max
DPct	-2.80	7.45	-29.73	20.70
Pct_t1	37.16	10.41	8.59	61.05
nQ	12.97	4.12	1	20
Pct_t2	34.36	11.10	2.97	61.05
t1	1987	15.04	1957	2012
t2	1991	15.18	1961	2014
q2	2.65	1.10	1	4

Receipts

Variable	Mean	Std. Dev.	Min	Max	N
DREC_0	0.10	1.20	-4.20	6.73	316
DREC_1	0.13	1.07	-3.39	2.96	285
DREC_2	0.19	1.18	-2.90	6.72	235
DREC_3	0.28	1.22	-3.02	4.07	138
DREC_trm	0.15	0.75	-3.55	2.48	300

Disbursements

Variable	Mean	Std. Dev.	Min	Max	N
DDIS_0	0.18	2.23	-20.17	8.79	315
DDIS_1	0.30	2.19	-7.62	18.47	285

DDIS_2	0.20	2.12	-6.75	7.77	236
DDIS_3	0.02	1.86	-6.48	6.70	140
DDIS_trm	0.19	1.24	-10.43	3.76	302

Net Lending

Variable	Mean	Std. Dev.	Min	Max	N
DNL_0	-0.07	2.16	-8.36	19.78	302
DNL_1	-0.13	2.26	-18.48	5.62	296
DNL_2	0.00	2.16	-8.37	6.86	262
DNL_3	0.25	2.03	-7.26	5.39	245
DNL_trm	-0.02	1.24	-7.31	9.95	314
BALCH_trm	0.03	2.55	-19.72	6.89	295
BALCH_termPey	-0.16	2.26	-16.33	5.63	295
BTxDS	-2.62	11.38	-88.72	30.74	288
DNL0xDS	-1.22	14.76	-149.30	58.15	313

Cyclically-adjusted net lending

Variable	Mean	Std. Dev.	Min	Max	N
DCANL_0	-0.15	2.04	-5.94	17.75	268
DCANL_1	-0.26	2.20	-18.97	4.56	241
DCANL_2	0.20	1.83	-6.47	6.62	202
DCANL_3	0.18	1.81	-7.04	4.72	113
DCANL_trm	- 0.03	1.14	-4.06	8.79	252

Social Expenditure

Variable	Mean	Std. Dev.	Min	Max	N
DSX_0	0.25	0.90	-2.76	5.05	221
DSX_1	0.15	0.73	-2.14	2.84	203
DSX_2	0.24	1.04	-2.13	4.31	175
DSX_3	0.17	0.94	-2.42	4.08	103
DSX_trm	0.22	0.52	-1.36	1.60	202

GDP (annual)

Variable	Mean	Std. Dev.	Min	Max	N
DGDP_0	3.16	2.80	-5.92	13.06	327
DGDP_1	3.01	2.57	-6.55	11.91	298
DGDP_2	2.81	2.90	-14.74	11.85	248
DGDP_3	3.25	2.73	-5.48	11.19	146
DGDP_trm	3.14	2.20	-2.61	12.64	317
DGDPPC_0	2.54	2.76	-7.07	11.97	317
DGDPPC_trm	2.50	2.15	-3.21	11.18	308
DDGDP_trm	-0.22	3.40	-14.87	14.33	313

Inflation

Variable	Mean	Std. Dev.	Min	Max	N
INF_0	5.34	6.99	-5.21	77.31	323
INF_1	5.70	6.36	-1.85	53.65	321
INF_2	5.66	6.39	-3.92	49.19	292
INF_3	5.49	6.37	-2.48	52.48	243
INF_avg	5.69	6.43	-1.78	60.05	312

Unemployment

Variable	Mean	Std. Dev.	Min	Max	N
DUNP_0	0.05	1.04	-4.42	4.31	322
DUNP_1	0.09	0.93	-3.91	3.65	302
DUNP_2	0.27	1.51	-2.58	13.33	255
DUNP_3	-0.08	1.00	-3.32	5.06	151
DUNP_trm	0.09	0.79	-4.07	3.39	322

Table 4.3 Replication of Brender-Drazen

	Model 1	Model 2	Model 3
Dependent variable	Reelect	Reelect	DPct
BALCH_trm	0.04 (0.06)	0.01 (0.08)	- 0.01 (0.18)
DNL_0	- 0.04 (0.06)	- 0.04 (0.09)	- 0.43 (0.21) **
DGDPPC_trm	0.21 (0.07) ***	0.32 (0.10) ***	1.31 (0.24) ***
Ndem_t2	- 0.60 (0.51)	0.14 (0.79)	- 3.70 (2.47)
Maj_t2	0.37 (0.28)	- 0.31 (1.87)	- 3.85 (3.11) ***
Pct_t1			- 0.47 (0.07) ***
Model	Logit	Logit, CFE, HCSE	CFE, HCSE
R^2	0.05	0.16	
Adjusted R^2			0.25
Observations	281	281	281

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.4 Replication of Brender-Drazen (continued)

	Model 4	Model 5	Model 6	Model 7
Dependent variable	Reelect	DPct	Reelect	DPct
BALCH_trm	0.05 (0.06)	- 0.01 (0.18)	0.04 (0.06)	- 0.01 (0.19)
DNL_0	- 0.08 (0.07)	- 0.43 (0.24) *	- 0.06 (0.07)	- 0.37 (0.24)
DGDPPC_trm	0.13 (0.10)	1.31 (0.34) ***	0.20 (0.08) ***	1.35 (0.25) ***
DGDPPC_0	0.09 (0.08)	- 0.00 (0.24)		
GDPD_trend_ey			0.01 (0.01)	- 0.02 (0.03)
Ndem_t2	- 0.61 (0.51)	- 3.70 (2.48)	- 0.59 (0.51)	- 3.79 (2.47)
Maj_t2	0.38 (0.28)	- 3.85 (3.13) ***	0.37 (0.28)	- 3.79 (3.16)
Pct_t1		- 0.47 (0.07) ***		- 0.48 (0.08) ***
Model	Logit, HCSE	CFE, HCSE	Logit, HCSE	CFE, HCSE
R^2	0.05		0.05	
Adjusted R^2		0.25		0.25

Observations	281	281	281	281

Standard errors in parentheses. *** *p* < 0.01, ** *p* < 0.05, * *p* < 0.1.

Table 4.5 Replication of Brender-Drazen (continued)

	Model 8	Model 9	Model 10	Model 11
Dependent variable	Reelect	DPct	Reelect	DPct
BALCH_trm			0.03 (0.06)	- 0.08 (0.18)
DNL_0	- 0.07 (0.07)	- 0.43 (0.17) **	- 0.06 (0.07)	- 0.50 (0.18) **
DGDPPC_trm	0.21 (0.07) ***	1.29 (0.22) ***	0.23 (0.08) ***	1.35 (0.26) ***
BALCH_termPey	0.06 (0.06)	0.02 (0.19)		
BTxDS			- 0.00 (0.01)	- 0.01 (0.03)
DNL0xDS			- 0.01 (0.01)	- 0.04 (0.02)
Ndem_t2	- 0.60 (0.50) *	- 3.69 (2.44)	- 0.53 (0.54)	- 3.71 (2.73) **
Maj_t2	0.36 (0.28)	- 3.93 (3.13)	0.33 (0.29)	- 3.84 (2.96)
Pct_t1		- 0.47 (0.07) ***		- 0.48 (0.07) ***
Model	Logit, HCSE	CFE, HCSE	Logit, HCSE	CFE, HCSE
R^2	0.05		0.05	
Adjusted R^2		0.25		0.25
Observations	281	281	276	276

Standard errors in parentheses. *** *p* < 0.01, ** *p* < 0.05, * *p* < 0.1.

Table 4.6 Replication of Nyman

	Model 1	Model 2	Model 3	Model 4
Dependent variable	Reelect	DPct	DPct	DPct
Structural budget balance (DCANL_trm)	- 0.02 (0.17)			- 0.56 (0.50)

Non-adjusted budget balance		0.03	- 0.44	
(DNL_trm)		(0.51)	(0.47)	
Change in unemployment rate	- 0.35		- 1.82 **	- 1.08
(DUNP_trm)	(0.22)		(0.76)	(0.82)
Change in GDP growth	- 0.00		0.02	0.05
(DDGDP_trm)	(0.04)		(0.13)	(0.12)
Average GDP growth	0.13		0.53 **	0.86 ***
(DGDP_trm)	(0.11)		(0.22)	(0.27)
Right-wing party	0.48	0.50	0.83 **	1.80 **
(Rwing)	(0.28)	(0.62)	(0.69)	(0.75)
R^2 (1) / Adjusted R^2 (2-4)	0.04	0.00	0.08	0.11
Model	Logit, HCSE	OLS, HCSE	OLS, HCSE	OLS, HCSE
Observations	247	326	302	247

Country fixed effects included. Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.7 Term-length estimates

	Model 1	Model 2	Model 3	Model 4	Model 5
DNL_trm	- 0.44	- 0.26			
	(0.45)	(0.34)			
DCANL_trm			- 0.48	- 0.06	0.14
			(0.50)	(0.50)	(0.41)
DGDP_trm	1.01 ***	0.82 **			1.24 ***
	(0.31)	(0.29)			(0.28)
DUNP_trm		- 1.38 **			- 0.44
		(0.56)			(0.62)

INF_avg		0.11			0.07
		(0.07)			(0.06)
Pct_t1		- 0.44 ***		- 0.50 ***	- 0.47 ***
		(0.08)		(0.08)	(0.09)
nQ		- 0.22 **		- 0.09	- 0.23 **
		(0.09)		(0.11)	(0.11)
Coal_gov		- 1.46		- 2.28	- 2.06
		(1.24)		(1.54)	(1.39)
Maj_gov		1.57		1.34	2.06
		(1.22)		(1.53)	(1.39)
Ndem_t2		- 5.20 *		- 3.94	- 5.61 *
		(2.75)		(2.84)	(3.19)
Maj_t2		- 4.77 ***		- 10.45 ***	- 8.10 ***
		(1.12)		(2.24)	(2.13)
Rwing		0.72		0.66	1.24
		(0.93)		(0.98)	(0.93)
t2		- 0.04		- 0.12 ***	- 0.04
		(0.04)		(0.03)	(0.05)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.07	0.27	0.00	0.19	0.28
Observations	311	301	259	259	246

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.8 Election-year estimates

	Model 1	Model 2	Model 3	Model 4	Model 5
DNL_0	- 0.74 *** (0.21)	- 0.39 * (0.20)			
DCANL_0			- 0.75 *** (0.25)	- 0.78 *** (0.22)	- 0.46 ** (0.18)
DGDP_0	0.67 *** (0.16)	- 0.27 (0.27)			- 0.63 ** (0.30)
DUNP_0		- 1.11 * (0.67)			- 1.68 ** (0.73)
INF_0		- 0.28 * (0.15)			- 0.25 (0.21)
DNL_trm		- 0.15 (0.33)			
DCANL_trm				0.46 (0.42)	0.36 (0.38)
DGDP_trm		1.17 *** (0.41)			1.88 *** (0.42)
DUNP_trm		- 0.27 (0.90)			1.34 (1.01)
INF_avg		0.40 ** (0.19)			0.31 (0.25)
Pct_t1		- 0.43 *** (0.09)		- 0.49 *** (0.09)	- 0.47 *** (0.10)
nQ		- 0.27 *** (0.09)		- 0.16 (0.10)	- 0.29 *** (0.10)

Coal_gov		- 1.33		- 2.45	- 2.03
		(1.22)		(1.57)	(1.39)
Maj_gov		1.73		1.68	2.15
		(1.16)		(1.43)	(1.37)
Ndem_t2		- 5.92 **		- 4.25 *	- 6.01 **
		(2.66)		(2.57)	(3.04)
Maj_t2		- 4.93 ***		- 11.24 ***	- 9.23 ***
		(1.19)		(1.86)	(1.73)
Rwing		0.83		0.74	1.40
		(0.91)		(0.96)	(0.87)
t2		- 0.03		- 0.10 ***	- 0.03
		(0.04)		(0.03)	(0.05)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adj. R^2	0.07	0.28	0.04	0.22	0.30
Observations	327	300	276	259	245

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.9 Election-year estimates, controlling for prior changes in deficit

	Model 1	Model 2	Model 3	Model 4	Model 5
DNL_0	- 0.74 ***	- 0.63 ***	- 0.57 **	- 0.74 ***	
	(0.21)	(0.23)	(0.26)	(0.25)	
DNL_1		- 0.04	- 0.22	- 0.18	
		(0.17)	(0.22)	(0.27)	
DNL_2			- 0.07	- 0.32	
			(0.18)	(0.29)	
DNL_3				- 0.36	

				(0.32)	
DCANL_0					- 0.63 **
					(0.27)
DCANL_1					0.15
					(0.14)
DGDP_0	0.68 ***	0.40 **	0.40 *	0.46 **	
	(0.17)	(0.18)	(0.20)	(0.25)	
DGDP_1		0.74 ***	0.68 ***	0.23	
		(0.22)	(0.26)	(0.27)	
DGDP_2			0.47	0.77	
			(0.30)	(0.33)	
DGDP_3				0.39	
				(0.27)	
Pct_t1	- 0.44 ***	- 0.53 ***	- 0.44 ***	- 0.40 ***	- 0.53 ***
	(0.07)	(0.08)	(0.10)	(0.10)	(0.09)
nQ	- 0.24 **	- 0.39 ***	- 0.34	- 0.22	- 0.31 *
	(0.10)	(0.15)	(0.29)	(0.47)	(0.16)
Coal_gov	- 1.24	- 2.01	- 2.29 **	- 1.17	- 3.17 *
	(1.24)	(1.44)	(1.11)	(1.99)	(1.86)
Maj_gov	1.56	2.53 *	2.47 *	4.65 **	1.63 ***
	(1.29)	(1.32)	(1.32)	(2.06)	(1.56)
Ndem_t2	- 3.61 *	- 4.12 *	- 5.63 **	- 5.19	- 3.45
	(2.11)	(2.24)	(2.66)	(3.47)	(2.43)
Maj_t2	- 5.91 ***	- 5.87 ***	- 4.59 ***	- 1.47	- 10.77 ***
	(0.88)	(1.28)	(1.53)	(2.55)	(1.78)
Rwing	0.30	0.65	0.43	0.04	1.07
	(0.94)	(0.89)	(0.86)	(1.04)	(1.05)

t2	- 0.06 ***	- 0.03	- 0.03	- 0.02	- 0.09 ***
	(0.02)	(0.03)	(0.05)	(0.07)	(0.03)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.24	0.29	0.24	0.26	0.24
Observations	327	294	243	141	249

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.10 Election-year estimates, controlling for prior changes in deficit (cyclically-adjusted)

	Model 1	Model 2	Model 3	Model 4	Model 5
DCANL_0	- 0.89 ***	- 1.11 ***	- 0.53 **	- 0.68 ***	- 0.78 ***
	(0.31)	(0.37)	(0.22)	(0.21)	(0.29)
DCANL_1	- 0.17	- 0.22	- 0.12	- 0.18	- 0.23
	(0.22)	(0.30)	(0.13)	(0.21)	(0.31)
DCANL_2	0.37 **	0.49		- 0.15	- 0.08
	(0.18)	(0.32)		(0.20)	(0.37)
DCANL_3		- 0.41			- 0.43
		(0.42)			(0.41)
DGDP_0			0.23	0.34 *	0.43 *
			(0.15)	(0.19)	(0.22)
DGDP_1			1.02 ***	0.94 ***	0.47
			(0.27)	(0.31)	(0.29)
DGDP_2				0.44 *	0.63 **
				(0.24)	(0.28)
DGDP_3					0.38
					(0.31)

Pct_t1	- 0.43 ***	- 0.45 ***	- 0.55 ***	- 0.45 ***	- 0.42 ***
	(0.10)	(0.11)	(0.10)	(0.11)	(0.15)
nQ	- 0.31	- 0.44	- 0.37 ***	- 0.45	- 0.40
	(0.34)	(0.62)	(0.14)	(0.30)	(0.51)
Coal_gov	- 2.33	- 0.38	- 3.49 **	- 3.32 **	- 0.97
	(1.59)	(2.50)	(1.66)	(1.37)	(2.75)
Maj_gov	2.22	3.16	2.11	2.72 *	3.83 *
	(1.50)	(2.33)	(1.62)	(1.43)	(2.27)
Ndem_t2	- 5.71 *	- 3.15	- 4.09 *	- 5.38 *	- 0.93
	(2.99)	(3.80)	(2.44)	(2.98)	(3.83)
Maj_t2	- 11.31 ***	- 6.77 **	- 10.26 ***	- 8.85 ***	- 3.45
	(2.46)	(2.90)	(1.07)	(2.09)	(3.19)
Rwing	0.22	0.39	1.64 *	0.71	0.72
	(0.90)	(1.12)	(0.96)	(0.84)	(1.15)
t2	- 0.11 **	- 0.13 **	- 0.03	- 0.03	- 0.02
	(0.05)	(0.05)	(0.03)	(0.05)	(0.07)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.16	0.19	0.32	0.28	0.29
Observations	209	122	241	202	116

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.11 Effects of Changes in Revenue and Expenditure on Vote Share

	Model 1	Model 2	Model 3	Model 4	Model 5
DREC_trm	0.01		- 0.26	- 0.00	0.45
	(0.48)		(0.55)	(0.51)	(0.65)
DDIS_trm		0.56	0.66	0.80	0.47
		(0.44)	(0.47)	(0.50)	(0.48)
DGDP_trm	1.01 ***	1.09 ***	1.14 ***	1.38 ***	1.23 ***
	(0.28)	(0.32)	(0.34)	(0.36)	(0.44)
DREC_0					- 0.70 **
					(0.33)
DDIS_0					0.48 **
					(0.19)
DGDP_0					0.11
					(0.21)
Pct_t1				- 0.46 ***	- 0.45 ***
				(0.09)	(0.09)
nQ				- 0.18	- 0.21 **
				(0.11)	(0.10)
Coal_gov				- 1.14	- 0.96
				(1.13)	(1.16)
Maj_gov				1.12	1.19
				(1.32)	(1.25)
Ndem_t2				- 3.84 **	- 4.14
				(2.98)	(2.84)
Maj_t2				- 6.73 ***	-7.28 ***
				(1.49)	(1.48)

Rwing				1.09 (0.91)	1.14 (0.92)
t2				- 0.01 (0.04)	- 0.02 (0.04)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.07	0.08	0.08	0.26	0.27
Observations	298	300	297	297	297

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.12 Effects of Changes in Revenue and Expenditure on Vote Share (election year)

	Model 1	Model 2	Model 3	Model 4	Model 5
DREC_0	- 0.61 * (0.32)	- 0.53 * (0.29)	- 0.68 ** (0.27)	- 0.68 *** (0.25)	- 0.67 (0.43)
DDIS_0	0.71 *** (0.24)	0.75 *** (0.22)	0.75 *** (0.25)	0.80 *** (0.27)	0.85 ** (0.34)
DGDP_0	0.72 *** (0.16)	0.73 *** (0.17)	0.52 *** (0.17)	0.57 ** (0.22)	0.58 ** (0.26)
DREC_1			0.22 (0.35)	- 0.08 (0.37)	0.45 (0.44)
DDIS_1			0.29 (0.23)	0.45 (0.24)	0.35 (0.33)
DGDP_1			0.85 *** (0.22)	0.83 *** (0.24)	0.39 (0.28)
DREC_2				0.14 (0.44)	- 0.19 (0.54)

DDIS_2				0.11	0.33
				(0.19)	(0.29)
DGDP_2				0.38	0.70 **
				(0.30)	(0.31)
DREC_3					- 0.49
					(0.53)
DDIS_3					0.31
					(0.37)
DGDP_3					0.37
					(0.24)
Pct_t1		- 0.45 ***	- 0.53 ***	- 0.44 ***	- 0.37 ***
		(0.08)	(0.09)	(0.11)	(0.11)
nQ		- 0.22 **	- 0.31 **	- 0.25	- 0.09
		(0.10)	(0.15)	(0.27)	(0.48)
Coal_gov		- 1.42	- 1.68	- 1.94	- 0.12
		(1.25)	(1.45)	(1.27)	(2.14)
Maj_gov		1.63	2.08 *	2.18	4.03 *
		(1.18)	(1.22)	(1.35)	(2.18)
Ndem_t2		- 3.59 *	- 3.75 *	- 5.74 **	- 4.73
		(2.07)	(2.13)	(2.74)	(3.31)
Maj_t2		- 5.83 ***	- 9.03 ***	- 7.83 ***	- 0.84
		(0.95)	(1.19)	(1.74)	(2.41)
Rwing		0.56	0.92	0.44	- 0.10
		(0.93)	(0.85)	(0.88)	(1.20)
t2		- 0.06 **	- 0.01	- 0.00	- 0.01
		(0.03)	(0.03)	(0.05)	(0.07)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE

Adjusted R^2	0.07	0.24	0.29	0.25	0.26
Observations	315	315	285	235	137

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.13 Effects of Changes in Social Expenditure

	Model 1	Model 2	Model 3	Model 4	Model 5
DSX_trm	- 0.75	- 0.45	- 3.36 **	- 3.54 ***	- 3.67 **
	(1.20)	(1.16)	(1.35)	(1.23)	(1.48)
DREC_trm		- 0.42	- 0.55	- 0.51	- 0.03
		(0.56)	(0.52)	(0.63)	(1.01)
DDIS_trm			1.78 ***	1.83 ***	1.51 ***
			(0.36)	(0.41)	(0.50)
DGDP_trm	1.34 ***	1.50 ***	1.59 ***	1.62 ***	1.25 *
	(0.40)	(0.39)	(0.39)	(0.40)	(0.66)
DSX_0					0.55
					(0.74)
DREC_0					- 0.77
					(0.55)
DDIS_0					0.38
					(0.24)
DGDP_0					0.36
					(0.41)
Pct_t1				- 0.43 ***	- 0.43 ***
				(0.11)	(0.11)
nQ				- 0.32 *	- 0.37 **
				(0.17)	(0.16)

Coal_gov				- 0.33	- 0.68
				(2.28)	(2.23)
Maj_gov				1.38	1.65
				(1.25)	(1.06)
Ndem_t2				- 5.19	- 5.02
				(3.84)	(3.67)
Maj_t2				- 4.46 **	- 5.00 **
				(1.85)	(1.97)
Rwing				1.78 *	1.90 **
				(0.93)	(0.94)
t2				- 0.07	- 0.05
				(0.06)	(0.06)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.13	0.14	0.18	0.32	0.33
Observations	202	198	198	198	198

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.14 Effects of Changes in Social Expenditure (election year)

	Model 1	Model 2	Model 3	Model 4	Model 5
DSX_0	0.70	1.34 *	0.79	0.04	- 0.15
	(0.95)	(0.79)	(0.84)	(0.70)	(1.11)
DREC_0	- 0.98 **	- 1.04 **	- 1.14 ***	- 0.49	- 0.40
	(0.47)	(0.42)	(0.39)	(0.31)	(0.46)
DDIS_0	0.62 **	0.68 **	0.64 *	0.86 **	1.51 ***
	(0.30)	(0.28)	(0.36)	(0.36)	(0.50)

DGDP_0	1.21 ***	1.35 ***	1.02 ***	0.84 ***	1.25 **
	(0.33)	(0.29)	(0.32)	(0.31)	(0.51)
DSX_1			1.25	0.00	- 1.48
			(1.30)	(1.06)	(1.81)
DREC_1			0.03	- 0.14	0.57
			(0.47)	(0.47)	(0.78)
DDIS_1			0.15	0.86 ***	1.02 **
			(0.29)	(0.31)	(0.49)
DGDP_1			1.10 ***	0.87 ***	0.12
			(0.36)	(0.32)	(0.53)
DSX_2				- 1.63 ***	- 3.07 ***
				(0.47)	(0.91)
DREC_2				- 0.19	- 1.32 *
				(0.48)	(0.74)
DDIS_2				0.46 *	0.74
				(0.26)	(0.46)
DGDP_2				0.43	0.10
				(0.29)	(0.48)
DSX_3					- 0.57
					(1.19)
DREC_3					- 1.22
					(0.74)
DDIS_3					0.34
					(0.59)
DGDP_3					0.15
					(0.39)

Pct_t1		- 0.51 ***	- 0.50 ***	- 0.42 ***	- 0.26 **
		(0.07)	(0.11)	(0.11)	(0.12)
nQ		- 0.38 **	- 0.63 ***	- 0.47	- 0.13
		(0.16)	(0.18)	(0.41)	(0.62)
Coal_gov		- 2.62	- 2.27	0.10	0.61
		(2.08)	(2.15)	(1.86)	(3.83)
Maj_gov		3.77 ***	3.86 **	2.85 *	3.01
		(1.42)	(1.73)	(1.59)	(3.16)
Ndem_t2		- 3.68	- 4.36	- 4.82	- 8.54 **
		(3.10)	(3.16)	(3.22)	(3.74)
Maj_t2		- 5.48 ***	- 8.96 ***	- 4.65 **	1.14
		(1.42)	(2.49)	(2.31)	(3.31)
Rwing		1.32	1.30	1.08	0.36
		(1.03)	(1.02)	(1.00)	(1.39)
t2		- 0.01	0.01	- 0.02	- 0.14
		(0.06)	(0.06)	(0.08)	(0.11)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.10	0.27	0.33	0.31	0.28
Observations	219	219	198	170	102

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.15 Interaction effects (Election-year deficits, change from prior year)

	Model 1	Model 2	Model 3	Model 4	Model 5
DNL_0	0.17	0.18	- 0.65 ***	- 0.48 **	- 0.50
	(0.33)	(0.32)	(0.16)	(0.19)	(0.34)
DGDP_0	0.01	0.04	0.00	0.04	0.05

	(0.20)	(0.19)	(0.20)	(0.20)	(0.20)
DNL_trm	- 0.28	- 0.21	- 0.16	- 0.13	- 0.13
	(0.42)	(0.41)	(0.42)	(0.45)	(0.44)
DGDP_trm	1.10 ***	1.08 ***	1.11 ***	1.12 ***	1.10 ***
	(0.38)	(0.36)	(0.38)	(0.37)	(0.38)
DNL_0 * Coal_gov	- 0.90 **				
	(0.37)				
DNL_0 * Maj_gov		- 0.86 ***			
		(0.31)			
DNL_0 * Maj_t2			1.19 ***		
			(0.32)		
DNL_0 * Ndem_t2				- 0.83	
				(0.95)	
DNL_0 * Rwing					- 0.01
					(0.43)
Pct_t1	- 0.46 ***	- 0.45 ***	- 0.45 ***	- 0.44 ***	- 0.45 ***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
nQ	- 0.20 **	- 0.22 **	- 0.20 **	- 0.23 **	- 0.21 **
	(0.10)	(0.09)	(0.10)	(0.10)	(0.10)
Coal_gov	- 1.54	- 1.22	- 0.96	- 1.01	- 1.09
	(1.05)	(0.96)	(1.17)	(1.14)	(1.13)
Maj_gov	1.71	1.69	1.42	1.63	1.59
	(1.22)	(1.20)	(1.27)	(1.28)	(1.27)
Ndem_t2	- 4.62 *	- 4.71 *	- 4.74 *	- 5.12 *	- 4.49 *
	(2.75)	(2.71)	(2.68)	(2.79)	(2.71)
Maj_t2	- 5.39 ***	- 3.69 ***	- 5.20 ***	- 4.50 ***	- 4.56 ***
	(1.21)	(1.31)	(1.27)	(1.33)	(1.37)

Rwing	0.96	0.77	1.03	0.84	0.91
	(0.90)	(0.90)	(0.91)	(0.89)	(0.90)
t2	- 0.04	- 0.04	- 0.04	- 0.04	- 0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.27	0.27	0.27	0.26	0.26
Observations	311	311	311	311	311

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.16 Interaction effects (Election-year structural deficits, change from prior year)

	Model 1	Model 2	Model 3	Model 4	Model 5
DCANL_0	0.01	0.20	- 0.96 ***	- 0.75 ***	- 0.82 **
	(0.32)	(0.34)	(0.20)	(0.23)	(0.40)
DCANL_trm	0.31	0.33	0.45	0.49	0.48
	(0.40)	(0.40)	(0.42)	(0.42)	(0.49)
DCANL_0 *	- 1.10 ***				
Coal_gov	(0.42)				
DCANL_0 *		- 1.20 ***			
Maj_gov		(0.39)			
DCANL_0 *			1.30 **		
Maj_t2			(0.61)		
DCANL_0 *				- 0.54	
Ndem_t2				(1.04)	
DCANL_0 *					0.07
Rwing					(0.52)

Pct_t1	- 0.49 ***	- 0.49 ***	- 0.48 ***	- 0.48 ***	- 0.49 ***
	(0.08)	(0.08)	(0.09)	(0.09)	(0.08)
nQ	- 0.18 *	- 0.16	- 0.17 *	- 0.17 *	- 0.16
	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Coal_gov	- 2.99 **	- 2.27 *	- 2.44 *	- 2.40	- 2.48
	(1.42)	(1.35)	(1.58)	(1.57)	(1.59)
Maj_gov	2.06	1.74	1.63	1.68	1.68
	(1.37)	(1.36)	(1.48)	(1.44)	(1.43)
Ndem_t2	- 3.85	- 4.61 *	- 4.35 *	- 4.81 **	- 4.25 *
	(2.76)	(2.52)	(2.54)	(2.42)	(2.56)
Maj_t2	- 11.81 ***	- 9.77 ***	- 10.83 ***	- 11.20 ***	- 11.30 ***
	(1.90)	(2.30)	(3.09)	(1.91)	(1.92)
Rwing	0.91	0.65	0.81	0.71	0.75
	(0.95)	(0.99)	(0.95)	(0.96)	(0.94)
t2	- 0.10 ***	- 0.10 ***	- 0.10 ***	- 0.10 ***	- 0.10 ***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.24	0.24	0.23	0.22	0.22
Observations	259	259	259	259	259

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.17 Interaction effects (Expenditure-based fiscal adjustments, election year)

	Model 1	Model 2	Model 3	Model 4	Model 5
DDIS_0	- 0.05	- 0.22	0.57 ***	0.50 ***	0.78 **
	(0.36)	(0.39)	(0.19)	(0.18)	(0.34)
DREC_0	- 0.60 *	- 0.70 **	- 0.65 **	- 0.70 **	- 0.69 **
	(0.31)	(0.34)	(0.28)	(0.34)	(0.32)

DGDP_0	0.05 (0.22)	0.07 (0.20)	0.03 (0.20)	0.10 (0.22)	0.11 (0.21)
DDIS_trm	0.59 (0.45)	0.60 (0.46)	0.49 (0.47)	0.46 (0.47)	0.32 (0.48)
DREC_trm	0.27 (0.66)	0.48 (0.64)	0.33 (0.65)	0.43 (0.64)	0.45 (0.65)
DGDP_trm	1.26 *** (0.45)	1.26 *** (0.43)	1.26 *** (0.44)	1.23 *** (0.43)	1.21 *** (0.43)
DDIS_0 * Coal_gov	0.65 (0.40)				
DDIS_0 * Maj_gov		0.80 ** (0.33)			
DDIS_0 * Maj_t2			- 1.06 ** (0.41)		
DDIS_0 * Ndem_t2				- 0.49 (1.49)	
DDIS_0 * Rwing					- 0.38 (0.37)
Pct_t1	- 0.46 *** (0.09)	- 0.45 *** (0.09)	- 0.45 *** (0.09)	- 0.46 *** (0.09)	- 0.45 *** (0.09)
nQ	- 0.19 * (0.10)	- 0.22 ** (0.10)	- 0.21 ** (0.10)	- 0.20 ** (0.10)	- 0.21 ** (0.10)
Coal_gov	- 1.20 (1.13)	- 0.81 (1.07)	- 0.87 (1.17)	- 1.02 (1.20)	- 1.05 (1.13)
Maj_gov	1.23 (1.23)	1.04 (1.22)	1.00 (1.29)	1.18 (1.24)	1.19 (1.25)

Ndem_t2	- 4.12	- 4.13	- 4.39	- 3.58	- 4.13
	(2.86)	(2.80)	(2.84)	(3.14)	(2.80)
Maj_t2	- 7.47 ***	- 6.10 ***	- 7.21 ***	- 7.36 ***	- 7.79 ***
	(1.42)	(1.77)	(2.07)	(1.43)	(1.50)
Rwing	1.08	0.94	1.14	1.16	1.26
	(0.90)	(0.89)	(0.93)	(0.92)	(0.91)
t2	- 0.02	- 0.02	- 0.02	- 0.02	- 0.02
	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.28	0.28	0.28	0.27	0.27
Observations	297	297	297	297	297

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4.18 Interaction effects (Term-length changes in welfare spending, holding receipts and total disbursements constant)

	Model 1	Model 2	Model 3	Model 4	Model 5
DSX_trm	- 5.01 ***	- 2.55 *	- 2.71 **	- 4.02 ***	- 2.50 *
	(1.89)	(1.37)	(1.10)	(1.25)	(1.45)
DREC_trm	- 0.55	- 0.53	- 0.55	- 0.54	- 0.57
	(0.65)	(0.61)	(0.64)	(0.62)	(0.61)
DDIS_trm	1.88 ***	1.83 ***	1.82 ***	1.93 ***	1.81 ***
	(0.40)	(0.42)	(0.40)	(0.42)	(0.40)
DGDP_trm	1.68 ***	1.58 ***	1.60 ***	1.62 ***	1.54 ***
	(0.41)	(0.40)	(0.40)	(0.37)	(0.42)
DSX_trm *	2.35				
Coal_gov	(1.72)				
DSX_trm *		- 1.77			

Maj_gov		(1.56)			
DSX_trm * Maj_t2			- 6.35 ** (2.80)		
DSX_trm * Ndem_t2				11.24 * (6.28)	
DSX_trm * Rwing					- 2.15 * (1.22)
Pct_t1	- 0.44 *** (0.10)	- 0.43 *** (0.11)	- 0.45 *** (0.11)	- 0.41 *** (0.11)	- 0.43 *** (0.11)
nQ	- 0.30 * (0.16)	- 0.32 * (0.17)	- 0.27 * (0.15)	- 0.32 ** (0.16)	- 0.33 * (0.17)
Coal_gov	- 0.74 (2.23)	- 0.55 (2.38)	- 0.36 (2.28)	- 0.05 (2.20)	- 0.17 (2.35)
Maj_gov	1.35 (1.29)	1.82 (1.15)	1.22 (1.30)	1.60 (1.18)	1.54 (1.24)
Ndem_t2	- 5.21 (3.86)	- 5.18 (3.76)	- 4.94 (3.82)	- 6.76 * (3.57)	- 5.25 (3.81)
Maj_t2	- 4.37 ** (1.80)	- 4.70 ** (1.83)	1.22 (1.30)	- 4.23 ** (1.94)	- 5.15 ** (2.11)
Rwing	1.66 * (0.94)	1.79 * (0.96)	1.58 * (0.95)	1.92 ** (0.94)	2.17 ** (0.95)
t2	- 0.07 (0.06)	- 0.07 (0.06)	- 0.08 (0.06)	- 0.07 (0.06)	- 0.07 (0.06)
Model	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE	CFE, HCSE
Adjusted R^2	0.32	0.32	0.33	0.33	0.32
Observations	198	198	198	198	198

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix 4. Data and Sample

The set of countries is listed in Table 4.1, and includes the 34 member states of the Organization for Economic Cooperation and Development (OECD), excluding Chile, Israel, Mexico, Turkey, and Switzerland. Chile, Mexico, and Turkey are omitted on the basis of their relatively low per capita GDP and recent democratization. Chile and Mexico both held their first fully open and competitive democratic elections in 2000, according to the Polity IV coding (2014b). Following the 1980 coup d'état, Turkey did not hold its next fully democratic election until 1991. Israel is excluded on account of the considerable degree of party switching among members of parliament between elections, which inhibits the accurate measurement of vote share for the party of the chief executive. Switzerland is excluded due to the unique structure of its executive branch: an agreement among the four dominant political parties to share representation in the Federal Council, with no one individual or party holding the position of chief executive.

Following Alesina, Carloni, and Lecce (2013) and Nyman (2014), I use fiscal data from the *OECD Economic Outlook* 96 (November 2014), supplemented by data on earlier observations from the *OECD Economic Outlook* 76 (December 2004). Brender and Drazen (2008) use data from the International Monetary Fund (IMF)'s *International Financial Statistics*, supplemented by the IMF's *Government Finance Statistics*. However, the IMF's eLibrary currently provides data on central government and budgetary central government deficits for only 105 of the 180 observations in Brender and Drazen's subset of developed countries. In contrast, the *OECD Economic Outlook* contains 306 observations of election-year deficits. Given the relatively low number of degrees of freedom in some of the models, particularly those with data on social expenditure and lagged changes in revenue and expenditure, it is necessary to use the more expansive OECD data.

To measure *change in incumbent vote share,* I compute the difference between votes for the party of the incumbent chief executive as a percentage of total valid votes in the current and prior election (*DPct*). When incumbent coalition partners run on a joint party list with the party of the chief executive for particular constituencies (e.g. Norway from 1965 to 1973), I measure change in vote share for all coalition partners on the joint list. Other coalition partners, such as the German CDU/CSU coalition and the Australian Liberal-National Coalition traditionally govern together and do not generally field candidates to oppose candidates of the coalition partner at the constituency level. When allied parties are in government, I use the vote share for all parties in the electoral alliance to measure electoral outcomes.

I use elections to the lower house of parliament in bicameral systems, elections to the single parliamentary chamber in unicameral systems, and presidential elections in presidential systems (the United States and South Korea) to compute change in incumbent vote share. Electoral data is taken from Döring and Manow's *Parliament and Government Composition Database* (ParlGov) (2015), Nohlen and Stöver's *Elections in Europe: A Data Handbook* (2010), and various national sources, listed in the references. Other political variables come from the World

Bank's *Database of Political Institutions* (DPI) (Beck et al. 2001), augmented and amended by my original calculations.

Treatment variables include change in net lending (*DNL*), change in cyclically-adjusted net lending (*DCANL*), change in receipts (*DREC*), change in disbursements (*DDIS*), and change in social expenditure (*DSX*). For each model, the treatment variable (*T*) is a measure of either election-year (denoted by *T_0*) or election-term (*T_trm*) change in the level or composition of government expenditure. I measure term-length variables in terms of *average annual change* between *CE_Yr1* and *t2*, where *CE_Yr1* is the year in which the party of the chief executive enters office and *t2* is the year of the first election after *CE_Yr1*. In some specifications, I include lagged annual changes in the treatment variable *T_**a***, where ***a*** is the number of years prior to the election at *t2*, and *T_**a*** measures the change in the level of the variable from time ***a*** – 1 to time ***a***. For example, I measure change in net lending in the year of election relative to the prior year (*DNL_0*), over the course of the incumbent's term in office (*DNL_trm*), and at various annual lags (*DNL_1*, *DNL_2*, *DNL_3*). Beyond three years, there are too few observations for each fiscal variable to precisely estimate electoral effects.

I calculate *DREC* and *DDIS* using data on general government receipts and disbursements from the OECD's *Economic Outlook* (EO) 96 (November 2014) and *Economic Outlook* 76 (December 2004). Combining observations from both editions of the *Economic Outlook* increases the number of degrees of freedom for each of the models incorporating *DREC* and *DDIS*. When available, I use data from the more recent edition of the *Economic Outlook*, but do not combine observations from both sources when coding a single observation. For instance, EO 96 contains data on general government receipts in Australia from 1989 up to and including the most recent year of election (2013). EO 76 contains data on the same variable from 1960 up to and including 1989. For the term spanning 1987 to 1990 (Hawke's fourth Labor administration), I measure *DREC_trm*, *DREC_1*, and *DREC_2* using data from EO 76, and *DREC_0* using data from EO 1989. I thus do not combine data from multiple sources when estimating the change in receipts from 1988 to 1989, using instead the data source for which both variables are defined (EO 76).

DNL is the change in government net lending, defined as *DREC – DDIS* for a particular time period, and calculated as a percentage of nominal GDP. The OECD also calculates *cyclically-adjusted net lending* (*CANL*) estimates for a subset of countries in the sample. Cyclical adjustment attempts to remove the effects of short-term changes in national output on the budget balance. *CANL* is measured as a percentage of potential GDP.

Data on social expenditure comes from the OECD's (2015d) *Social Expenditure Database*. Macroeconomic variables measured on an annual basis include change in real GDP (*DGDP*), change in unemployment (*DUNP*), and *level* of inflation (*INF*, measured as the change in the GDP deflator over the previous year). Since I use levels rather than first differences to estimate annual effects of inflation, I measure term-length inflation by calculating the average annual level (*INF_avg*) rather than average annual change in inflation. Annual GDP data are from the OECD's (2015c) *National Accounts*, calculated using the expenditure approach, and presented in constant 2010 United States dollars. Data on unemployment are from the OECD's (2015a) *Annual Labour Force Statistics*. The World Bank's (2015) *World Development Indicators* provides data on inflation.

5. Long-Term Fiscal Adjustment: Political Cohesion and Pension Reform

A number of economists and political scientists have claimed that the probability that governments will raise taxes or cut spending in response to unfavorable fiscal, economic, and demographic conditions decreases with government fragmentation. Fiscal adjustment is delayed when veto players disagree over the distribution of costs. Pension reforms are perhaps another matter. Case studies of pension reforms suggest a contrary logic: less cohesive governments are more likely to enact cost-containing measures. When multiple parties of diverse ideological orientation are necessary to pass legislation, governments can more easily diffuse the costs of reform. To adjudicate between these conflicting hypotheses, I develop an original index of political cohesion and use the index to estimate the extent to which cohesion affects the change in pension generosity.[32] Contrary to established claims, I find that cohesion alone and in interaction with the level and change in the old-age dependency ratio has no significant non-negligible effect on the estimated degree of reform.

This chapter examines one of the most significant long-term fiscal policy challenges facing governments in affluent democracies: containing rising pension costs. From 1990 to 2009, public spending on pensions relative to GDP in the countries that comprise the Organization for Economic Cooperation and Development (OECD) increased by 27.9%. Although many governments have tightened eligibility and reduced benefits, public pension expenditure is projected to rise an additional 23.2% relative to output between 2015 and 2050 (OECD 2013).

In the aftermath of the 2008 global financial crisis, the ratio of government debt to GDP in many developed economies reached its highest level since the years immediately following the end of World War II (Reinhart and Rogoff 2011). Given that pensions are the single largest source of government expenditure in most OECD countries, it is unsurprising that governments have often included pension cuts in proposals to reduce budget deficits (OECD 2011). However, pension cuts have long been considered politically unpopular measures (Myles and Pierson 2001; Pierson 1994). Those who benefit most from cost containment, particularly younger citizens, tend to be less politically influential than the losers of pension reforms (Tucker 2013). Furthermore, while reforms may generate immediate savings, many of the economic benefits of reducing pension expenditures – in the form of savings to taxpayers, reduced interest payments on government debt, and increased ability to fund future beneficiaries – are prospective, abstract, and uncertain (Jacobs 2011). When voters sufficiently discount future benefits, it becomes politically costly for governments to implement reforms, even if such reforms are economically optimal.

Despite the practical importance of the topic, we know remarkably little about the political determinants of pension reform. In this chapter, I estimate the relationship between political

[32] This chapter uses data from the “Political Causes of Fiscal Adjustments Dataset” described in Appendix B. For data, please email the author at donnelly.patrick.t@gmail.com.

cohesion, which I define as the summed ideological distance between parties necessary to pass legislation, and the change in pension generosity in response to common fiscal, economic, and demographic constraints. The choice of explanatory variable is motivated by a tradition of research that categorizes government institutions according to the degree to which groups of policymakers can block reform (Immergut 1992; Lijphart 1999; Tsebelis 1995).

Two prevailing theories generate opposite empirical predictions concerning the relationship between political cohesion and reform. Political economists have frequently claimed that more cohesive governments are more capable of reducing public debt, noting that minority and coalition governments are associated with higher deficits when economic conditions are unfavorable (Roubini and Sachs 1989). When political power is dispersed, fiscal contractions may be delayed due to the inability of governments to secure agreement among coalition partners regarding the allocation of costs (Alesina and Drazen 1991).

However, a number of case studies and comparative analyses have suggested that the political logic of pension reform is substantially different than that of short-term fiscal adjustment. Whereas annual reductions in government debt are more likely to succeed in political environments conducive to unilateral governmental action, pension reforms often require broad consensus involving opposition parties in parliament and social partners such as labor unions and employers' associations (Busemeyer 2006; Myles and Pierson 2001; Rhodes 2001; Schludi 2003). Consensual policymaking is far more likely to occur when political power is fragmented (Lijphart 1999). The following two sections address these two conflicting sets of hypotheses in greater detail.

The Case for Cohesion

During the 1970s, the era of uninterrupted postwar economic growth in high-income democracies came to an end. In the ensuing decades, economists and political scientists attempted to account for the divergent national responses to declining productivity growth (Iversen and Wren 1998), rising unemployment and inflation (Cameron 1984), and revenue shortfalls (Alesina and Perotti 1994; Roubini and Sachs 1989), among other economic challenges. The lasting accumulation of public debt across developed economies during the 1980s led scholars in the growing field of political economics to question the assumption that governments in fact minimize the social costs of taxation and deficits. At the time, the prevailing theory of government debt accumulation held that governments will maintain constant tax rates over the business cycle to minimize the distortionary costs of taxation (Barro 1979). “Tax smoothing” leads to countercyclical fiscal policy: deficits during recessions offset by surpluses during periods of relatively high economic growth.

Although tax smoothing may be socially optimal, fiscal policymakers are political actors rather than benevolent social planners. Spending ministers may prefer to shield their departments from cuts during periods of budgetary contraction, and lobby for an increasing share of expenditures during periods of expansion, even if such preferences are not consistent with an optimal level of deficit (Roubini and Sachs 1989, p. 924). Examining variation in budget deficits across OECD countries, a number of political economists have concluded that less cohesive governments – those with more parties in government, more executive constraints, and more political actors with the authority to block legislation – are likely to accumulate more government debt, particularly during periods of low growth or high unemployment that require discretionary fiscal policies in order to balance budgets. Three theories of fiscal policymaking have arrived at this conclusion from separate premises: the “strong government” hypothesis introduced by Roubini and Sachs (1989), the “war of attrition” model formulated by Alesina and Drazen (1991), and the “veto players" theory of Tsebelis (1995).

Roubini and Sachs (1989, p. 925) argue that each party in government has a political incentive to protect their spending preferences from cuts during contractions. While each party may favor an overall reduction in the budget deficit, disagreement over the composition of cuts coupled with the ability of each party to veto proposed legislation leads to a socially suboptimal decrease in government spending, biasing the budget toward an excessive deficit. However, the authors note that this bias should only be present during fiscal contractions. Individual parties in government are able to veto spending cuts, but are not able to unilaterally approve favored increases in government spending. Hence coalition governments should only be biased toward socially suboptimal deficits when macroeconomic conditions lead to increased government expenditure or decreased revenue absent discretionary changes in fiscal policy.

Alesina and Drazen (1991) develop a formal model to explain why less cohesive governments may be less capable of reducing large budget deficits. By extension, the authors' theory implies that the level of deficits should decrease with political cohesion. Like the political parties in Roubini and Sachs' informal theory, the political actors in Alesina and Drazen's model agree that deficits or debt should be reduced, but disagree about how to allocate the costs of adjustment. Each actor receives a particular benefit from winning the ensuing war of attrition (and imposes the costs of stabilization on the losing actors), but it is also costly for each actor to fight. However, the actors are uncertain of their opponents' costs and benefits from contesting the war of attrition. Contestants will continue to fight the war of attrition until the passage of time or an ensuing political stabilization (such as an election) demonstrates that one party is more likely to concede than the other. Citing Roubini and Sachs (1989), Alesina and Drazen show that the probability of stabilization increases with political cohesion. Alesina, Ardagna, and Trebbi (2006) later show that substantial reductions in government deficits are more likely to occur in more unified and cohesive governments, such as presidential systems and governments with greater parliamentary majorities and fewer executive constraints.

Tsebelis (1995, 2002) argues that increasing the number of “veto players" necessary for policy change should impede fiscal consolidation. In presidential systems, veto players are the president and the legislative chambers, each of which have the ability to block (or override) proposed policies. In parliamentary systems, veto players are the parties that comprise the governing coalition. As the number, ideological distance, and internal cohesion of veto players increases, the ability of governments to enact policy changes decreases. The empirical prediction of Tsebelis' theory is consistent with that of Roubini and Sachs (1989) and Alesina and Drazen (1991): deficits should increase with the number of political parties necessary to pass legislation, and when the executive and legislature have different policy preferences. When faced with a revenue shortfall, governments with few veto players can more easily raise taxes or cut spending to reduce the deficit. Increasing the number of veto players delays the passage of measures necessary to balance the budget. The implication of these theories for explaining pension reform is straightforward. As fiscal pressure to reduce pension costs increases – in the form of declining growth, budget deficits, and population aging – governments' ability to adjust pension eligibility and coverage should increase with the level of political cohesion. This suggests a model in which economic and political factors interact to enable or inhibit reform.

The claim that cohesion facilitates fiscal adjustment – and by extension, cost-containing pension retrenchment – is intuitively plausible and carefully reasoned in each of these three arguments. Yet empirical tests of a systematic relationship between cohesion and deficits have yielded inconsistent conclusions. Initial analyses provided support for a positive association between cohesion and budget balance. In a sample of 13 OECD countries, Roubini and Sachs (1989) find a negative association between changes in general government net debt and an index of political cohesion composed of three components: whether the government commands a parliamentary majority, whether the government is unified or divided (in presidential systems), and the number of parties in government.

The authors suggest that less cohesive (or more fragmented) governments may find it more difficult to agree on the allocation of budget cuts. If each party is likely to block proposed cuts to programs favored by their respective leadership and constituencies, increasing the number of parties may make it harder to pass legislation authorizing reductions in government expenditure. Similarly, if parties have different preferences regarding tax policies, minority, coalition, and divided governments may find it more difficult to agree on who should pay for reductions in the budget deficit. Yet as the authors acknowledge, the negative correlation between cohesion and deficits only holds for the period 1975-85, when output growth was relatively low across the country sample. From 1964 to 1974, changes in general government debt are not significantly associated with the level of political cohesion. These findings are consistent with the authors' theory that political cohesion should only increase deficits when macroeconomic conditions are not conducive to maintaining balanced budgets without increasing taxes or decreasing expenditures.[33]

Edin and Ohlsson (1991) find that Roubini and Sachs' results are robust, but show that their findings are entirely driven by the presence of higher deficits in minority governments. Increasing the number of parties or switching from unified to divided governments does not explain variations in government deficits in Roubini and Sachs' sample. Other studies cast doubt on the association between political cohesion and deficits. In a time-series cross-sectional analysis of government budgets in 12 European Community member states from 1981 to 1999,

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[33] For a more detailed analysis of Roubini and Sachs’ study and its limitations, see Chapter Two.

de Haan and Sturm (1994) find that deficits increase with the frequency of government changes. However, the authors do not find a significant association between Roubini and Sachs' index of political cohesion and annual changes in general government debt.

In a subsequent replication of Roubini and Sachs' analysis, de Haan and Sturm (1997) correct several coding errors in the original paper, extend the sample to 21 OECD countries, and change the time period from 1982 to 1992. The authors find no significant association between the Roubini-Sachs index of political cohesion and annual changes in government spending or debt. Harrinvirta and Mattila (2001), using a sample of 17 OECD countries from 1960 to 1995, find that the annual general government financial balance does not significantly change with the number of parties in government. Furthermore, majority governments tend to be associated paradoxically with higher deficits, though the results are not significant at conventional levels. Sakamoto (2001) shows that central and general government deficits in 18 OECD countries from 1961 to 1994 tend to be significantly lower under coalition governments. In some models, the minority government variable is negatively associated with deficits. These results suggest that the estimated association between government attributes and deficits is highly dependent on the choice of variables, observations, and method of estimation. Nevertheless, many of the results support Roubini and Sachs' hypothesis that less cohesive governments tend to run higher deficits when output growth is low and unemployment is high.

I now examine a set of arguments that claim that pension reform is more likely to occur when governments can effectively share the costs of reform with coalition members, parties in opposition, and social partners. One of the clearest empirical implications of these theories is that the degree of reform should be higher in less cohesive governments in which it is more difficult for voters to attribute responsibility to particular parties in government, and the party of the executive specifically. But why should one expect the logic of pension reform to differ from that of fiscal adjustment more generally? And does the historical record support the hypothesized negative association between cohesion and reform?

The Case against Cohesion

If relatively cohesive governments are more capable of implementing fiscal adjustments in response to adverse macroeconomic shifts and shocks, then it would appear that such governments would be well-equipped to correct fiscal imbalances generated by maturing pension obligations. However, much of the existing research on the politics of pension reform suggests a strikingly different, if not antithetical political logic: reforms are possible only when the government is able to win the support of opposition parties or social partners (Busemeyer 2006; Myles and Pierson 2001). Fiscal adjustment through pension cost containment tends to occur when more parties are involved in the process of legislation, suggesting that less cohesive governments are more likely to tighten pension eligibility and benefits in response to rising costs.

Two related theories of policymaking support this conclusion. Case studies of pension reform often cite the advantages of sharing the responsibility for reform among a broad range of political actors. As the number of groups involved in the reform process – political parties, labor unions, employers' associations, and interest groups representing beneficiaries – increases, it becomes more difficult for voters to punish governments for the costs of reform. Although subsequent research has challenged the broader hypotheses that welfare retrenchment and fiscal consolidation are generally electorally costly (Armingeon and Giger 2008; Giger and Nelson 2010; Alesina, Carloni, and Lecce 2013), it remains clear that reforms impose costs on large segments of the electorate with the capacity to politically mobilize to block policy changes (Alesina and Drazen 1991; Pierson 1996). To the extent that pension cost containment necessitates blame sharing rather than credit claiming, it should be easier for governments to tighten benefit eligibility and generosity when political power is dispersed (Pierson 1996).

Myles and Pierson (2001) use this logic to explain the politics of pension reform. They claim that legislation to tighten pension eligibility and benefits has almost exclusively taken the form of consensual agreements among multiple political actors. Busemeyer (2006) notes that nearly all studies of pension reform have contended that consensus is a necessary precondition for reform (Culpepper 2002; Ebbinghaus and Hassel 2000; Schludi 2003). Pension reform involves not only consensus among parties in government, and between government and opposition, but also among social partners: associations representing the interests of employees and employers (Natali 2004; Rhodes 2001). As Lijphart (1999) notably argues, consensual political agreements are more likely to occur in political systems with generally low government cohesion and low clarity of government responsibility.

More generally, Pierson (1996) contends that governments generally tend to minimize responsibility for welfare retrenchment. Anticipating electoral punishment for cuts to popular social transfers, pro-retrenchment governments will attempt to share the political costs of expenditure cuts, minimizing prospective losses in vote share through a process of “blame avoidance” (Pierson 1996, p. 145; Weaver 1986). The logic of Pierson's argument presumably applies to other reforms that impose concentrated costs on politically influential constituents in exchange for diffuse benefits shared by less organized groups of voters (Pierson 1996, p. 145).

A parallel literature on the consequences of economic conditions for the electoral performance of incumbent parties lends support to the blame avoidance hypothesis. Powell and Whitten (1993) show that governments are held less accountable for election-year economic conditions in governments with less “clarity of responsibility.” The factors in Powell and Whitten's index of government clarity are nearly identical to the criteria used by Roubini and Sachs (1989) to define political cohesion. Unified, majority, and single-party governments are more cohesive but less electorally accountable. As accountability decreases, so do the prospective electoral sanctions facing governments choosing whether or not to delay adjustment.

When governments choose to reform pensions, they frequently exchange short-term economic costs for long-term benefits (Jacobs 2011). Short-term declines in output growth become increasingly electorally costly as political cohesion increases (Powell and Whitten 1993) and when citizens can agree on an alternative party or coalition to support (Lewis-Beck 1986; Anderson 2000). Assuming that governments anticipate that the electoral consequences of reform will strengthen when voters can easily assign responsibility to governing parties and defect to the opposition, the expected degree of pension reform should decrease with the clarity of government responsibility and the clarity of available alternatives. As I will argue in the following section, the ideological cohesion of the governing coalition enables voters to more effectively sanction incumbents for the costs of pension reform.

Despite extensive descriptive research on the topic, there is no systematic evidence that political institutions that enable citizens to hold governments responsible for their policies strengthen the electoral consequences of pension reform or limit the degree to which governments implement changes to pension systems. And while a subsequent individual-level analysis of economic voting has provided support for the clarity of responsibility hypothesis (Nadeau, Niemi, and Yoshinaka 2002), others find that Powell and Whitten's findings are not robust to alternative measures of responsibility (Royed, Leyden, and Borrelli 2002). Absent further analysis, it remains unclear how (or if) political cohesion affects the degree of pension reform.

Institutional and Electoral Constraints on Reform

Early researchers of the politics of fiscal adjustment were puzzled by why governments often chose to delay socially optimal reductions in government debt or deficits. Pension reform is puzzling for the opposite reason. Why do governments choose to reform pensions when more politically expedient options for generating savings are available in the short run? In an attempt to answer this question, I begin by introducing a conceptual distinction. Governments face two fundamental constraints toward enacting economic policies. For simplicity, I refer to these as *institutional* and *electoral* determinants of policy choice. As I will later address in greater detail, this is not to suggest that electoral factors are not themselves institutionally determined. These two constraints correspond to the research traditions examined in the previous two sections. Political economists that emphasize the benefits of cohesion tend to argue for the dominance of institutional over electoral constraints on policy choices. Scholars that argue that fragmented governments are more likely to reform typically contend that concern over potential electoral sanctions trumps internal resistance to policy change.

Institutional constraints are the set of rules that structure the interaction of actors within political and other systems (North 1990). Formal institutions strongly influence, but do not determine the set of veto players necessary for policy change. In parliamentary systems, institutional constraints on policymaking include electoral rules, which impact the number of parties necessary to pass legislation. In presidential systems, institutional constraints include the presidential veto on legislation (Tsebelis 1995). Electoral constraints refer to governments' beliefs about how prospective fiscal policies will affect reelection prospects in subsequent elections. These beliefs in turn influence governments' policy choices.

Institutional constraints limit the ability of governments to implement their policy preferences. In his seminal analysis of the institutional causes of policy change, Tsebelis (1995, 2002) argues that policy stability increases with the number of veto players that can block legislation. Similarly, Alesina and Drazen (1991) develop a model in which increasing the number of political actors necessary for policy change delays fiscal adjustment. Roubini and Sachs (1989) use a similar insight to explain the relatively high accumulation of debt in multiparty political systems. Immergut (1992) shows that the extent to which policymakers were able to establish public health insurance in France, Sweden, and Switzerland decreased with the number of veto players.

Each of these studies assumes the exogeneity of government preferences. In Tsebelis' basic model, individual legislators and political parties have ideal positions. Although the cohesion of parties' positions may vary exogenously, Tsebelis (1995) does not explicate the determinants of the position or cohesion of actors' preferences. Similarly, Alesina and Drazen (1991) and Roubini and Sachs (1989) assume that political parties have distinct preferences over the distribution of the costs of fiscal adjustment, but do not derive the source of these preferences.

By introducing electoral constraints into models of budgetary policymaking, I explain why political parties and other actors adopt economically suboptimal *positions* on fiscal adjustment. In contrast to institutional constraints, which regulate the ability of governments to enact preferred policies, electoral constraints influence governments' policy preferences. Governments are motivated by the policy preferences of core supporters and party elites, but they also seek reelection, either as a means to enact preferred policies, to obtain the spoils of office, or as a desirable goal in itself (Ström 1990). Although political parties often maintain distinct policy positions that are relatively stable over time (Iversen 1994), the platforms (Adams et al. 2004) and policies (Stimson, MacKuen, and Erikson 1995) of electorally competitive parties (Adams et al. 2006) change in response to public opinion. Since voters and policymakers have relatively short time horizons, governing parties are primarily concerned about their change in vote share in the next election, and in the impact of fiscal policies on short-term economic conditions.[34]

Alesina and Drazen (1991) and Roubini and Sachs (1989) both show that delayed adjustment can occur even when it is generally costly for each political actor to delay. However, as I have noted, many others have argued that governments may have political incentives to delay fiscal adjustment. Even when governments (hypothetically) face no internal disagreement over the distribution of the costs of stabilization, legislators, ministers, and party leaders may believe that voters will punish them for the (real or perceived) negative economic consequences of adjustment.

[34] For evidence of voter myopia in American elections, see Achen and Bartels 2004; Healy and Lenz 2014. The analyses in Chapter Three suggest that voters generally tend to consider macroeconomic conditions in years prior to the year of election. Yet, as Chapter Four has shown, the electoral effects of fiscal policies are generally limited to election years. Chapter Two provides evidence that governments tend to favor expansionary fiscal policies in election years.

Models that emphasize institutional factors yield strikingly different empirical predictions than those based on electoral constraints. In institutional models of policymaking, the probability of fiscal adjustment following a revenue shock should increase with political cohesion. As the number of parties in government increases, political cohesion declines, as does the prospect of stabilization. Models that emphasize electoral constraints suggest an opposing logic. Governments are more likely to enact electorally unpopular reforms when they can share the responsibility for the negative consequences of reform among a larger number of parties. When it comes to pension reform, should one expect the institutional logic to dominate, leading to a positive relationship between government cohesion and reform, or should one expect the opposite to be the case? Are governments primarily constrained by internal disagreement over the distribution of the costs of reform, or are governments that can diffuse responsibility for costs more likely to implement changes to pension systems?

One possibility is that the findings of qualitative research on pension reform do not hold when subject to statistical analysis. While researchers have used cross-national quantitative studies to evaluate the determinants of retrenchment in accident, sickness, and unemployment insurance, the statistical analysis of pension retrenchment remains relatively unexplored in comparative perspective. However, given the limited number of cases and the relatively large volume of literature on pension reform, it seems unlikely that case studies and non-statistical comparative analyses would generate conclusions that are antithetical to the findings of statistical analyses of the determinants of budgetary adjustments.

Alternatively, the politics of pension reform may be entirely distinctive from that of budgetary adjustment, and thus it makes little sense to compare the political determinants of these two apparently dissimilar outcomes. Pension reform may be less about cost containment and more about the attempts of right-wing governments to reduce the size of the public sector. Yet pension reforms, like budgetary adjustments, are not typically enacted by conservative governments against the will of voters, left-of-center parties, and trade unions. On the contrary, successful pension reforms tend to involve the support of parties and unions representing the interests of labor (Myles and Pierson 2001). Pension reforms differ from ordinary fiscal adjustments in that they generally impose certain, immediate, and tangible short-term costs on voters in exchange for uncertain, prospective, and abstract long-term benefits. Whereas tax increases and spending cuts often lead to immediate savings, the benefits of pension reforms may take generations to materialize. Governments attempting to reform pensions face a different political task than governments seeking to meet an annual fiscal target. Perhaps increasing political cohesion may enable governments to meet an annual fiscal target, but impede cost-containing measures when the benefits of reform are not immediate.

Research Design

Few statistical analyses have attempted to explain which political factors are conducive to reforming public pension systems. In their study of the political causes of pension reform, James and Brooks (2001, p. 5) hypothesize that increasing the effective number of parties will decrease the probability that a government will either establish a "structural reform" of the state pension system, which they define as either the creation of a "privately-managed funded pillar" or the change of the system's "pay-as-you-go (PAYG) pillar from defined benefit (DB) to defined contribution (DC)." The authors' definition of structural pension reform is consistent with the World Bank's (1994) prescriptions for reforming public pensions. In a cross-sectional probit analysis of OECD, Latin American, and former Soviet Union countries, the authors find no significant relationship between the effective number of parties and the probability of structural reform.

In contrast, this study attempts to explain the timing of reforms. Reforms should occur not only in countries in which political power is more diffuse; they should also occur *when* political power is less concentrated. In examining pension reform as a form of long-term fiscal adjustment, I am strictly interested in cost-containing measures, specifically changes in the generosity of public benefits.

Treatment Variable

To measure political cohesion, I calculate the aggregate ideological distance (*DIST*) between the party of the chief executive and each other party necessary to secure a legislative majority.[35] Since the value of this index decreases with cohesion, I refer to the index as measuring political fragmentation, with fragmentation defined as the reciprocal of cohesion. Due to lack of data, I do not incorporate internal party cohesion into the fragmentation index. This is problematic to the extent that *intra*-party cohesion correlates with the degree of *inter*-party cohesion. Although I argue that the index presented here improves significantly on prior metrics of government cohesion, future research should attempt to measure the ideological dispersion among legislators and ministers of each governing party.

I use the Comparative Manifesto Project (CMP)'s *rile* variable to measure a party's general ideological position in a specific election year (Laver and Budge 1992). This variable combines positions on 26 issues coded from election-year manifestos (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2014). Despite the limitations of the CMP's coding assumptions – most generally that parties compete in a one-dimensional issue space by emphasizing particular

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[35] This metric combines two dimensions of cohesion: the number of parties and their ideological polarization (Tsebelis 1995), and is defined as $DIST = \sum | X - Yi |$ from $i = 1$ to N, where X is the policy position of the party of the chief executive, and Y_i is the policy position of each supporting party, $\underline{i} \in (1, \ldots, N)$, where N parties are needed to pass legislation.

positions – alternative measures of party positions such as simple party family classifications (as in e.g. Cusack 1999) or expert surveys (e.g. Bakker et al. 2015) are too coarse or too infrequently administered to precisely capture cross-national and temporal variation (Gemenis 2013).

The following table displays the countries in the empirical analysis with years of available data, ranked by mean government fragmentation, with mean ideology scores. Since government cohesion decreases with the aggregate ideological distance between parties, the countries with the most cohesive governments (Greece, the Republic of Korea, and the United Kingdom, all single-party governments for all observations in the dataset) have the lowest fragmentation scores. The three most fragmented political systems belong to Switzerland, with its “magic formula” of executive power sharing among four ideologically disparate political parties; Denmark, with its tradition of minority governments and multiparty policymaking; and Belgium, with its parliamentary politics divided along ideological and linguistic lines. Table 5.1 ranks countries in descending order by mean government fragmentation.

[Table 5.1 here]

Aggregate ideological distance improves on prior metrics of cohesion. Roubini and Sachs' political cohesion index (*POL*) combines two factors: whether or not the government holds a majority of seats in parliament, and the number of parties in government. The value of *POL* equals 0 for one-party majority governments in both presidential and parliamentary systems, 1 for two-party coalition or divided governments, 2 for governments with three or more coalition partners, and 3 for minority parliamentary governments (Roubini and Sachs 1989, p. 523).

An obvious objection to Roubini and Sachs' criteria concerns the coding of minority governments. There is no reason to suppose that a minority government that relies on the confidence and supply of a second party in parliament is less politically cohesive than a five-party minimum-winning coalition. Nor does it make sense to assume that four-party minority governments such as the center-right Danish coalition that governed from 1982 to 1988 are as cohesive as one-party minority governments such as the ones led by the Danish Social Democrats for much of the 35 years following the end of World War II. Moreover, the *POL* variable does not account for ideological distance between parties. It is presumably easier for coalitions of center-left or center-right and moderate parties, such as those that governed the Federal Republic of Germany during its existence, to efficiently agree on policies than it is for coalitions consisting of ideologically disparate partners.

An alternative approach, favored by Borelli and Royed (1995), Edin and Ohlsson (1991), Harrinvirta and Mattila (2001), and Sakamoto (2001), has been to disaggregate the components of political cohesion into constituent variables. For instance, Sakamoto (2001) includes binary variables for minority, coalition, and left governments, along with a continuous variable measuring political stability, along with interactions of the indicator variables with unemployment and deficits, and interactions of all four variables with decade fixed effects. However, as the number of comparisons increases, it becomes more difficult to determine which estimated effects of the components of cohesion are systematically related to the outcome of interest. Substantially increasing the number of comparisons sharply decreases the p-value necessary to demonstrate significance at conventional levels for each individual comparison (Dunn 1961). While it may be of interest to disaggregate the components of cohesion for the purposes of robustness checks and exploratory analysis, I avoid the problems associated with multiple comparisons by regressing my index of pension reform on a single measure of political cohesion.

In addition to increasing with the number of parties, policy stability should also increase with the ideological distance between political actors necessary to pass legislation (Tsebelis 1995). When governments can share the short-term political costs of reform among parties with divergent policy preferences, it is less likely that reforms will be reversed by subsequent governments. Understanding this, voters are more likely to trust governments' commitment to reform, and members of the governing coalition are more willing to impose immediate costs on voters when they can credibly commit to delivering future benefits.

Rather than counting the number of parties in government, I calculate the minimum number of political parties necessary for a government to pass legislation. In minimum-winning cabinets in parliamentary systems, this is simply the number of parties in government, even if it is possible to pass legislation with the support of fewer parties by relying on the support of parties in opposition. I also include the party of the president in systems in which the president has real veto power.

For minority governments, I include the number of parties typically required to obtain a parliamentary majority. Here I reference Döring and Manow's (2011) Parliament and Government Composition Database (Parlgov). For some minority cabinets, the database specifies which parties provide confidence and supply. At other times, I infer this information from which parties supported the government in prior and subsequent elections. I exclude parties that provide confidence and supply beyond the minimum necessary for securing a parliamentary majority.

When it is unclear which parties voted with the government, it is necessary to apply specific knowledge of national politics. Often, I simply take the party closest in ideological distance to the governing party: for instance, I assume that the Norwegian Labour Party in 1996 relied on the support of the left-wing Socialist People's Party (SF). However, since the SF's support was not enough to secure a majority, Labour was more likely to turn to the centrist Center Party rather than the center-right Conservative Party. In other cases, it is necessary to apply more specific knowledge of national politics. For instance, moderate parties may establish a *cordon sanitaire*, agreeing to not rely on the support of extremist parties such as the former Vlaams Blok in Belgium. In surplus majority governments, I exclude parties whose support is not necessary to pass legislation. If multiple parties are not necessary to obtain a majority, I exclude the smallest coalition partner first and continue until a minimum-winning coalition remains.

Statistical Analysis

I first examine the relationship between fiscal, economic, and demographic conditions and changes in the annual level of pension generosity. The analysis here is exploratory, and intended to identify the most plausible sources of external stress on pension systems. To measure the level of public pension benefits in a particular year, I use Scruggs' (2014) Pension Generosity Index (*PGEN)*[36].

Fiscal pressures include the level of government net lending (deficit) and gross government debt. Due to data availability limitations, I include data on *general* government net lending but *central* government debt. In some cases, data is available on general government debt but not central government debt for certain years but data is available for both variables on other years. In these instances, I estimate the level of central government debt using the country-specific regression of central government debt on general government debt for years in which data is available for both variables. Data on net lending comes from the November 2014 edition of the *OECD Economic Outlook*. Data on government debt comes from Reinhart and Rogoff (2010), supplemented by the OECD's (2015b) *Government Financial Statistics*. The cost of financing government debt, rather than its level or change, may determine the extent to which governments balance budgets (Armingeon 2012) or cut replacement rates on unemployment insurance (Krogslund 2013). I thus include a variable measuring 10-year interest rates on government debt, taken from the OECD's (2015b) *Government Financial Statistics*.

Economic pressures include the unemployment rate and change in GDP per capita. Although sustained low growth and unemployment over multiple years may increase demands for reform, governments may have economic and political reasons to postpone cuts – or to extend benefits – when economic conditions are unfavorable. The World Bank (2015) provides data on growth in GDP per capita over the previous year. Data on unemployment comes from the OECD's (2015a) *Annual Labour Force Statistics*. *Demographic pressures* include the level and change in the old-age dependency ratio, calculated as the number of persons aged 65 and older divided by the number of persons aged 15 to 64, and supplied by the World Bank (2015).

[36] $PGEN_{nt}$ = [z (Standard Pension Benefit Replacement rate)$_{nt}$ + z (Social Pension Benefit Replacement rate)$_{nt}$ + z (Expected Pension Duration years)$_{nt}$ + z (Standard Pension Qualification years)$_{nt}$ + z (Employee pension funding ratio$_{nt}$ + 12.5] * Pension take-up rate$_{nt.}$ Each z-score is calculated by taking the difference in the value of a particular indicator in a specific country *n* at a given time *t* from the mean value of the indicator across all country-years *nt* in the sample. The replacement rate is the ratio of a retiree's pension income to their pre-retirement income. For all variables in the CWED2, replacement rates are calculated for a 40-year-old manufacturing worker with 20 years of experience (Scruggs, Jahn, and Kuitto 2014b). Social pensions provide a minimum basic income to retirees, whereas standard pensions are earnings-related. The take-up rate, or coverage rate is the ratio of pension recipients to total retirement age population. I use data on replacement rates, duration, eligibility, funding, and coverage rather than spending data since I am interested in estimating the probability of policy change in a particular year.

I lag values of all of fiscal, economic, and demographic variables by one year. Lagging the values of these explanatory variables accounts for the necessary delay between external shocks and policy responses. Even for internally cohesive governments unconcerned with short-term electoral prospects, the process of recognizing, legislating, and administering policies takes time. In sharp contrast, budget balances adjust immediately to changes in the level of pension generosity, and markets often respond rapidly to policy statements and their effects. Changes in pension benefits are likely to affect fiscal and economic conditions. Introducing lags addresses these concerns of reverse causality.

Table 5.2 presents descriptive statistics. I include both the variables listed above, the index of political cohesion, and potentially confounding variables to be introduced later in the analysis.

[Table 5.2 here]

Fiscal, Economic, and Demographic Determinants of Pension Reform

To evaluate the extent to which fiscal, economic, and demographic pressures affect the degree of pension reform, I regress the change in pension generosity on variables measuring each of these three constraints.[37] Table 5.3 presents estimates from the regression analysis.

[Table 5.3 here]

Five of the seven economic variables fail to significantly correlate with the outcome in the multiple regression at $\alpha = .05$. Interestingly, pension generosity tends to *increase* when 10-year interest rates are higher in the prior year. Growth in GDP is a significant predictor of change in pension generosity. However, the change in pension generosity tends to decrease with growth, suggesting that governments do not cut pension benefits in response to low annual rates of growth. The most plausible external pressure on pension systems comes from population aging. The lagged old-age dependency ratio correlates negatively and significantly with the change in pension generosity (t = -2.05).

[37] $\Delta PGEN = PGEN_{nt} - PGEN_{n(t-1)} = \alpha + \beta_1 (FISC) + \beta_2 (ECON) + \beta_3 (DEM) + PGEN_{n(t-1)} - PGEN_{n(t-2)} + u_n + v_t + \varepsilon_{nt},$ where $PGEN_{nt}$ is Scruggs, Jahn, and Kuitto's (2014) index of pension generosity for a particular country in a particular year, $PGEN_{n(t-1)}$ and $PGEN_{n(t-2)}$ are one and two-year lags of the pension generosity variable, respectively, u_n is a term accounting for time-invariant effects, v_t is a term accounting for country-specific effects, α is a constant term, and ε_{nt} is a stochastic error term. To facilitate interpretation of the coefficients, I multiply the current and lagged values of $\Delta PGEN$ by 100. Since I initially measured $\Delta PGEN$ in basis points, I now scale $\Delta PGEN$ by 1000 relative to Scruggs' coding. *FISC*, *ECON*, and *DEM* are matrices of covariates measuring fiscal, economic, and demographic stress, respectively.

Political Determinants of Pension Reform

I use the results of the prior analysis to specify a model to test the relationship between political cohesion and change in pension generosity. If governments reduce pension benefits in response to population aging, and political cohesion affects the ability of governments to legislate and administer changes to pension generosity, then one should observe the effect of cohesion on benefit generosity when population aging is above a particular threshold. Following Alesina, Ardagna, and Trebbi's (2006) analysis of the economic and political determinants of fiscal adjustment, I define a binary variable[38] indicating whether (1) or not (0) the old-age dependency ratio is in the top quartile of observations with available data on covariates. To estimate the effect of cohesion on the expected degree of pension reform in response to demographic constraints, I regress the change in pension generosity on the interaction of the variable measuring political cohesion and the variable indicating an old-age dependency ratio in the top quartile of observations.[39]

One of the difficulties with specifying the empirical model is that political cohesion correlates with other variables that may plausibly influence pension reform. It is sometimes unclear which variables are effects of cohesion (and thus should not be included as controls in the regression model), and which variables cause variation in cohesion (King 1991, p. 1049-50). For instance, less cohesive governments tend to exist in countries with high levels of union membership. Both variables plausibly affect the degree of reform. Do less cohesive governments arise in countries with strong organized labor movements, or do unions thrive in politically fragmented environments? Are both variables the effect of a common cause, such as the strength of left-wing parties? Or does the relative strength of these variables capture the extent to which political power is concentrated in parliamentary rather than non-parliamentary actors?

Other variables may be prior causes of cohesion. For instance, proportional representation tends to produce minority and coalition governments and often leads to representation of more ideologically extreme parties. One may similarly think of prior variables which impacted the probability of initially adopting a particular electoral system. Hence it is difficult to outright claim that political cohesion causes more or less pension reform. The objective of the empirical analysis is instead to determine if there is a basic association between cohesion and reform, and whether or not this association remains after controlling for the effects of potentially confounding variables. With these caveats in mind, I include the following control variables in my regressions: the level and change in economic openness (lagged one year), the partisan composition of government, the density of labor unions, years to the next scheduled election, and whether or not the government is elected by proportional representation.

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38 $Q\{OADR_{(t-1)} > .75\}$

39 $\Delta PGEN = PGEN_{nt} - PGEN_{n(t-1)} = \alpha + \beta_1 (POL) \times Q\{OADR_{(t-1)} > .75\} + \beta_2 Z + PGEN_{nt} - PGEN_{n(t-1)} + u_n + v_t + \varepsilon_{nt}$. Z is a matrix of covariates that may affect both the outcome $\Delta PGEN$ and the degree of political cohesion POL.

A number of studies have argued that small, open economies with strong social democratic parties and labor unions tend to spend more on a number of government programs (Alesina and Wacziarg 1998; Cameron 1978; Rodrik 1998). Such countries tend to be less cohesive, or more consensual, in their form of government by the criteria presented in this chapter (Lijphart 1999). However, these types of countries may also be more likely to enact economic and social reforms in response to changing economic conditions (Rhodes 2001). I use World Bank (2015) data on the level and change of imports and exports as a share of GDP to measure economic openness. As with other economic variables in the analysis, I lag the values by one year. Data on union density come from the *OECD Economic Outlook* (November 2014).

I also include variables measuring the change in GDP and the level of old-age dependency ratio, both lagged one year. Although neither variable is a significant predictor of *ΔPGEN* in the economic model at $p < 0.05$, both are significant at $p < 0.10$. I also include unemployment ($t = -1.3$ in the economic model), which may be lower in small, open, countries with encompassing unions and strong left-of-center political parties (Cameron 1984). Hence there is reason to suppose that unemployment may be correlated with both the treatment and response variable. To measure the partisan composition of government, I calculate the average *rile* partisan ideology score from the Manifesto Project database (Budge et al. 2001; Laver and Budge 1992; Klingemann et al. 2006; Volkens et al. 2014) for legislators necessary to secure a parliamentary majority.[40]

Another possibility is that less cohesive governments emerge in PR systems. PR systems may encourage higher turnout, particularly among younger voters who tend to favor less established political parties (Blais 2006; Blais and Carty 1990). When younger citizens are more likely to turn out, it may be easier to enact policies that disproportionately benefit this group of voters, such as reforms to ensure the long-term sustainability of pension systems. The World Bank's Database of Political Institutions (DPI) provides data on the type of electoral system used to elect the lower house of parliament (Beck et al. 2001). I correct the coding of New Zealand, which the

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[40] The average partisan ideology score, $IDEO = \alpha X + \sum \beta_i Y_i + \gamma P$, where β_i and Y_i are summed over all values from $i = 1$ to N parties necessary to pass legislation under majority rule, α is the number of members of parliament (MPs) of the party of the prime minister (PM), X is the *rile* score of the party of the PM, β_i are the number of MPs of all supporting parties except for the party of greatest ideological distance from the party of the PM, Y_i are the *rile* scores of these parties, $\boldsymbol{\gamma}$ is the remaining number of MPs necessary to secure a parliamentary majority, and P is the party of these ministers (the coalition partner or party in opposition likely to supply the remaining necessary MPs). I assume that party of the PM seeks support from other parties in parliament until obtaining the necessary majority to pass legislation. The PM first appeals to all members of supporting parties except for the party of greatest ideological distance from the party of the PM. The PM then appeals to the minimum number of legislators in the remaining party necessary to secure a parliamentary majority. This is not necessarily the party whose *rile* score is furthest from the PM's party in the particular election. The choice of final party for which the PM will appeal for support depends on knowledge of the particular political context. For instance, the Moderate Party and the Liberal People's Party tend to support each other in Sweden, regardless of whether the Social Democrats are coded as being ideologically closer to one of the governing center-right parties than the other center-right party.

DPI codes as “Plurality,” but has elected its lower house by mixed-member proportional representation since 1996.

According to the “political budget cycle” hypothesis, governments tend to run deficits prior to elections, avoiding imposing immediate costs on the electorate and expanding economic output through increasing government spending (Rogoff 1990). Governments are more likely to enact reforms following elections when it is less electorally risky to cut spending. Although it is unclear whether the timing of elections should affect political cohesion, I include a variable measuring the year to next scheduled election in order to examine the extent to which pension reform varies with the electoral cycle.

In Tables 5.4 and 5.5, I present estimates of the relationship between government cohesion and pension reform. In addition to the previously specified model estimating the effect of cohesion on reform in response to change in the old-age dependency ratio (Model 5), I display the bivariate regressions of *ΔPGEN* on the fragmentation index (Model 1) and its interaction with the variable indicating an old-age dependency ratio in the top quartile (Model 3). I also regress *ΔPGEN* on the fragmentation index with all control variables included (Model 4).

[Tables 5.4 – 5.5 here]

Cohesion is not significantly associated with change in pension generosity in any of the models. Nor is there evidence that more or less cohesive governments are more likely to tighten (or expand) benefits when growth is low. Estimates of political budget cycle effects are similarly insignificant. The only significant predictor of change in pension generosity is economic growth, which is positively associated with the generosity index.

Testing for Non-Negligible Effects

Analysis of the relationship between government cohesion and the degree of pension reform has shown that there is insufficient evidence to reject the null hypothesis of no positive or negative effect of cohesion on reform. However, this finding does not demonstrate that cohesion has only a negligible effect on reform (Westlake 1979). To evaluate whether the relationship between cohesion and reform is substantively insignificant, rather than merely not statistically significant (McCloskey 1985), I follow the method posited by Rainey (2014) and calculate a 90% confidence interval (CI) for variables measuring government fragmentation (Tables 4-5, Model 4) and the interaction of government fragmentation and lagged old-age dependency ratio in the top quartile[41] (Tables 4-5, Model 5). For clarity of presentation, I round values to the nearest two decimal points. This does not affect the substantive conclusions of the analysis.[42]

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[41] *Fragmentation x Q {OADR* $_{(t-1)}$ *> .75}*

[42] The 90% confidence interval for a given mean μ and standard error σ is defined as [$\mu - \Phi(1 - \alpha)\,\sigma$, $\mu + \Phi(1 - \alpha)\,\sigma$], $\alpha = .05$. Using the model described in the second column of Table 5, the respective 90%

I now test to see if a substantial annual change in political cohesion is sufficient to generate a meaningful change in pension generosity. I use the New Zealand electoral reform approved by voters in 1993 and implemented prior to the 1996 general election as a measure of substantial change in cohesion. After rejecting first past the post voting with single-member districts in favor of mixed member proportional representation, New Zealand's level of government fragmentation increased from zero to 17.96 overnight, a change in cohesion greater than 88% of observed annual absolute shifts in cohesion.

Following Rainey (2014, p. 1086), I evaluate whether there is sufficient evidence to reject the null hypothesis of no "meaningful" change in pension generosity.[43] I compute estimated effects[44] for Tables 5, Models 3 and 4. Model 3 estimates the effect of fragmentation. Model 4 estimates the effect of the interaction of fragmentation and the old-age dependency ratio.[45] The 90% confidence intervals fail to cross the threshold of substantive significance.[46] By the criterion adopted here, political cohesion, alone or in conjunction with the old-age dependency ratio is unlikely to facilitate or inhibit reform.

Conclusion

Although there are compelling reasons to believe that more cohesive governments are better at securing agreement on the terms of reform among legislators and cabinet ministers, while less cohesive governments are better at minimizing the real or perceived electoral costs of adjustment, there is no observed systematic relationship between political cohesion and the degree of pension reform. Perhaps elections that consolidate power in the hands of fewer and more ideologically similar parties may help to solve certain challenges associated with reform. In other contexts, attempted reforms with the support of a large number of parties and social partners may be more likely to succeed. However, there is no general relationship between cohesion and reform, and no simple way of determining which contexts favor which strategy.

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confidence intervals for government fragmentation and the interaction of fragmentation and *Q {OADR (t – 1) > .75}* are [- 0.00 - 0.04(1.64), - 0.00 + 0.04(1.64)] = [- 0.07, 0.07] and [0.05 - 0.08(1.64), 0.05 + 0.08(1.64)] = [- 0.08, 0.18].

43 The null hypothesis H_0: Δ [- ∞, - *m*] ∪ [*m*, ∞] when *m* exceeds a "meaningful" level of significance. For *ΔPGEN*, "meaningful" is most conservatively defined as |*m*| = 1000, since *any* change in *PGEN* must be at least 1000 units. Recall that I initially scaled *PGEN* in basis points, and then multiplied *PGEN* by 100 again. In Scruggs' initial coding, the smallest possible change in *PGEN* is 0.1. Thus, when twice multiplied by 100, the smallest possible change is 1000. A change in cohesion (in absolute terms, equivalent to a change in fragmentation) of δ = 17.96 when growth is low leads to the following estimated change in *PGEN* (90% confidence interval): $[\delta (\mu - \sigma \phi (1 - \alpha)), \delta (\mu + \sigma \phi (1 - \alpha))]$, $\alpha = .05$, $\delta = 17.96 = [17.96 (\mu - \sigma \phi (.95)), 17.96 (\mu + \sigma \phi (.95))]$.

44 Where δ = 17.96.

45 The estimated confidence intervals when δ = 17.96 are as follows: [17.96(-0.07), 17.96(0.07)] = [- 1.26, 1.26] (Model 3), and [17.96(-0.08), 17.96(0.18)] = [- 1.44, 3.23] (Model 4).

46 Defined conservatively as any change in pension generosity such that | *ΔPGEN* | ≥ 1000.

In demonstrating that the conjunction of political cohesion and economic constraints are unlikely to generate even a negligible degree of pension reform, the analysis in this chapter goes beyond simply showing that there is insufficient evidence to reject the null hypothesis of no effect. The results are somewhat disheartening for scholars that emphasize the importance of political factors for reform outcomes. Demographic constraints dominate political variables. Whereas reductions in benefit generosity occur more frequently when the level and change in old-age dependency ratio is high, neither electoral rules nor government ideology nor the strength of trade unions have any clear impact on the degree of pension expansion or retrenchment.

Despite the lack of evidence for a systematic relationship between government cohesion and the change in pension generosity in response to common demographic constraints, this chapter makes significant contributions to our knowledge of the politics of economic and social policy reform. By combining the number of parties necessary to pass legislation with their ideological distance, the index of government cohesion introduced in the chapter improves on prior metrics. The method of identifying a variable whose lagged value is significantly associated with the degree of reform, defining an indicator variable consisting of observations of the variable greater or less than a particular threshold (depending on the sign of the coefficient), and interacting the indicator with the political treatment of interest may be used to analyze a wide range of policy choices.

Rather than simply demonstrating the absence of a statistically significant relationship between explanatory and response variables, I show affirmatively that cohesion has at best a negligible effect on reform. The finding that population aging reduces pension generosity, presumably through challenging the long-term sustainability of the system at current benefit levels, is intuitively plausible, and suggests avenues for additional research. However, analysis of the fiscal and economic determinants of change in benefit generosity yield fascinating findings that demand future analysis. It is understandable that governments may reduce benefits when growth is high, opting to delay reforms when such adjustments are most politically and economically costly. Yet the positive association between the lagged value of government bond yields and the degree of change in pension generosity is puzzling.

As for the absence of observed political effects, it is possible that political variables determine other forms of pension cost-containment, such as policy measures to expand the coverage of private pensions or increase labor force participation among older citizens. Evaluating the political determinants (and non-determinants) of pension cost-containment may bring us incrementally closer to understanding the complex processes behind economic and social policy reform. Chapter Six examines another aspect of this process: the effect of fiscal constraints on electoral support for welfare state expansion.

Table 5.1 Countries by Estimated Government Fragmentation

Country	Time Series	Mean Fragmentation
Switzerland	1992-2010	179.45
Finland	1978-2010	87.90
Belgium	1976-2010	85.03
Denmark	1973-2010	84.01
Sweden	1973-2010	44.95
Italy	1977-2010	43.75
Netherlands	1977-2010	42.68
Germany	1993-2010	40.15
New Zealand	1988-2010	32.05
France	1980-2010	31.46
Norway	1973-2010	31.30
Austria	1975-2010	30.72
Ireland	1992-2010	28.49
United States	1973-2010	20.83
Japan	1973-2009	13.70
Portugal	1998-2010	13.57
Spain	1980-2010	9.95
Canada	1973-2010	3.67
Greece	1997-2007	3.20
Australia	1992-2010	0
Korea	2009-2010	0
United Kingdom	1973-2010	0

Table 5.2 Descriptive Statistics

Variable	N	Mean	St. Dev.	Min.	Max.
Δ Pension generosity	736	6.92	33.12	-230	340
Government fragmentation	736	38.22	49.44	0	248.90
Net lending/GDP $_{(t-1)}$	724	- 2.48	4.52	- 16.45	18.70
Central government debt/GDP $_{(t-1)}$	718	48.20	29.51	4.30	183.80
10-year interest rate $_{(t-1)}$	723	7.93	3.67	0.99	21.25
Δ GDP $_{(t-1)}$	735	2.50	2.31	- 8.27	10.78
Unemployment rate $_{(t-1)}$	736	6.29	3.83	0.32	24.17

Old-age dependency ratio $_{(t-1)}$	736	21.14	3.90	10.48	34.50
Old-age DR $_{(t-1)}$, 4th quartile	682	0.25	0.43	0	1
Δ Old-age dependency ratio $_{(t-1)}$	736	0.18	0.26	- 0.79	1.31
Trade/GDP $_{(t-1)}$	736	61.23	27.61	10.73	158.50
Δ Trade/GDP $_{(t-1)}$	736	0.56	4.12	- 22.43	22.69
Government ideology	736	- 1.61	17.66	- 48.50	48.46
Union density	734	39.41	20.14	7.54	83.86
Years to scheduled election	736	1.76	1.20	0	4
PR indicator	736	0.70	0.46	0	1

Table 5.3 Fiscal, Economic, and Demographic Determinants of Change in Pension Generosity

	Dependent Variable: Change in Pension Generosity
Net lending/GDP $_{(t-1)}$	- 0.04 (0.41)
Central government debt/GDP $_{(t-1)}$	- 0.06 (0.08)
10-year interest rate $_{(t-1)}$	1.49 (1.32)
Δ GDP $_{(t-1)}$	- 1.88 (0.79) **
Unemployment rate $_{(t-1)}$	- 0.61 (0.53)
Old-age dependency ratio $_{(t-1)}$	- 1.49 (0.73) **
Δ Old-age dependency ratio $_{(t-1)}$	- 3.12 (10.19)
Δ Pension generosity $_{(t-1)}$	- 0.09 (0.07)
Observations	684
Adjusted R^2	0.03

Country and year fixed effects included. Heteroscedasticity-consistent standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5.4 Estimated Effect of Government Cohesion on Change in Pension Generosity

	Dependent Variable: Change in Pension Generosity	
	Model 1	Model 2
Fragmentation	0.01 (0.04)	0.00 (0.05)
Q {OADR $_{(t-1)}$ > .75}		- 10.39 (5.09) **
Frag. x Q {OADR $_{(t-1)}$ > .75}		0.04 (0.07)
Observations	682	682
Adjusted R^2	0.00	0.01

Country and year fixed effects included. Heteroscedasticity-consistent standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5. Estimated Effect of Government Cohesion on Change in Pension Generosity (continued)

	Dependent Variable: Change in Pension Generosity	
	Model 3	Model 4
Fragmentation	0.01 (0.04)	- 0.00 (0.04)
Q {OADR $_{(t-1)}$ > .75}		- 7.51 (5.43)
Change in GDP $_{(t-1)}$	- 1.91 (0.69) ***	- 1.91 (0.67) ***
Old-age dependency ratio $_{(t-1)}$	- 1.86 (0.66) ***	- 1.37 (0.66) **
Δ Old-age dependency ratio $_{(t-1)}$	- 2.18 (9.42)	- 2.93 (9.21)
Unemployment rate $_{(t-1)}$	- 0.72 (0.63)	- 0.72 (0.61)
Trade / GDP $_{(t-1)}$	- 0.14 (0.25)	- 0.14 (0.27)
Δ Trade / GDP $_{(t-1)}$	0.32 (0.35)	0.32 (0.37)
Government ideology	- 0.04 (0.09)	- 0.05 (0.09)
Union density	- 0.10 (0.36)	- 0.15 (0.39)
Years to next scheduled election	- 1.06 (1.14)	- 1.09 (1.14)
PR indicator	- 0.08 (7.45)	- 0.97 (7.58)
Δ Pension generosity $_{(t-1)}$	- 0.09 (0.06)	- 0.09 (0.07)
Frag. x Q {OADR $_{(t-1)}$ > .75}		0.05 (0.08)

Observations	682	682
Adjusted R^2	0.03	0.03

Country and year fixed effects included. Heteroscedasticity-consistent standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

6. The Welfare State in Surplus and Deficit: Deficits and Electoral Positions on Welfare State Expansion

It is commonly believed that governments under fiscal pressure to cut spending are unlikely to explicitly withdraw support for social transfers, opting instead to conceal the immediate negative consequences of reform. In this chapter, I contest this interpretation of the politics of retrenchment. When faced with a revenue shortfall, it is frequently politically beneficial for political parties in government or opposition to advocate cuts to welfare programs rather than exclusively impose costs elsewhere. Similarly, surpluses enable parties to credibly commit to expanding benefits when elected. Analysis of government budgets and election year manifestos shows that support for welfare expenditures increases with the government budget balance.[47] Consistent with the hypothesis that electoral competitiveness increases responsiveness to fiscal conditions, the positions of niche and challenger parties are significantly less sensitive to the level of surplus or deficit. It is less clear whether internationally-imposed lending constraints increase the sensitivity of platforms to deficits.

How do political parties in wealthy democracies adapt their electoral positions on social welfare programs in response to fiscal constraints? As growth remains sluggish, particularly in Japan and the Eurozone, and budget deficits persist, this question is not merely of academic interest. Yet no prior studies have directly evaluated the relationship between deficits and support for welfare programs. In this chapter, I show that budgetary conditions fundamentally impact the extent to which political parties express support for welfare policies in election-year manifestos. When current revenues exceed expenditures, political parties can promise to increase spending on social transfers without taking politically costly measures – cutting spending, increasing tax rates, or accumulating debt. However, when faced with a budget deficit, parties cannot credibly commit to expanding or maintaining welfare spending without imposing visible and often immediate economic costs on taxpayers and beneficiaries. Parties are sensitive to fiscal constraints irrespective of their policy preferences. High deficits inhibit the ability of pro-expansion governments to satisfy constituents' demands for expanding social protection. Similarly, deficits may provide pro-retrenchment parties and coalitions with political opportunities to limit social expenditure.

The idea that political parties are concerned with the credibility of their electoral promises is intuitively appealing, particularly in stable party systems characterized by programmatic competition among parties with diverse and expansive constituencies (Keefer 2008). Repeated interaction with voters incentivizes parties to deliver credible promises (Ferejohn 1986). However, the more specific claim that parties' support for welfare programs is highly sensitive to budgetary constraints remains contested among political scientists and other scholars of social policy. Most notably, Pierson argues that eliminating benefits is inherently politically costly,

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[47] For data, please email the author at donnelly.patrick.t@gmail.com.

even when the welfare state faces unprecedented fiscal constraints (Pierson 2001). Cutting welfare spending imposes immediate and concentrated losses on politically organized groups of beneficiaries. In contrast, the savings associated with welfare retrenchment are broadly distributed among present and future taxpayers. The potential losers from welfare retrenchment will disproportionately influence debates over the future of benefits, either through directly lobbying policymakers to block cuts to benefit programs or increasing awareness among voters of the costs of expenditure reductions (Pierson 1996).

A related theory explains the persistence of the welfare state in terms of its broad popularity among citizens. Welfare programs are not only popular among their narrow, politically influential constituents; they are also endorsed by the public at large (Brooks and Manza 2006). Moreover, there is little reason to suppose that public support for social transfers should decline as it becomes costlier for governments to commit to funding benefits. The economic, fiscal, and demographic shifts and shocks that constrain the ability of governments to maintain current levels of welfare expenditure may simultaneously increase public demands for social insurance, leading to an expansion of benefits (Rodrik 1998; Iversen and Cusack 2000). Although it becomes costlier for government to tax labor and capital as factors of production become increasingly internationally mobile, the exposure of domestic industry to foreign competition generates support for labor market protection and benefits from displaced workers – as well as support for tariffs and subsidies from displaced capitalists (Cusack, Iversen, and Rehm 2006; Margalit 2013; Rehm 2009).

Recessions may decrease tax revenue and increase government expenditure relative to output while also exposing a greater proportion of citizens to unemployment risk, intensifying electoral pressure for unemployment insurance. Demographic shifts may challenge the fiscal sustainability of pension systems while substantially expanding the number of beneficiaries, who tend to support existing programs (Myles and Pierson 2001). A large body of literature thus suggests that the electoral costliness of retrenchment severely restricts the capacity of governments to reduce welfare benefits. Yet there is little prior evidence the governments are generally punished for cutting spending on social transfers and other programs (Alesina, Carloni, and Lecce 2011; Armingeon and Giger 2008; Giger and Nelson 2010; but see also Chapter Four of this dissertation).

Several studies have also shown that the welfare state is less resilient than initially thought, and that partisan politics continues to shape the trajectory of social insurance in developed countries (Allan and Scruggs 2004; Korpi and Palme 2003). Bonoli gives two prominent examples of when governments have claimed credit for retrenchment: the 1995 Italian pension reform, and the 1992 Swedish cuts to unemployment and disability insurance, parental leave, subsidized housing, and child benefits. In both the Italian and Swedish cases, the government enacted reforms with the support of the major opposition parties and trade unions (Bonoli 2012). High deficits and recent shifts in political power – the fall of the Social Democrats in Sweden and the Christian Democrats in Italy after extensive periods of holding office – may have increased the probability of reform (Alesina and Drazen 1991; Alesina, Ardagna, and Trebbi 2006).

In this chapter, I test the extent to which political parties' electoral positions on welfare spending are sensitive to budgetary constraints. Using government financial data from the *OECD Economic Outlook* (2014) and coded electoral manifesto data from the Manifesto Project Database (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2014b), I show that political parties' support for the welfare state significantly increases with the government budget balance. This finding is robust across a number of model specifications. Moreover, the evidence shows that that electorally competitive mainstream and incumbent parties are more sensitive to budgetary conditions than their niche and challenger counterparts.

Although there are a number of methodological advantages to using coded election-year manifestos to measure parties' positions on welfare expenditure, there are also limitations to the approach. Manifestos often fail to specify the details of cuts, and cannot be used to test how governments actually implement reductions in benefits when in office. In the following section, I show that electoral platforms are superior for estimating the extent to which parties extend or withdraw support for welfare programs under various fiscal constraints.

Deficits and Retrenchment

Economic and demographic shifts have undoubtedly challenged the fiscal sustainability of the social insurance systems of high-income democracies. Yet there is little concrete evidence of how budgetary conditions shape the politics of welfare retrenchment. In a sample of 18 OECD countries from 1975 to 1999, Allan and Scruggs (2004) show that sick pay income replacement rates decrease with government deficits. The relationship is statistically significant at $\alpha < .05$ (two-tailed test) in three of five model specifications with country fixed effects, but without accounting for multiple comparisons. Although the authors also show that unemployment replacement rates decrease with deficits, the association is not statistically significant.

Using data from 21 OECD member states, Krogslund (2013) shows that the replacement rate on unemployment insurance decreases with the cost of debt financing, rather than the level of debt. According to Krogslund, retrenchment is the last resort for governments facing a borrowing crisis. When financing debt is inexpensive, governments will avoid cutting popular programs, electing to accumulate further debt. Even when debt yields are high, governments will raise taxes – and presumably enact less politically costly spending cuts – before reducing rates on unemployment insurance and other social transfers.

Although I accept that replacement rates should decrease with the costliness of debt and the ability of governments to raise taxes to cover revenue shortfalls during debt crises, I reject the idea that retrenchment will occur only when governments are unable to raise sufficient revenue to cover short-term obligations. Of the countries examined in my sample, only Greece has defaulted on its debt, in 2012 (Reinhart and Rogoff 2014; Zettelmeyer, Trebesch, and Gulati

2013). In the vast majority of high-income democracies, cuts to welfare and other forms of government spending occur when there is no immediate risk of default. Moreover, there is no clear evidence that government spending and welfare benefits are systematically shielded from cuts to minimize their political costs. Consider the composition of fiscal consolidation measures following the 2008 global financial crisis in the three largest European Union member states: Germany, the United Kingdom, and France. Despite the low cost of borrowing in each country, expenditure reductions comprised the majority of budgetary adjustments in all three cases. In Germany, 59% of cuts proposed in 2010 for the 2011-14 period came from unemployment insurance and social security. In France, the Socialist government proposed a consolidation plan in which 87% of cuts from 2012-14 were to come from pension reform (OECD 2011).

In this chapter, I present an alternative theory of retrenchment in which electorally competitive political parties extend support for the welfare state during times of surplus and withdraw support during times of deficit. Although the extent to which the welfare state is resilient to fiscal pressure remains debated, empirical evidence suggests that the level of welfare expansion increases with the government surplus, while the level of welfare retrenchment increases with the deficit (Allan and Scruggs 2004). It is less intuitive that political parties' stated support for social transfers should significantly change with the government budget balance. If reductions in welfare spending are politically costly, governments may continue to express support for popular social policies during periods of fiscal stress, and may emphasize the importance of shielding particular programs from spending cuts.

There are several advantages to measuring welfare support through electoral platforms rather than aggregate spending or replacement rates. Election-year manifestos measure the extent to which political parties claim credit for proposed policies (Budge 2001). Examining proposed rather than actual policies thus provides a more direct test of the null hypothesis that parties will maintain support for the welfare state when deficits are high. There are also methodological limitations to using economic and policy outputs to measure welfare effort. It is difficult to estimate the extent to which deficits affect welfare spending, since increasing welfare spending also increases the government deficit. Short-term changes in social spending primarily reflect economic conditions: spending relative to GDP decreases with output growth and increases with unemployment. In contrast, significant changes to social policies may not immediately affect the ratio of spending to GDP. Moreover, spending alone does not capture the extent to which welfare states protect citizens from economic risk (Esping-Andersen 1990).

One solution is to use changes to the replacement rate of income for particular social insurance programs to estimate welfare effort (Korpi and Palme 2003; Allan and Scruggs 2004). However, examining changes to a limited number of existing programs – typically unemployment and disability insurance – is similarly an imperfect measure of general support for social policy. Hacker (2004) notes that governments may fail to adapt policies in response to stagnating wages, the increasing risk of unemployment, and the entry of women into the labor force. Additionally, replacement rates only measure one aspect of social protection: the degree to which programs substitute benefits for prior income over the short run. The eligibility, duration, and mode of funding benefits – through general taxation, employer contributions, or withholding employees' pay – may be equally important to defining the level of coverage (Scruggs, Jahn, and Kuitto 2014).

There are methodological advantages of using electoral platforms to estimate the emphasis political parties place on extending or withdrawing benefits. Unlike changes in spending and replacement rates, there is little reason to suppose that the intensity of pro-welfare statements in parties' manifestos directly increases the deficit in the year of election. Contrary to approaches that evaluate changes in particular policies and their economic effects, electoral positions directly measure parties' general support for the welfare state. Using coded manifesto data, it is also possible to compare the effects of budgetary conditions on different types of political parties in a specific country at a specific time.

In the following section, I specify the assumptions of my theory and deduce conclusions from these premises. I then develop an empirical model to test my primary hypothesis that support for welfare expenditure increases with the general government budget balance. To evaluate whether the sensitivity of political parties' electoral platforms to fiscal constraints increases when parties are motivated by electoral rather than policy objectives, I test the hypothesis that the electoral positions of niche parties – green, far-left, and nationalist parties – are less correlated with the budget balance than the positions of other parties (Adams et al. 2006). Finally, to determine whether the relationship between government lending and political parties' support for the welfare state intensifies when governments face externally imposed and enforced lending constraints, I test for differences between parties in European Economic and Monetary Union (EMU) member states, and parties in other countries. When parties anticipate governing – and subsequently being held accountable for their stated electoral positions – they will be more likely to deliver credible promises, withdrawing support for welfare spending as deficits increase. The final section concludes with a discussion of my findings and suggestions for future research.

Theory

Political parties seek to enter government and enact preferred policies. Regardless of whether parties are primarily motivated by electoral success, policy objectives, or the perquisites of office (Strøm 1990), observation of electoral positions clearly shows that parties adopt distinct platforms while adapting their stances on particular issues to the preferences of the electorate (Adams et al. 2004). Competition for predominantly ideologically moderate undecided voters incentivizes positional convergence between parties (Downs 1957), but parties may also benefit from adopting more extreme positions than voters, signaling clear positions on issues (Iversen 1994; Rabinowitz and Macdonald 1989). Parties not only respond to public opinion; they also shift positions in accordance with changing economic circumstances, as well as the positions of competing parties (Adams and Somer-Topcu 2009; Adams, Haupt, and Stoll 2009).

Here I consider parties' positional shifts on one dimension: the level of professed support for welfare spending, measured by stated positions on election year manifestos. The literature on the economic and political determinants of welfare spending is perhaps the most extensive research tradition in comparative political economy. Research has demonstrated that host of economic and political variables positively correlate with the level and change in welfare spending, including the volume and expansion of international trade (Cameron 1978; Garrett 1998; Rodrik 1998), the strength of trade unions and social democratic parties (Cameron 1978; Huber, Ragin, and Stephens 1993; Korpi 1983; Korpi and Palme 2003; Allan and Scruggs 2004), the shift in employment from manufacturing to services (Iversen and Cusack 2001), and the reliance on indirect taxation (Cameron 1978; Steinmo 1993).

To the extent that parties are vote-seeking, parties' support for welfare policies depends on the preferences of the electorate. However, parties may also be independently motivated by the policy preferences of party elites and core supporters. The degree to which parties seek to maximize their share of cabinet portfolios, seats in government, or seats in parliament at the cost of their policy objectives depends on the competitiveness of elections. Parties become increasingly vote-seeking when their expectations of entering government – or of influencing policy through providing confidence and supply to parties in government – are less certain (Strøm 1990). Hence the convergence between parties' platforms should be more pronounced in close elections.

If a party expects to obtain a sufficiently large share of offices in a governing coalition, or an outright majority of seats in parliament with a high degree of certainty, policy preferences may dominate electoral incentives. When secure in their prospects of electoral success, parties are more likely to use electoral platforms to advance policy objectives that do not necessarily correspond to the preferences of the median voter. As the competitiveness of elections declines, party platforms increasingly become a space to outline reforms – such as fiscal consolidation and cuts to welfare programs – where the costs are immediate and tangible, and the actual or perceived benefits are prospective and uncertain.

Similarly, when a party anticipates that it has little to no chance of entering a governing coalition in the upcoming election, it may use its electoral platform to increase the salience of its preferred issues, steering public opinion and the positions of parties concerned with losing votes toward its preferences. Numerous examples abound from the study of "niche parties" in Western Europe: parties espousing a limited number of issues that appeal to voters across multiple socioeconomic classes and political orientations (Meguid 2005). The UK Independence Party – a party with two seats in the House of Commons prior to the 2015 general election – has challenged the British center-right to address the topic of Britain's future in the European Union, and has driven members of both Labour and the Conservatives to increasingly support restrictions on immigration. Although green parties have governed in Belgium, Finland, France, Germany, Italy, Ireland, and Sweden, they have generally attempted to influence policy as minor coalition partners without attempting to shift their core positions to appeal to a wider range of voters.

Political parties are also concerned with the credibility of their electoral promises. If citizens perceive that a party will not be able to implement its stated policy objectives after assuming office, they may choose to vote instead for a party whose positions are more distant from their ideal point but more feasible to enact. Similarly, voters may punish parties for failing to deliver on the promises of prior electoral campaigns (Ferejohn 1986). The probability that a party will be held accountable for its electoral platform – and thus the value a party assigns to credibility – increases with the probability that the party will enter government as a major coalition partner, or as the single governing party. Minor or niche parties are thus largely unconcerned with the feasibility of their campaign promises.

I now use the assumptions stated above to elucidate the relationship between budgetary conditions and party platforms. Consider a party that would prefer to spend more on welfare transfers, subject to electoral constraints. When election year revenues exceed expenditures, the party will anticipate having additional funds to allocate to its preferred programs, including welfare. Surpluses also enhance the credibility of parties' commitments to expand spending. Surpluses enable governments to increase spending without concurrent expenditure or revenue measures – policies that may be economically or electorally costly or difficult to negotiate politically. However, when confronted with a large revenue shortfall, a party that generally favors welfare expansion must choose between expanding benefits at the expense of substantially higher taxes, spending cuts, or debt accumulation. In this scenario, the political costs of promising to expand or maintaining current levels of welfare spending may exceed the costs of either reneging on electoral promises, imposing the costs of fiscal adjustment on taxpayers or beneficiaries of other spending programs, or incurring additional debt.

One possibility is that it is always more politically costly for governments to cut spending or increase taxes than to amass further debt, provided that borrowing costs are sufficiently low (Krogslund 2013). However, empirical evidence suggests that governments are not systematically punished for implementing large fiscal adjustments (Alesina, Carloni, and Lecce 2011). Nor will governments necessarily delay adjustments until faced with an impending debt crisis. Despite negative real borrowing costs, the United States' plan for deficit reduction from 2010 to 2013 called for more extensive spending cuts and tax increases relative to GDP than in Ireland, whose government accepted 85 billion euros in aid from the European Central Bank, European Commission, and the International Monetary Fund (European Commission 2011; OECD 2011). From 2010 to 2013, 10 year yields on British government bonds were lower than the euro area average (OECD 2014). Yet the British government's fiscal consolidation plan called for a larger reduction in the deficit than all other OECD countries with the exception of crisis-ridden Greece and Spain (OECD 2011).

Now consider a party with a general preference for less welfare spending relative to GDP. In times of deficit, such a party is likely to withdraw support for welfare programs. Revenue shortfalls allow parties to claim credit for fiscal discipline and the savings associated with retrenchment, and minimize the political costs of attempting other forms of budgetary contraction. Deficits also enable pro-retrenchment parties to reduce the long-term trajectory of welfare spending – what Pierson (1994) terms "systemic retrenchment" – in accordance with the policy preferences of their leaders and supporters. On the other hand, it is likely to be politically costly for parties to advocate welfare retrenchment during times of surplus. In this scenario, parties cannot claim credit for using welfare cuts to reduce deficits, prevent tax increases, or protect favored spending programs. A more practicable strategy for pro-retrenchment parties confronted with a budgetary surplus might be to promise tax cuts, eroding the revenue base necessary to maintain levels of welfare expenditure over the medium to long term (Alesina and Tabellini 1990).

In this section, I have argued from four basic premises. Parties seek to implement their policy preferences subject to electoral constraints. However, the extent to which parties appeal to undecided voters rather than core supporters depends on the competitiveness of the upcoming election. Moreover, voters are likely to punish parties in present or future elections for proposing platforms that are not credible. Finally, fiscal conditions affect the political costs associated with parties' promises to expand or withdraw support for the welfare state. From these premises, I derive two testable hypotheses. First, political parties' support for welfare spending increases with the government budget balance. Second, the sensitivity of parties' positions on welfare spending to the government surplus or deficit increases with the electoral competitiveness of the party. Incumbent and mainstream parties are thus more likely to adjust positions on welfare spending in response to fiscal constraints.

Although my theory's assumptions are intuitive, its conclusions challenge prevailing beliefs about welfare retrenchment. Political scientists have often presumed that governments will tend to conceal the costs of retrenchment (Pierson 1996), though others have contended that governments may claim credit for retrenchment under particular conditions (Bonoli 2012). Governments may attempt to cut benefits when in office, but it is politically costly for parties to withdraw support for social insurance programs in electoral campaigns. This chapter suggests a different logic of retrenchment. When deficits are high, it may be less politically costly for pro-retrenchment parties to claim credit for retrenchment than to impose the costs of adjustment on taxpayers or beneficiaries of other spending programs. Similarly, deficits constrain the ability of pro-expansion parties to credibly commit to extending benefits.

My contribution is to suggest that the mechanism linking deficits to parties' support for welfare programs is political rather than economic. As I have discussed above, an analogous logic applies to the relationship between surpluses and electoral platforms. Deficits do not necessarily limit the economic capacity of governments to fund the welfare state. Since deficits typically rise during and immediately after periods of declining economic growth, many governments choose to extend welfare spending when deficits are high, in order to boost aggregate demand, provide income to poorer citizens with a higher marginal propensity to consume, and satisfy increasing demands for social protection among citizens impacted by or threatened with the loss of income or employment. If cuts to welfare programs are more politically costly than cuts of equal savings to other categories of government expenditure, governments can take other budgetary measures to ensure that welfare spending remains high during times of fiscal contraction.

One might also claim that budgetary constraints do not inevitably prevent political parties from expressing support for welfare expenditures. Deficits could conceivably provide political opportunities for parties to increase their rhetorical, if not short-term financial support for popular programs threatened by potential cuts. To the contrary, I have argued that parties' political incentives to extend or withdraw support for the welfare state in electoral platforms depend crucially on the state of election-year public finances. In the following section, I describe my empirical strategy and specify the variables included in the statistical model.

Model Specification

To test the extent to which the budget balance impacts party positions on welfare expansion and retrenchment, I estimate a two-way fixed effects model, controlling for within-country and within-time heterogeneity in addition to observed potentially confounding variables.[48]

I include combinations of the following continuous variables in my regression analyses: party position, budget balance, economic growth, unemployment rate, trade to GDP ratio, financial openness, and union density. I also include indicator variables for left, niche, and incumbent parties, and parties in European Economic and Monetary Union (EMU) member states. Finally, to account for the fact that party positions on particular issues tend to remain stable over time (Adams et al. 2004), I include a lagged dependent variable measuring party positions on welfare policy in the previous electoral campaign. Although marginal changes in the government budget balance may lead political parties to shift their positions on welfare policy, political parties are unlikely to present platforms that deviate substantially from their position in the prior election.

If a party radically shifts its issue stances over the course of an election cycle, voters may punish the party for presenting a platform that is inconsistent with its prior professed ideology. Voters may find it difficult to identify a party's position on certain issues if the party consistently alters its platform in response to changing economic and political circumstances. Parties may also benefit from consistently emphasizing particular issues over time, establishing "ownership" over these issues (Budge and Farlie 1983; Belanger and Meguid 2008). Voters tend to believe that center-left parties are better at reducing unemployment, and center-right parties are better at fighting inflation (Powell and Whitten 1993). Finally, if parties are ideologically motivated, their positions will change with the policy preferences of their leadership, which may be less sensitive to fiscal conditions than the preferences of the electorate (Adams, Haupt, and Stoll 2009).

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[48] $Y_{1it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 Y_{1i(t-1)} + a_i + v_t + \varepsilon_{it}$, where Y_{1it} indexes party position on welfare expansion in country i at time t, X_{1it} indexes government budget balance in country-year it, X_{2it} is a matrix of control variables (the columns of which vary across each particular model), $Y_{1i(t-1)}$ is the lagged dependent variable indexing party position on welfare expansion in country i at time $t-1$, a_i is a country-specific effect, v_t is a year-specific effect, and ε_{it} is a stochastic error term. I estimate each model using ordinary least squares (OLS) regression with heteroscedasticity-consistent standard errors.

The response variable, *party position*, is taken from the Manifesto Project's dataset of coded electoral platforms. The dataset contains 56 variables, each measuring the relative emphasis given to an issue for a particular party in a specific election year. For instance, in their 1983 electoral platform, the Green Party of West Germany is coded at 15.854 for "Environmental Protection: Positive," indicating that the party devoted approximately 16% of their manifesto statements toward support for the environment in their first year crossing the electoral threshold for representation in the Bundestag (Budge et al. 2001). The Manifesto Project dataset's codebook describes the "welfare state expansion" variable as "favourable mentions of need to introduce, maintain, or expand any public social service or social security scheme. This includes, for example, government funding of health care, child care, elder care and pensions, [and] social housing…This category excludes education" (Volkens et al. 2014b). The explanatory variable, *budget balance,* is taken from the Organisation for Economic Co-Operation and Development (OECD)'s November 2014 *Economic Outlook.* This variable measures annual net government lending relative to GDP.

To estimate the effect of budget balance on electoral positions, it is necessary to control for bias introduced by variables that correlate with both treatment and outcome. I first consider a set of economic variables. Among high-income democracies, budget balances are typically countercyclical: deficits decrease with growth in total output (Lane 2003). However, parties' support for the welfare state is also likely to increase with economic growth (Hicks and Swank 1984). When output growth is high, citizens are arguably more willing to agree to higher rates of taxation to fund expanding social programs, particularly when growth translates into expanding personal income. Hence growth may enable governments to raise additional tax revenue to fund welfare expansion, enhancing the credibility of promises to enlarge the welfare state. To measure *economic growth*, I use data on GDP growth in constant prices provided by the World Bank (2015). Deficits also increase with unemployment. Simultaneously, unemployment increases demands for social protection from workers threatened with the loss of job or income (Cusack, Iversen, and Rehm 2006; Margalit 2013). To account for the fact that unemployment may confound the relationship between deficits and support for welfare expansion, I use OECD (2014) *Economic Outlook* data on the general *unemployment rate*.

Two widely-cited studies (Cameron 1978; Rodrik 1998) show that the initial level of a country's volume of international trade is a significant determinant of the subsequent expansion of the country's public economy. Much of the expansion of the public sector since the end of World War II in wealthy democracies has been social spending. Rodrik (1998) argues that increased exposure to price shocks in open economies leads to demands for government to expand social insurance. Rehm (2009), Margalit (2011), and Cusack, Iversen, and Rehm (2006) show that workers that are more exposed to risks of unemployment and loss of income resulting from exposure to international economic competition are more likely to support the extension of welfare benefits. At the same time, trade openness may affect the level of budget deficit. Revenue instability increases with the volume of trade, leading to higher deficits in periods immediately following international price shocks and financial crises. Empirical evidence that deficits increase with openness is primarily confined to studies of emerging markets (Combes and Saadi-Sedik 2006), but a similar relationship may hold for developed economies during periods of low economic activity between trading partners (Rodrik 1998). However, if governments in open economies extend social insurance to reduce the effects of changes in trade on income and consumption, a similar logic suggests that a country's exposure to deficit-inducing trade risk may induce governments to run surpluses when output growth is relatively high in anticipation of revenue shortfalls when growth is low. The volatility of the business cycle in open economies may lead governments to hedge against fiscal risk in addition to shocks to income and consumption. The World Bank provides data on the *trade to GDP ratio*, measuring the extent to which an economy is dependent on international trade.

The degree of political strength of the working class has influenced the expansion, contraction, and level of welfare expenditure and coverage (Korpi 1983, Przeworski and Sprague 1986). The strength of left-of-center parties and unions may also affect the sensitivity of party positions to fiscal conditions. Adams, Haupt, and Stoll (2009) argue that left parties are more organizationally and ideologically rigid than other political parties – a function of their Marxist heritage and close ties to trade unions – and are thus less likely to change their positions in response to shifts in economic conditions. The same logic may hold for deficits. Right-of-center parties may be more flexible, opportunistic, and ideologically pragmatic than their left-of-center counterparts. To capture the effect of partisan ideology, I code a *left party* binary variable indicating whether or not a party is green, communist, socialist, or social democratic. To approximate the organizational strength of labor unions, I use data on *union density*, taken from the OECD (2015) database on the Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts.

Niche parties – green, far-left, and far-right parties – are less likely to become major partners in governing coalitions, and thus less likely to be electorally sanctioned for the economic and distributional effects and credibility of their policies. I have argued that low electoral risk may reduce the sensitivity of niche party platforms to the budget balance. Such parties can advocate preferred policies without threat of electoral punishment, since they are unlikely to be held accountable for their electoral platforms by virtue of their lower probability of entering office. Irrespective of their prospective electoral success, niche parties also tend to be motivated by the policy preferences of their leadership and supporters. In sharp contrast to mainstream parties, which adapt their electoral platforms to changes in economic conditions and public opinion (Adams, Haupt, and Stoll 2009), niche parties are electorally punished for shifting their policy platforms from one election to the next (Adams et al. 2006).

The sensitivity of niche party platforms to deficits provides an opportunity to test the hypothesized mechanism linking budget balance to electoral platforms. Parties that are less motivated to appeal to the policy preferences of the median voter, either by choice or by diminished expectations of holding a large share of government seats or cabinet portfolios, should be less sensitive to changes in the government surplus or deficit. The Manifesto Project classifies political parties into 11 types: ecological (or green), socialist (typically current or former Communist parties), social democratic, liberal, Christian democratic, conservative, nationalist, agrarian, ethnic and regional, and special issue parties (Volkens et al. 2014a). Following Adams et al. (2006), I define ecological, socialist, and nationalist parties as *niche parties*. I then explicitly test the hypothesis that party position on welfare state expansion decreases with the interaction of the budget balance variable and the niche party indicator. In other words, the effect of surpluses or deficits on parties' support for welfare policy should be lower among niche parties.

The relationship between fiscal constraints and party positions should also differ between incumbent and other parties. Parties that hold office prior to the election have control over election-year fiscal policy, and may be able to manipulate the level of deficit or surplus through tax and spending measures (Alt and Lassen 2006; Rogoff 1990). Voters also sanction incumbents for their policies and their perceived economic effects over their prior term in office, whereas voters, by definition, are unable to sanction challenging parties for their recent performance in office. Much of the empirical evidence for retrospective voting shows that the incumbent vote share increases with election-year (Healy and Lenz 2014) changes in personal income (Fiorina 1978), decreases with unemployment and inflation, and increases with aggregate output growth (Lewis-Beck and Stegmaier 2000), particular when voters can easily assign responsibility to incumbents (Powell and Whitten 1993). In political systems with multiple challengers, voters may find it easy to assign credit or blame to the administration in office, but it is unclear to which party, if any, voters will defect (Anderson 1995). Voters can either prospectively or retrospectively sanction incumbents, but cannot retrospectively sanction challengers for recent performance, though they may indirectly reward or punish challengers by defecting to or from an incumbent party.

Since voters apply different criteria to evaluate incumbent and challenger parties, it is reasonable to presume that the ways in which political parties appeal to voters differ between parties in and out of office. Unlike challengers, incumbents may use electoral platforms to highlight the success of popular policies, or evade blame for unpopular policies. Incumbent parties are also doubly constrained by voter perceptions of the credibility of their stated positions. Like challenger parties who enter government following the election, voters may punish incumbents if current electoral promises fail to materialize over the ensuing term in office. However, voters may also punish incumbent parties for presenting promises that are inconsistent with the policies of their prior term, either by ignoring positions perceived as implausible or by penalizing the incumbent for breaking prior commitments. To control for potential incumbency effects, I include a dichotomous variable indicating *incumbency status*.

Moreover, the relationship between deficits and electoral positions may differ among countries that are subject to externally-imposed lending constraints. Fiscal rules limiting the level of government deficit or debt may increase the sensitivity of parties' support for the welfare state to the current budget balance. When the benefits of membership in an international organization are conditional on member states meeting lending constraints, the governments of these member states are likely to be more constrained by the current availability of funds. International restrictions on deficit spending prevent excessive debt financing of government expenditure, limiting the extent to which governments may continue to support welfare transfers as deficits rise. Even when deficits are low, support for welfare and other forms of spending may increasingly depend on the current budget balance, since governments are concerned about maintaining levels of debt below a certain threshold.

I use membership in the European Economic and Monetary Union (EMU) to estimate the effect of the interaction between lending constraints and deficits on electoral positions. The European Union (EU)'s Stability and Growth Pact (SGP) requires each member state to maintain a deficit to GDP ratio below 3.0% and a debt to GDP ratio either below 60% or declining. Although the SGP applies to all member states, governments whose countries have adopted or are attempting to adopt the euro face tighter fiscal constraints insofar as their membership in the single currency depends on meeting the SGP criteria. I thus exclude the two EU member states whose governments have opted out of the EMU: Denmark and the United Kingdom (UK). I hypothesize that *EMU membership* of a party's country should increase the sensitivity of the party's electoral position on welfare expenditure to budgetary conditions.

Empirical Analysis. In Table 6.1, I present descriptive statistics of the variables included in the various specifications of my model.

[Table 6.1 here]

The distributions indicate the presence of observations more than three standard deviations from the mean on both ends of the budget balance and economic growth variables, and above the mean in the party position and trade to GDP ratio variables. To limit the possibility that outliers influence the estimated relationships between variables, I recode values in the top one percent of the budget, growth, party position, and trade variables with the value of the 99th percentile observation. I do the same for the bottom percentile of the distribution in the budget and growth variables, replacing the lowest one percent of observations with the value of the first percentile observation (see Alesina, Ardagna, and Trebbi 2006). Figure 6.1 shows the difference in parties' support for welfare expenditure under conditions of surplus and deficit.[49]

[Figure 6.1 here]

When government lending exceeds borrowing, political parties' mean support for welfare expenditure is 42% higher than in periods of government deficit. The difference is highly significant (t = 8.06). Since governments are two to three times more likely to run a deficit than a surplus, the two samples are rather unbalanced. To examine the relationship more closely, I divide the data into four quartiles, with the extra observation in the quartile corresponding to the largest surplus (Figure 6.2).

[Figure 6.2 here]

[49] The boxes display the median values, bordered by the first and third quartiles. The whiskers indicate the points at 1.5 times the interquartile range from the first and third quartiles, after replacing outliers.

This preliminary analysis suggests a positive relationship between government net lending and parties' electoral positions on welfare expenditure. However, as I have noted in the prior section, it is likely that a number of variables correlate with both the budget balance and electoral positions. To evaluate whether or not budgetary conditions systematically affect parties' support for the welfare state, I examine the results from seven model specifications. Each model includes country and time indicator variables to account for unobserved country and time-specific variables that may bias estimates of the relationships of interest. Tables 6.2 and 6.3 present estimates of the effect of the budget balance on parties' support for welfare expenditure.

[Table 6.2 here]

In Model 1, I describe the relationship between budget balance and party position, including country and year fixed effects but excluding other statistical controls. The relationship is positive and statistically significant. When budget balance and party position are at their mean values, a decrease in the budget balance to one standard deviation below the mean (a decline of 4.44% of GDP) is associated with a 20.4% decline in party support for welfare expansion. Model 2 tests the hypothesis that political parties' support for welfare state expansion increases with the budget balance. The correlation between budget balance and electoral support for welfare policy remains positive and statistically significant. Models 3-7 interact the four binary variables defining left, niche, incumbent, and EMU member state parties with the budget balance variable to determine the relative sensitivity of different types of parties' positions on welfare expansion to budgetary conditions.

In Model 3, I evaluate whether or not the "leftist exceptionalism hypothesis" (Adams, Haupt, and Stoll 2009) extends to electoral positions on welfare policy. Although left parties are apparently less likely to shift their composite right-left ideology in response to changes in public opinion and international economic conditions, I find no evidence that left parties are significantly less sensitive to budgetary conditions when adopting electoral positions on social transfers. This suggests that parties that generally favor welfare state expansion – typically of the left – and parties that support lower levels of welfare spending – typically of the right – are equally sensitive to fiscal constraints.[50]

In Model 4, I test the hypothesis that niche parties – green, far-left, and far-right parties – are less sensitive to budgetary constraints, either by virtue of their policy preferences or their diminished probability of entering office and being held accountable for their electoral promises. The statistical evidence supports the hypothesis: niche parties are 40% as responsive to changes in budgetary conditions as their mainstream counterparts. The difference is statistically significant. Model 5 examines the extent to which political parties in EMU member states are constrained by the level of surplus or deficit relative to non-EMU members. The coefficient is

[50] As Levy (1999) has noted, European social democratic parties have managed to implement extensive welfare reforms when socioeconomic changes have rendered formerly favored policies inefficient.

positive and substantively large: parties' manifesto positions on welfare policy in EMU countries are 43% more sensitive to the budget balance. However, the difference narrowly exceeds the least conservative conventional level of significance ($p < 0.11$).

In Model 6, I distinguish between incumbent and challenger parties to test whether electorally competitive parties are more sensitive to budgetary conditions. Electorally-motivated parties are more likely to win votes and join governing coalitions. Hence the set of incumbents contains a disproportionate number of vote-seeking and office-seeking parties that are concerned with the feasibility of their electoral promises. In contrast, the set of challengers includes a disproportionate number of minor parties representing particular groups of constituents rather than the electorate at large. Since niche parties are also less likely to govern, I include both the interaction between the niche party indicator and the budget balance variable and the interaction between the incumbent indicator and the budget variable in Model 7. In Model 6, the interaction between incumbency and the budget balance is positive and statistically significant. In Model 7, the interaction remains positive but is only significant at $p < 0.1$, suggesting that the incumbency effect is driven in part by the negative association between incumbency and niche party status.

The assumption that deficits and electoral platforms are similarly related at all levels of government net lending is perhaps untenably restrictive. To account for the possibility that the relationship between deficits and electoral platforms is different in times of surplus, relative budget balance, moderate deficit, and fiscal crisis, I partition the data into four quartiles. I order the quartiles from lowest to highest net lending, retaining the initial recoding of outliers. Since the number of observations is not evenly divisible by four, the fourth quartile contains an extra observation. Following the logic of the theory expressed herein, the relationship between budget balance and political parties' positions on welfare policy should be strongest when deficits are highest and parties of both the left and right anticipate necessary cuts to social spending upon assuming office. During periods of surplus, pro-expansion parties can easily claim credit for expanding popular programs, while voters may punish pro-retrenchment parties for promising cuts when the fiscal benefits are not immediate. The relationship between budget balance and support for welfare expansion should be most ambiguous when deficits are low and parties face neither strict fiscal constraints nor revenue windfalls. Table 6.4 presents estimates of party support for welfare expenditure by quartile of budget balance.

[Table 6.4 here]

The statistical evidence shows that electoral platforms are indeed most closely associated with the budget balance when government deficits are greater than 5% of GDP ($t = 12.8$). Yet when deficits are moderate (2.5 to 5%), there is no significant correlation between budget balance and party positions on welfare expansion. In the third quartile, split between low-to-moderate deficit and low surplus (-2.5 to 0.4%), the relationship is again positive and statistically significant ($t = 4.8$). When the budget surplus is greater than 0.4% of GDP, the association remains positive and significant ($t = 2.6$). These findings suggest a nonlinear relationship between budget balance and electoral positions. However, in polynomial regressions of welfare support on budget balance, both second and third-degree coefficients are insignificant. Table 6.5 compares linear, quadratic, and cubic estimates.

[Table 6.5 here]

The empirical analysis indicates that political parties' support for expanding or maintaining the coverage of social welfare policies increases with the budget balance. Electorally competitive parties are sensitive to fiscal constraints when introducing election-year policy manifestos, irrespective of their general ideology. Incumbent parties are particularly responsive to the level of surplus or deficit. Niche parties, on the other hand, are less responsive to budgetary conditions. However, evidence that internationally-imposed lending constraints increase the sensitivity of parties' platforms to the level of surplus or deficit is inconclusive. These findings suggest that political parties are concerned with the feasibility of their electoral promises, and are less hesitant to withdraw support for welfare programs during times of deficit than commonly assumed.

Conclusion

Prevailing theories contend that political parties should be reluctant to withdraw support for welfare programs, even when governments face intense fiscal constraints. To the contrary, I have shown that parties are highly sensitive to budgetary conditions when adopting electoral positions on welfare policy. Although I have provided evidence for one mechanism linking the budget balance to electoral platforms – the electoral competitiveness of the party adopting the position – other theoretical assumptions remain untested. Among other questions, future research might explore if voters sanction parties for keeping or breaking their electoral promises, whether issue convergence among parties is most pronounced in close elections, and the extent to which parties' positions on welfare expansion correspond to actual policy changes.

The findings of this chapter contribute to several ongoing debates in the cross-national study of political economy and social policymaking. In addition to challenging the longstanding assumption that political parties are generally unwilling to explicitly withdraw support for the welfare state in their electoral platforms, I show that center-left parties are no less willing to cut benefits when deficits are high. Right-wing parties clearly prefer lower levels of expenditure on social transfers, but are no more or less likely than their left-wing counterparts to shift their preferences in response to changing budgetary conditions. The chapter also adds to growing evidence that niche parties behave fundamentally differently than mainstream parties when faced with similar challenges.

Additionally, the observation that center-left and center-right parties are more likely to retract support for welfare programs when deficits are high illuminates the dilemmas facing mainstream parties today, particularly in Europe. Promising to cut benefits – and delivering on these promises – may diminish support for the governing party, as has arguably been the case with the Conservatives in Britain. On the other hand, initially resisting cuts to social programs by increasing taxes or delaying fiscal adjustment is likely to have far more negative consequences on government popularity. In France, the steep decline in public support for President Hollande and the Socialist Party may be attributed to the party's simultaneously breaking their campaign promises and implementing unpopular measures after initially delaying reforms. As the recent general election in Greece and the European Parliament elections of 2014 have shown, parties of the radical left and right may benefit most during times of deficit. This may explain in part why extremist parties profit electorally from recessions (de Bromhead, Eichengreen, and O'Rourke 2013).

The primary contribution of this chapter has been to demonstrate the strong relationship between budgetary conditions and the electoral positions of competitive political parties. This effect holds for both mainstream left and right-wing parties. As the experiences of niche parties has shown, political parties are not prisoners of their fiscal environment. However, parties that anticipate governing are constrained by the credibility of their promises. This mechanism in turn leads parties to advocate apparently unpopular positions rather than conceal the costs of retrenchment.

In the next chapter, I examine a particular instance in which an incumbent party of government – the Conservative Party in the United Kingdom in 2010 and 2011 – explicitly advocated and implemented extensive cuts to welfare programs in response to a high fiscal deficit. As I show in the following chapter, the Cameron administration's response was not merely a product of the general tendency of governments to withdraw support for welfare expenditure when deficits are high, but also the effect of a confluence of specific political and economic factors.

Table 6.1 Descriptive Statistics (N = 1557)

Variable	Mean	SD	Min	Max
Party position	7.83	6.12	0	65.85
Budget balance	- 2.31	4.44	- 16.45	15.04
Economic growth	2.87	2.68	-5.91	12.48
Unemployment rate	6.83	4.29	0.4	22.8
Trade to GDP ratio	74.25	39.62	9.20	303.45
Union density	41.97	22.06	6.8	95.16
Left indicator	0.40	0.49	0	1
Niche indicator	0.22	0.41	0	1
Incumbent indicator	0.34	0.48	0	1
EMU indicator	0.30	0.46	0	1

Table 6.2 Determinants of Party Support for Welfare Expenditure

Variable	Model 1	Model 2	Model 3	Model 4
Budget balance	0.34 ***	0.26 ***	0.28 ***	0.29 ***
	(0.06)	(0.06)	(0.07)	(0.06)
Economic growth		0.08	0.08	0.08
		(0.08)	(0.08)	(0.08)
Unemployment rate		- 0.06	- 0.07	- 0.07
		(0.07)	(0.07)	(0.07)
Trade to GDP ratio		0.02	0.02	0.02
		(0.02)	(0.02)	(0.02)
Union density		0.00	0.00	0.00
		(0.03)	(0.03)	(0.03)
Left		1.51 ***	1.33 ***	1.58 ***
		(0.33)	(0.42)	(0.34)
Left * budget			- 0.07	
			(0.06)	
Niche		- 0.72 **	- 0.68 *	- 1.19 ***
		(0.35)	(0.36)	(0.43)
Niche * budget				- 0.18 ***
				(0.07)
Incumbent		0.49 *	0.51 *	0.50 *
		(0.30)	(0.30)	(0.30)
EMU		- 0.71	- 0.72	- 0.76
		(0.58)	(0.58)	(0.58)
Lagged party position		0.32 ***	0.32 ***	0.32 ***
		(0.04)	(0.04)	(0.04)

Adjusted R^2	0.22	0.33	0.33	0.33

Country and year fixed effects included in all models. Heteroscedasticity-consistent standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6.3 Determinants of Party Support for Welfare Expenditure (Continued)

Variable	Model 5	Model 6	Model 7
Budget balance	0.23 *** (0.07)	0.21 *** (0.07)	0.25 *** (0.07)
Economic growth	0.05 (0.09)	0.08 (0.08)	0.08 (0.08)
Unemployment rate	- 0.04 (0.07)	- 0.07 (0.07)	- 0.07 (0.07)
Trade to GDP ratio	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Union density	- 0.01 (0.03)	0.00 (0.03)	0.00 (0.03)
Left	1.51 *** (0.33)	1.50 *** (0.33)	1.57 *** (0.34)
Niche	- 0.72 ** (0.35)	- 0.73 ** (0.35)	- 1.13 *** (0.44)
Niche * budget			- 0.15 ** (0.07)
Incumbent	0.48 (0.30)	0.77 ** (0.38)	0.69 ** (0.30)
Incumbent * budget		0.12 ** (0.06)	0.09 (0.06)

EMU	- 0.21 (0.72)	- 0.75 (0.58)	- 0.78 (0.58)
EMU * budget	0.17 (0.12)		
Lagged party position	0.32 *** (0.04)	0.32*** (0.04)	0.32 *** (0.04)
Adjusted R^2	0.33	0.33	0.33

Country and year fixed effects included in all models. Heteroscedasticity-consistent standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 6.4 Determinants of Party Support for Welfare Expenditure (Segmented Models)

		Percentile of Budget Balance			
Variable	All	0-25	26-50	51-74	75-100
Budget balance	0.23 ** (0.08)	1.89 ** (0.86)	0.23 (1.20)	4.78 (3.97)	0.31 (0.55)
Economic growth	0.05 (0.09)	0.50 (0.64)	- 0.34 (0.35)	- 2.03 (1.61)	0.38 (0.53)
Unemployment rate	- 0.06 (0.07)	0.19 (0.42)	0.64 ** (0.26)	2.81 * (1.55)	- 1.21 ** (0.50)
Trade to GDP ratio	0.02 (0.02)	- 0.24 (0.19)	- 0.13 (0.12)	- 0.08 * (0.13)	0.17 (0.14)
Union density	- 0.01 (0.03)	- 0.25 ** (0.10)	0.15 (0.10)	0.55 (0.50)	0.18 (0.16)
Left	1.50 *** (0.46)	1.59 (1.44)	1.18 (2.81)	1.48 (0.83)	0.62 (1.34)

Left * budget	- 0.02	0.00	- 0.12	- 0.25	0.16
	(0.07)	(0.18)	(0.75)	(0.73)	(0.24)
Niche	- 1.10 **	- 1.53	- 2.52	- 1.35	- 1.61
	(0.49)	(2.04)	(3.25)	(1.43)	(1.63)
Niche * budget	- 0.15 *	- 0.13	- 0.86	- 0.45	- 0.19
	(0.09)	(0.26)	(0.85)	(0.83)	(0.28)
Incumbent	0.71 *	1.19	- 0.12	0.57	1.06
	(0.38)	(1.27)	(2.75)	(1.06)	(1.18)
Incumbent * budget	0.10 *	0.15	- 0.12	0.11	- 0.05
	(0.06)	(0.15)	(0.72)	(0.80)	(0.17)
EMU	- 0.25	- 6.36	- 8.73 **	11.55 **	1.78
	(0.72)	(9.07)	(3.55)	(5.53)	(4.00)
EMU * budget	0.18 *	- 0.98	- 0.41	- 3.21 *	- 0.59
	(0.11)	(1.06)	(1.77)	(1.64)	(1.05)
Lagged party position	0.32 ***	0.23 ***	0.36 ***	0.32 ***	0.35 ***
	(0.04)	(0.06)	(0.08)	(0.09)	(0.09)
Adjusted R^2	0.33	0.40	0.43	0.27	0.33

Country and year fixed effects included in all models. Heteroscedasticity-consistent standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6.5 Comparison of Linear and Polynomial Regression Estimates

Variable	Linear	Quadratic	Cubic
Budget balance	0.26 ***	0.25 ***	0.25 ***
	(0.06)	(0.06)	(0.07)
(Budget balance) ^{2}		- 0.00	- 0.00

		(0.00)	(0.00)
(Budget balance) ^{3}			- 0.00 *
			(0.00)
Economic growth	0.08	0.08	0.07
	(0.08)	(0.08)	(0.08)
Unemployment rate	- 0.06	- 0.06	- 0.03
	(0.07)	(0.07)	(0.08)
Trade to GDP ratio	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)
Union density	0.00	- 0.00	0.00
	(0.03)	(0.03)	(0.03)
Left	1.51 ***	1.51 ***	1.52 ***
	(0.33)	(0.34)	(0.34)
Niche	- 0.72 **	- 0.72 **	- 0.72 **
	(0.35)	(0.35)	(0.35)
Incumbent	0.49	0.49	0.49
	(0.30)	(0.30)	(0.30)
EMU	- 0.71	- 0.75	-0.79
	(0.58)	(0.60)	(0.60)
Lagged party position	0.32 ***	0.32 ***	0.32 ***
	(0.04)	(0.04)	(0.04)
Adjusted R^2	0.33	0.33	0.33

Country and year fixed effects included in all models. Heteroscedasticity-consistent standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure 6.1

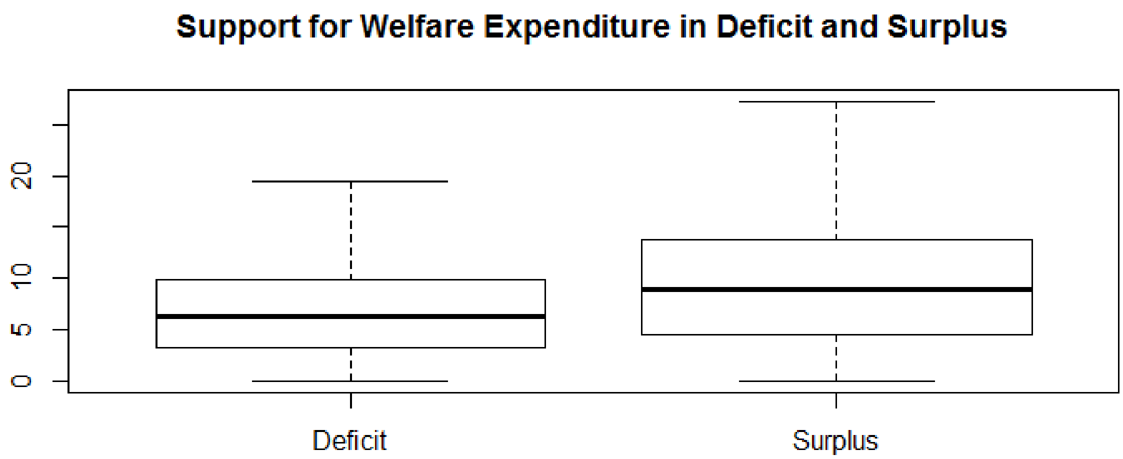
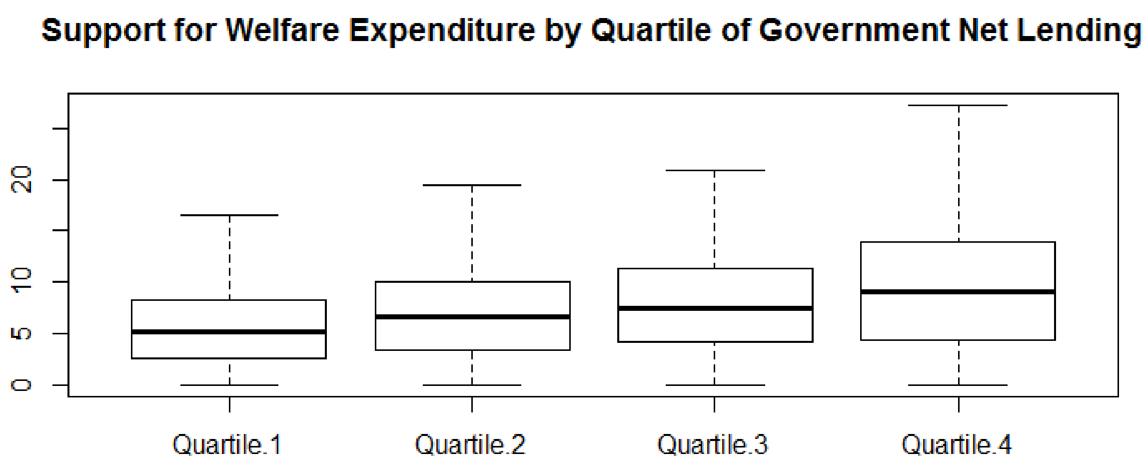


Figure 6.2



7. The Politics of Retrenchment in the "Age of Austerity": The First Cameron Ministry in the United Kingdom

The analyses of the previous five chapters have identified a number of general political causes and effects of fiscal outcomes. Yet understanding why certain governments choose particular fiscal policies – and how voters in turn respond to such policies – requires closer examination of the political and economic environment in which governments legislate and administer revenue and expenditure measures. In this chapter, I use the case of the fiscal adjustments enacted by the Cameron government in the United Kingdom during its first two years in office to illustrate how the interaction of country and time-specific factors influence the precise policy choices taken by a particular government. My analysis demonstrates the limitations of applying the conclusions of pooled analysis to specific cases. However, ad hoc qualitative analysis grants researchers even greater discretion in selecting cases and measuring and analyzing the relationship between variables, with less transparency and no clear means of falsifying hypotheses. This chapter shows the limitations not only of using pooled analysis to draw conclusions about policy choices in a particular time and place, but also of generalizing from qualitative studies of particular cases.

Following its election in May 2010, the coalition government in the United Kingdom, led by Prime Minister David Cameron, undertook a five-year program to reduce the public debt and eliminate annual deficits through unprecedented cuts to public sector funding and welfare benefits. Prioritizing deficit reduction as "taking precedence over any of the other measures" outlined in the coalition agreement, the Cameron administration began its term in office by passing two budgets that increased value-added and income taxes, froze wages for state employees, and reduced funding for universal and means-tested benefits. The magnitude of the austerity measures undertaken by the Cameron government challenges a central hypothesis of the predominant "new politics" model of welfare retrenchment, which suggests that such retrenchment would be unlikely to occur given the current political conditions in the United Kingdom. However, while the new politics model is unable to explain the degree of retrenchment under Cameron, it succeeds, through the logic of "blame avoidance," in identifying where and how cuts to social programs are likely to occur.

In order to explain retrenchment in the current "age of austerity,"[51] it is necessary to situate the political logic of retrenchment within the broader economic context of rising public debt and stagnant economic performance. For instance, assessing cuts to social programs under the Cameron administration in the United Kingdom necessitates reconsidering the degree to which

[51] David Cameron used this phrase in an April 2009 speech in Cheltenham to describe the fiscal constraints facing the United Kingdom following rising government spending and deficits under Prime Minister Gordon Brown's Labour government, and to advocate for "responsible politics" to implement substantial fiscal adjustment measures.

the Thatcher government furthered the systemic retrenchment of welfare programs (Pierson 1994). This chapter's analysis of retrenchment in contemporary Great Britain demonstrates how the logic of blame avoidance in welfare retrenchment is constrained by the broader economic and political context. Although the new politics model may explain why social programs are more vulnerable to defunding, privatization, or elimination, it cannot explain why such programs are likely to face cuts in the first place. The likelihood of retrenchment is instead dependent on economic factors such as the fiscal health of the state and long-term structural changes in the labor market and the production process. Additionally, it is necessary to consider political factors such as the policy legacies of prior administrations, the strength of unions and left-wing political parties (power resources), and the presence or absence of politically viable alternatives to austerity.

As Pierson (1994) has argued, the politics of welfare retrenchment differs fundamentally from the politics of welfare expansion. Although the relative strength of organized class interests may explain the development of welfare policy in post-war Europe (Esping-Andersen and Korpi 1984), the "power resources" model is unable to explain the endurance of the welfare state during the Thatcher and Reagan administrations. Decreases in unionization and support for left-wing and center-left parties in Britain and the United States did not lead to significant changes in the provision of social benefits. According to Pierson, while Thatcher and Reagan were able to reduce funding for specific welfare policies, neither administration succeeded in their goal of fundamentally altering the nature of the welfare system in their country (Pierson 1994, p. 131).

If we accept the logic of Pierson's argument, then the chances for systemic retrenchment under the current Cameron administration would appear minimal. Unlike Thatcher, whose Conservative party controlled a majority of the House of Commons through three consecutive elections, the Conservatives under Cameron failed to win a majority in 2010, leading to their formation of a coalition with the Liberal Democrats. Yet within two months of assuming power, the Cameron administration had revised the 2010 budget, calling for a £32 billion/year reduction in expenditures, including £11 billion in cuts to welfare benefits to housing, disability, and child credit. In a clear example of "blame avoidance" (Pierson 1996), these cuts have occurred under the heading of "freedom, fairness, and responsibility" (HM Government, 2010; HM Treasury, 2010), primarily through changing the indexing of benefits to inflation from the Retail Prices Index (RPI) or Rossi index to the more conservative Consumer Price Index (CPI). In addition to the projected £32 billion/year to be generated by spending cuts, £8 billion/year was to be generated via tax increases (HM Treasury 2010). The announcement of the 2011 Budget saw further cuts to public services and welfare benefits as part of the administration's plan to balance the budget by the end of their five-year term in office (Institute for Fiscal Studies, 2010, p. 3).

Despite the widespread cuts to public services, the 2010 Budget mandated additional spending for both the National Health Service (NHS) and state pensions over the next four years (Crawford, 2010, p. 27). Nevertheless, with Parliament approving the second reading of a proposal to decentralize the NHS administration, the NHS faced the largest structural changes since its creation. Parliament also took measures to incentivize the provision of healthcare and promote competition, introducing measures to pay providers according to performance (NHS White Paper). Had such changes lead to the privatization of health care, the Cameron administration would have clearly succeeded in furthering the systemic retrenchment of the most popular welfare program in the United Kingdom.

The primary objective of this chapter is to evaluate the extent to which welfare retrenchment under the first two years of the Cameron administration followed the logic of the "new politics" model of retrenchment developed by Pierson (1994, 2001). Although the generalizability of this study is limited by its focus on a specific country in a specific time, examining retrenchment in the contemporary United Kingdom has certain theoretical advantages. First, it enables the comparison of retrenchment under Cameron with Pierson's analysis of retrenchment under Thatcher. The ability of the Cameron administration to cut public spending and welfare benefits to a greater extent than the Thatcher administration demands further explanation. Second, the contemporary British case provides an example of retrenchment under conditions of fiscal crisis, a phenomenon which has become increasingly common within developed economies, altering the dynamics of welfare state politics.

Theories of Retrenchment

Before outlining the specific dynamics of retrenchment under the Cameron government, I first consider two existing theories of retrenchment: the power resources model developed by Esping-Andersen and Korpi, and the new politics model developed by Pierson and others. In particular, I will focus on Pierson's analysis of retrenchment under Thatcher as a basis for comparison with the current measures taken by the Cameron administration. I will then outline the specifics of the coalition government's plan to eliminate the deficit, analyzing cuts to welfare spending in terms of the political and economic context in which reforms have occurred.

Earlier attempts to theorize the development of the welfare state emphasized the importance of class politics and "the distribution of power resources among [political] actors" (Esping-Andersen and Korpi 1984, p. 181). The power resources model claims that conflicting class interests, rather than consensus over the goals of social policy, led to the formation of a variety of welfare state regimes in postwar Europe. Esping-Andersen (1990) later highlights the role of cross-class coalition building. In Esping-Andersen's analysis, the absence of middle class support for broad social protection led to the formation of "liberal" welfare states such as Great Britain and the United States. Liberal welfare states are defined by the absence of universal benefits or widespread social insurance characteristic of "social democratic" or "corporatist" welfare states, and rely instead on means-tested benefits for the poor. One might thus expect to such states to be more vulnerable to retrenchment than countries with broader class-based support for social insurance and transfer policies. In particular, the means-tested nature of welfare policies in liberal regimes has enabled proponents of retrenchment to mobilize political support amongst non-beneficiaries for stricter provision of benefits. However, substantial variation in retrenchment has occurred within liberal regimes. In contrast to the United States, Great Britain has succeeded in maintaining a universal single-payer National Health Service, which has remained intact since its creation, and has largely avoided the fiscal cuts which have rolled back other forms of welfare provision, such as housing benefit.

Pierson argues that theories of welfare state development cannot explain the endurance of welfare states under conservative administrations. Pierson claims that both the Thatcher administration in Britain and the Reagan administration in the United States failed in their common goal of "systematic retrenchment" of the welfare state. While Thatcher and Reagan had "moderate success" in "programmatic retrenchment," by "modifying individual sectors of the welfare state," primarily through cutting means-tested benefits, neither administration succeeded overall in "modifying the context for future struggles over programs" (Pierson 1994, p. 131). Yet the power resources model cannot explain the relative endurance of the welfare state under Thatcher and Reagan. Both administrations confronted weakening support for unions and left-of-center parties. Similarly, both administrations succeeded in cutting benefits from particular programs, but failed in their efforts to reform others.

Pierson's answer to the puzzle of conservative governments' mixed success in retrenchment is that the logic of retrenchment fundamentally differs from the logic of expansion. Institutions generate "policy feedback" which supports existing welfare programs. The widespread provision of social benefits entails commitments to members of the electorate, commitments which are often reinforced through interest groups. Cutting welfare programs imposes costs on specific, often well-organized members of the electorate in return for less visible, less concentrated benefits to the rest of society through reduced taxation.

A related aspect of Pierson's argument emphasizes the role of blame avoidance in defunding social provision (Pierson 1996). As the policy feedback theory suggests, an aspect of blame avoidance entails diffusing costs, or directing costs toward underrepresented segments of the population, such as the poor. A second aspect of blame avoidance involves decreasing the visibility of spending cuts, through subtle changes in the rules which govern the provision of benefits. Cameron has employed this tactic extensively, generating the bulk of public savings through changing the index which links benefits to inflation, and cutting means-tested benefits while leaving pensions largely intact and continuing to increase funding for the National Health Service (NHS).

Although blame avoidance, policy feedback, and the distribution of class-based power resources may explain how retrenchment occurs, where cuts are likely to occur, and in which countries we may expect to see the greatest degree of retrenchment, such theories alone cannot fully explain when welfare state expansion or retrenchment is most likely to occur. For this, it is necessary to situate the political dynamics described by Esping-Andersen, Korpi, and Pierson with the broader economic context. Just as welfare expansion was driven by the sustained growth of the postwar European "golden age" (Schonfield 1965; Glyn et al. 1990), so too has welfare retrenchment been driven by various forms of fiscal crisis. Any comparative analysis of retrenchment must account for the differences between the crises which trigger cuts to social spending: sluggish growth coupled with inflation in the case of Thatcher, rising deficits in the case of Cameron.

Reevaluating Retrenchment under Thatcher

Pierson compares retrenchment under the Reagan and Thatcher administrations, examining the extent of retrenchment in pensions, housing benefit, and income-support programs, and to a lesser extent health care and disability benefits. Although Pierson argues that the Thatcher administration generally failed in furthering systematic retrenchment of the British welfare state, it did succeed in radically reforming the British pension system. While the British state pension continues to provide universal payments to retired citizens, the level of payment is much lower than other pension systems such as Social Security in the United States. Thus, much of the elderly population of Britain depends on personal pension schemes or means-tested benefits in addition to the basic pension.

The introduction of the State Earnings-Related Pension Scheme (SERPS) under the Labour government of the 1970s established a supplemental pension which would provide benefits linked to earnings. The Thatcher administration initially attempted to abolish SERPS; when this proposal proved unpopular, the government chose instead to phase out benefits and encourage private pensions as an alternative to SERPS. SERPS was eventually replaced by the State Second Pension in 2002, under the Blair administration. Pierson concludes that Thatcher’s government failed to privatize earnings-related pensions because of middle-class opposition represented by interest groups. However, because SERPS had only recently been introduced under the previous administration, the program had not yet matured to the point where much of the electorate would receive a significant payout from the earning-related pension fund. This enabled Thatcher to prevent the development of a large scale state pension system linked to earnings (Pierson 1994, p. 53-73).

The Thatcher administration was even more successful in reducing funding for public housing. First, the “Right to Buy” policy enabled public housing tenants to purchase their homes at a reduced price. Second, the administration cut eligibility for housing subsidies, shifting expenditures from grants to local governments to means-tested benefits for individuals. The means-tested Housing Benefit was more vulnerable to cutbacks than subsidies for buildings, and the Thatcher administration was able to minimize opposition to cuts by promoting the popular Right to Buy policy (Pierson 1994, p. 74-87).

The Thatcher administration was less successful in cutting income support for the poor. Although the administration succeeded in trimming universal policies such as unemployment benefits and Child Benefit, it was unable to cut funding significantly for the means-tested programs which replaced universal benefits. Similarly, cuts to sickness and disability pay were limited. In the realm of health care policy, the Thatcher government initially considered implementing a private insurance system, but the enduring popularity of nationalized health insurance led the administration in the end to increase funding for the NHS (Pierson 1994, 131-146).

Pierson (1994, 146-163) concludes his analysis by examining the degree to which the Reagan and Thatcher administrations managed to achieve systemic retrenchment of welfare provision. Pierson identifies four ways in which the government in power may facilitate systemic retrenchment. First, the administration may alter public opinion toward welfare policy. At the time Thatcher assumed office in 1979, a substantial majority of the British public favored cuts to welfare programs. However, once the public began to feel the effects of reduced benefits, opinion shifted toward greater support for welfare programs. For this reason, Pierson argues that the Thatcher administration failed to erode public support for the welfare state, and thus did not facilitate retrenchment through shifting public opinion.

With the benefit of hindsight, we now know that British politics has shifted somewhat to the right, particularly in the realm of fiscal policy. Under the leadership of Tony Blair, the Labour Party presented itself as a pragmatic, center-left alternative to the Conservative party, seeking "to put a commitment to enterprise alongside the commitment to justice" (Labour Party 1997). "New Labour" embraced market capitalism while implementing progressive social reforms. Government spending fell to record lows during Blair's first term, increasing somewhat during the 2000s but remaining relatively low until the financial crisis of 2008 (*The Guardian* 2010b). The fact that the Conservatives were able to regain power on a platform prioritizing deficit reduction shows the extent to which British politics has moved rightward. Yet the Conservatives' moderate electoral success is more reflective of changes in the British economic climate, a point which I will return to later.

The second way in which a government may facilitate systemic retrenchment is through defunding the welfare state by cutting tax rates or running deficits, denying future administrations the necessary revenue to fund social programs. In direct contrast to the Reagan administration in the United States, Thatcher increased taxes, improving the fiscal condition of the United Kingdom during her tenure as Prime Minister. Instead of defunding the welfare state, Thatcher created the fiscal preconditions for the growth of welfare spending under the Blair administration. Similarly, the increase in public debt under Gordon Brown's Labour administration created the preconditions for retrenchment under Cameron.

Third, the government may change the way in which policies are executed, altering the nature and arrangement of political institutions. The Thatcher government successfully centralized authority, which made it easier for the administration to enact cuts to welfare programs, but arguably had little effect on long-term prospects for retrenchment. In contrast, the coalition government under Cameron has pushed for a "radical devolution of power" from Westminister to local government (HM Government 2010, p. 11). Although decentralization often inhibits the central government's ability to enact large-scale cuts, devolving power may redirect political opposition to retrenchment away from the central government and toward local authorities.

Fourth, the government may weaken interest groups representing welfare beneficiaries. Pierson (1994, 158) argues that the Thatcher administration had only “mixed results” in reducing the power of interest representatives. Although the administration was only moderately successful in limiting the power of public interest organizations, it was massively successful in its attack on trade unions. Union density declined from 50.7% in 1980 to 39.3% in 1990 (Visser 2006, p. 45). As is the case with contractionary fiscal policy, it is important to contextualize the decline in union membership in terms of broader economic trends. Yet the Thatcher administration did not merely reap the benefits of high unemployment and deindustrialization; the government actively sought to reduce the influence of trade unions in government, with a great degree of success (Towers 1989).

Although Pierson argues that the Thatcher administration had moderate success in cutting back particular social welfare programs, he contends that the administration was less successful in transforming fiscal and political conditions in order to favor long-term retrenchment. The trajectory of British welfare policy over the past several decades challenges the validity of Pierson’s conclusion. While the Blair administration increased means-tested spending for social programs, it accepted many of the pro-market reforms of the Thatcher administration, and it made no significant attempt to repeal legislation passed under Thatcher which limited the powers of trade unions. The British public may still support welfare programs, but the nature of welfare policy has changed substantially since Thatcher assumed power in 1979.

Contextualizing the New Politics of Retrenchment

In order to make sense of the cuts to welfare programs undertaken by the Cameron government, it is necessary to refine the new politics model developed by Pierson and others. Pierson’s model is based on two related hypotheses. First, welfare expansion imposes diffuse costs in return for concentrated benefits, while welfare retrenchment “imposes concentrated costs in return for diffuse benefits… [and] there is substantial reason to believe that concentrated interests possess marked advantages in political conflicts” (Pierson 1994, 13). Second, voters exhibit a “negativity bias” in assessing the impact of policies. Given a policy with beneficiaries and victims, the victims are more likely to express their opposition than the beneficiaries are to express their support. The losers of welfare policy are more likely to mobilize politically than the winners.

The first hypothesis helps to explain the persistence of programs supported by concentrated interests, such as the NHS; the second helps to explain the widespread resistance to austerity measures. However, neither hypothesis can explain the occurrence of retrenchment in contemporary Britain under apparently unfavorable political conditions. By isolating policy formation from its broader economic context, the new politics model of retrenchment – like the power resources theory – attempts to explain retrenchment purely in terms of the logic of political action. The new politics model succeeds in explaining which programs are likely to be cut in the process of retrenchment, but it fails in explaining the relative likelihood of retrenchment between polities situated in different economic contexts. Although the new politics model explains why Thatcher and Cameron have both been able to cut means-tested benefits but not funding for the NHS, it cannot explain why Cameron has had greater success in defunding welfare than Thatcher under less favorable political conditions.

Recognizing the increasing importance of economic factors in delimiting the boundaries of welfare politics, Pierson (2001, 80-104) identifies four "post-industrial pressures" which constrain the provision of welfare benefits in developed countries. First, Pierson argues that the ongoing shift in production from manufacturing to services slows productivity. Second, the maturation of entitlement programs in an era of slowing economic growth increases fiscal strain. Third, population aging leads to higher demand for health care and pensions, while declining fertility rates decreases funding for such programs. Fourth, changes in the nature of the household, from higher female labor participation to the increase in single-parent families places new demands on welfare programs. This applies particularly to Christian Democratic states where entitlements were established to protect families during periods in which the "male breadwinner" was unable to work due to sickness, disability, unemployment, or old age (Esping-Andersen 1996).

In comparing retrenchment under Cameron with retrenchment under Thatcher, it is important to consider the impact of underlying economic, demographic, and sociological factors which increasingly limit the ability of the welfare state to provide benefits. Yet fiscal strain is not a uniquely "post-industrial" phenomenon, nor has the welfare state only recently been transformed by apolitical pressures. At every stage in the development of the welfare state, the politics of expansion and retrenchment has been bounded by fiscal constraints. For example, the power resources theory may explain why welfare expansion in postwar Europe assumed different forms in different countries. However, it is unlikely that such welfare expansion would have occurred if not for high long-term rates of economic growth which enabled European states to fund social programs, coupled with low rates of unemployment which reduced benefit payments.

Both the power resources theory and new politics model help to explain the welfare cutbacks in present-day Great Britain. The power resources model calls attention to the effects of weakened unions and the rightward shift in British economic policy. The new politics model explains why certain programs have been cut, while others have remained intact. To explain the magnitude of retrenchment, it is necessary to consider – in addition to power resources and concentrated interests – the importance of economic and political context.

Public Spending and Economic Performance 1963-2011

Proponents of the new politics model derive empirical support from data showing that government spending relative to GDP has not declined significantly in response to governments' attempts to cut welfare benefits. Thatcher inherited a government which had spent 45.1% of GDP in FY 1978-79; under Labour administration, government expenditures reached their historical peak of 49.7% of GDP in FY 1975-76. Yet throughout Thatcher's first term, spending continued to increase. Only with the economic recovery of the mid-1980s did spending relative to GDP begin to fall, dropping to 38.9% in FY 1988-89. Spending rose to 43.7% in FY 1992-93 under Conservative rule before reaching its all-time low of 36.4% in 1999-2000 under New Labour. The 2008-09 recession saw government spending jump from 41.1% of GDP in 2007-08 to 47.5% in 2009-10 (*The Guardian* 2010b).

The emphasis on government spending relative to GDP is misleading and insufficient as a metric for welfare retrenchment. An obvious limitation of this approach is that spending, like GDP itself, is cyclical in nature, decreasing during periods of growth and increasing in times of recession. The inverse relationship between spending per GDP and change in GDP is most pronounced under administrations which employ Keynesian demand stimulus policies or high levels of social protection. However, this relationship is also present under governments which provide more modest welfare assistance, as stagnant wages and rising unemployment lead to more citizens relying on means-tested benefits. Finally, changes in government spending tend to lag behind changes in the economy. Price shocks and financial crises occur suddenly, whereas government spending is decided primarily through annual budget negotiations. A proportionate decrease in government spending is unlikely to match a sudden decline in the growth of GDP.

Although a wide body of economic research has examined how public spending impacts economic performance, economists and political scientists have paid significantly less attention to how economic performance impacts public spending. Given the space and time constraints of this essay, along with the considerable difficulty of modeling the relationship between growth and spending, I leave this problem open to further research. Yet simple analysis of the data is enough to reveal the importance of economic context. The largest proportional increase in government spending occurred in FY 1974-75, following a 3.3% contraction of the economy in 1973-74. Similarly, under Thatcher, spending to GDP increased initially due to a 4.6% contraction in FY 1980-81. During the seven-year period of sustained 2-6% growth from FY 1982-83 to 1988-89, proportional government spending decreased every single year, falling from 48.1% to 38.9% of GDP. Undoubtedly the Thatcher administration's cuts to public spending accelerated this trend. However, only when Britain emerged from the recession in 1982 did proportional spending begin to decline (*The Guardian* 2011b).

Public spending reached its post-1962 nadir not under Thatcher, but under Blair's Labour government, which maintained spending below 40% of GDP from FY 1997-98 through 2003-04. In FY 2007-08, the last budget released by the Blair administration, spending per GDP stood at 41.1%, lower than all but one of the budgets released under the Major administration, including the first budget after Thatcher left office in 1990. Economic contraction in 2008 and 2009 dramatically increased spending per GDP, which reached 47.5% in FY 2009-10, its highest rate since the Thatcher administration.

There are several conclusions to draw from this analysis. At the most general level, it is unhelpful to use government spending per GDP as a metric for welfare expansion or retrenchment without considering the broader economic context. The British economy has experienced four recessions since the end of World War II, each accompanied by increases in government spending. In evaluating long-term changes in welfare spending, it is necessary to examine what happens in the aftermath of such recessions. Following the oil crisis, the Labour government kept public spending at its postwar height, prompting initial support for spending cuts under Thatcher. Thatcher, on the other hand, oversaw an unprecedented decrease in public spending during the economic recovery of the mid-to-late 1980s.

After the early 1990s recession, public spending returned to its postwar low under the Major administration. Yet spending per GDP continued to decline during Blair's first term; while spending increased somewhat during the early 2000s, it remained lower than under the prior Conservative government. The financial crisis drove government spending back to near-record levels, generating large deficits in the process. Amidst the crisis and concerns about the solvency of European governments such as Greece and Italy, the Cameron administration assumed power with the objective of eliminating the current account deficit by 2015.

Cameron, like Thatcher, entered office with the goal of reducing public funding for welfare programs. Both Cameron and Thatcher adopted a conservative platform of deregulation, privatization, and stricter means testing for benefit programs. However, the broader economic policy objectives of the two administrations differed considerably. Economic policy under the coalition government prioritized deficit elimination. For Cameron, cuts to social spending were above all a means to balancing the budget.

Thatcher, on the other hand, attempted to alter the fundamental structure of the British economy, privatizing state-owned firms, weakening the power of trade unions, and deregulating finance. In addition, Thatcher sought to contain the problem of inflation through tightening monetary policy. For Thatcher, privatization and cuts to social spending were means to creating a more competitive economy. Cameron, on the hand, not only inherited an economic environment in which large industries such as British Telecom, British Coal, and British Rail had all been privatized under previous Conservative administrations; he also inherited a political environment in which the Labour Party had long abandoned their commitment to nationalization (Kavanagh 1997).[52] In analyzing the specifics of welfare retrenchment, it is necessary to consider the distinct economic problems faced by each administration: rising deficits in the case of Cameron; inflation and declining productivity in the case of Thatcher. However, it is also important to consider the sequencing of retrenchment and policy legacies of prior administrations. The nature of retrenchment under Cameron has been driven both by fiscal constraints and a post-privatization political environment in which eroding means-tested benefits has become a priority for Conservative administrations.

[52] Under the leadership of Jeremy Corbyn, Labour has subsequently pivoted leftward, though without restoring Labour's initial commitment to "common ownership of the means of production, distribution, and exchange" (*The Guardian* 2015).

Public Sector Cuts and Welfare Retrenchment under Cameron

The Cameron administration proposed their plan for balancing the budget in their coalition agreement with the Liberal Democrats. Under the heading of "freedom, fairness, and responsibility," the coalition platform prioritized deficit reduction, and called not only for reforms to the system of welfare and taxation, but also substantial political reforms. The coalition outlined their plans to radically decentralize power, replacing top-down bureaucratic administration with local governance. The incoming government proposed to abolish administrative agencies such as the Government Office, which was soon eliminated by the October 2010 Budget Review. Nationally funded, independently managed organizations known officially as "non-departmental public bodies" (NDPBs) and informally as "quangos" (quasi-autonomous non-governmental organizations) were targeted for elimination or privatization. While promising to continue to increase overall funding for the NHS, the administration proposed significant reductions in administrative costs, the elimination of health quangos, and the transfer of political power from the central agency to general practitioners.

According to Pierson (1994, 155), decentralization is likely to aid retrenchment by encouraging deregulation, fragmenting interest groups, and deflecting opposition away from the administration toward local government. Faced with an already centralized system, Thatcher further consolidated power in the national government, with mixed results for retrenchment. In contrast, the Cameron administration built upon the legacy of devolution under New Labour not only by extending home rule to Scotland, Wales, and Northern Ireland, but also by cutting funding for national agencies and delegating power to communities and local governments. The coalition also stated their intention to reform the tax system by increasing the personal allowance, moving hundreds of thousands of low-income individuals out of income tax. Plans to increase income and value-added taxes, coupled with incremental annual reductions in the corporate tax, were left out of the coalition agreement. The plan for welfare reform stressed means testing and creating incentives to work without explicating the details of benefit reductions.

With the release of the June 2010 Budget, Chancellor of the Exchequer George Osborne unveiled the new administration's plans for deficit reduction. In contrast to the pre-election budget released by Labour three months prior, the "emergency budget" called for immediate action to balance the current account deficit. The deficit reduction plan included an annual £40 billion in savings by 2014-15, £32 billion from spending cuts, of which £11 billion would be cut from welfare programs. £8 billion in revenue would be generated from increases to the income and value added taxes, whereas the corporate tax was reduced (HM Treasury 2010). The Institute for Fiscal Studies projected that the budget will have a regressive effect on income distribution, with low-income working families particularly impacted by the cuts to welfare benefits. In contrast, the March 2010 Budget issued by the Brown administration was projected to have a progressive effect on income distribution (Browne 2010).

The most significant portion of the cuts to welfare transfers came through the administration's decision to index benefits in terms of the Consumer Price Index (CPI). Previously, increases in benefits had been linked to increases in the Retail Prices Index (RPI) or the Rossi index. The CPI tends to underrepresent inflation relative to the two alternative indices, leading to lower increases in benefits as inflation increases. The IFS estimated that changes in indexing would save the government £5.8 billion annually by 2014-15 (Brewer 2010). Reducing entitlements by changing the indexation of benefits reflected the Cameron administration's attempts to minimize opposition to retrenchment. Re-indexing benefits diffuses costs and obscures the defunding of social programs. Indexing benefits to less generous measures of inflation may be less likely to spark widespread protest than laying off thousands of public employees, as events in Britain during 2011 suggested.

The second largest source of cuts to welfare transfers – £2.4 billion in 2013-14 alone – came from new restrictions on recipients of Child Benefit, a universal payment to families with children (Brewer and Joyce 2012). Child Benefit was frozen for three years, payouts were reduced, and supplementary tax credits for babies and toddlers were eliminated. To mitigate the impact on child poverty, the administration provided a tax credit for low income families with children, effectively transforming the current provision of child welfare from universal payments to means-tested benefits.

The next largest sources of cuts came from reductions in Housing Benefit and disability payments. The administration cut Housing Benefit payments by limiting eligibility, in part through stricter means-testing, changing the indexation of benefits to the CPI, and eliminating benefits for the long-term unemployed. Disability payments were to be reduced entirely through stricter means testing. Pensioners comprised the one group of transfer recipients who actually benefited from the changes in taxation and benefits. The administration decided not to cut benefits for pensioners, but instead to raise pensions annually by increases in prices, earnings, or 2.5%, whichever led to the highest payout for beneficiaries (Brewer 2010).

Most of the cuts to government spending came not from changes in the indexation and eligibility of social transfers, but from the defunding, abolition, and privatization of hundreds of government agencies and NDPBs. On October 14, 2010, the coalition followed through on its promise, announcing the elimination of 192 NDPBs, with an additional 299 agencies undergoing significant reforms or mergers (*The Guardian* 2010c). The NHS was largely spared from the initial public sector cuts, and even saw a slight increase in funding from the June Budget (Crawford 2010). However, the Health and Social Care Bill 2011 mandated a significant decentralization and reduction of funding for health administration. Primary Care Trusts and Strategic Health Authorities, the current local and regional branches of NHS administration, would be abolished, with authority shifting to general practitioners (UK Parliament 2011). An article in the British Medical Journal argued that decentralizing NHS administration would lead to the privatization of health care provision (Peedell 2011). Although the specific effects of decentralization remain unclear, the NHS reforms comprise potentially the most radical changes to the structure of health care provision in the agency's history.

Much of the opposition to the cuts in public sector funding and welfare benefits has taken the form of protests organized by trade unions and anti-austerity organizations. In London, on March 26, 2010, the "March for the Alternative" drew an estimated 250,000 protestors, the largest demonstration since the 2003 Iraq War protest (*The Guardian* 2011a). In late 2010, Labour began to receive slightly more support than the Conservatives in public opinion polls (UK Polling Report 2011), though as of 2011, voters still trusted the current government over Labour to run the economy (*The Economist* 2011).[53]

Programmatic and Systemic Retrenchment under Cameron

Three questions inform the following evaluation of programmatic retrenchment under Cameron. First, how much were particular programs defunded, and what are the broader implications of reductions in funding for social benefits? Second, which programs were targeted for cuts, and which programs continued to receive funding? Third, how significant were the measures taken to reduce spending given the alternatives? It is helpful to compare the administration's policies with those implemented by Thatcher. However, in doing so, it is essential to situate each administration's policies in terms of the broader economic context. It is equally important to consider the shift in political climate between the Thatcher and Cameron administrations.

Pierson argues that the Thatcher administration was most successful in limiting the provision of state pensions. In contrast, the pension system under Cameron has been largely immune to the widespread reductions in transfer payments. Although Thatcher successfully prevented the development of earnings-related pensions, her administration was unable to prevent the growth of the universal pension. Thus, in the cases in which the Cameron administration has attempted to cut funding for the universal pension, it has faced significant public opposition. The government's attempt to reform the provision of public sector pensions has led to protests culminating in a general strike on November 30, 2011 (*The Guardian* 2011c).

Thatcher's government also experienced great success in reducing public funding for housing, privatizing a large degree of council housing through the popular Right to Buy program and replacing building subsidies with Housing Benefit. The Labour government left Right to Buy intact and did not attempt to expand council housing, leaving the Cameron administration with an already weakened housing system susceptible to further cuts, which the government proceeded to implement. As with pension policies, the defunding and privatization reforms undertaken by the Thatcher administration have left the current government with less to cut.

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[53] The inability of Labour and its leader Ed Miliband to persuade voters that their economic platform comprised a favorable alternative to the Conservatives' austerity measures arguably enabled the Conservatives to maintain public support on economic issues. When the economy began to recover prior to the 2015 election, the Conservative party was able to claim credit for the relatively strong performance of the British economy in comparison to its European neighbors. The success of the Scottish National Party further inhibited the ability of Labour to attract voters defecting from the Conservatives (and Liberal Democrats) in response to the budget cuts.

In the realm of income-support policies and disability benefits, the Thatcher government had considerably less success. Yet the Cameron government has undertaken large-scale cuts to means-tested benefits. Changing the indexation of benefits from the RPI to the CPI has provided a basis for long-term defunding of welfare provision, in which benefits are set to lag behind inflation for the foreseeable future. Finally, neither Thatcher nor Cameron attempted to reduce overall funding for the NHS, though the Cameron government is currently attempting to decentralize the NHS administration, significantly reduce administrative fees, and arguably create the preconditions for privatization. As with pension reform, it is still too early to judge the success of the Cameron administration in reforming the NHS.

Pierson argues that despite Thatcher's moderate success in programmatic retrenchment, her administration was unable to further systemic welfare retrenchment by modifying the political conditions in favor of further retrenchment. In contrast, it is likely that Cameron's policies will alter the allocation of welfare benefits in the United Kingdom for years to come.[54] Recall that Pierson outlines four ways in which governments may further systemic retrenchment: first, by shifting public opinion; second, by defunding the welfare state; third, by modifying political institutions; and fourth, by weakening the influence of interest groups and unions.

Although the austerity measures undertaken by the coalition government initially led to strikes and protests, public opinion only slightly shifted in favor of Labour during the first year of the Coalition's term in office, and citizens continued to regard the coalition as more equipped than Labour to handle the fiscal crisis. In 2011, the Conservatives overtook Labour in the polls for the first time in a year (UK Polling Report 2011), a time at which British citizens were deeply pessimistic about the future of the economy (*The Guardian* 2011d). While citizens most directly affected by budget cuts, such as public sector employees, have mobilized against the administration's policies, many voters consider retrenchment a necessary evil, and are more likely to blame the economy at large rather than the current government's fiscal policy.

It is unclear whether the policies implemented by Cameron's administration will lead to a long-term defunding of welfare provision. The five-year goal of eliminating the current account deficit was off-target only one year into the Coalition's tenure in office (*The Economist* 2011), prompting further cuts, and potentially preventing the next administration from reversing reductions in social transfers. Additionally, changes to the indexation of benefits will likely have long-term implications, as benefits continue to lag behind inflation. Yet eliminating large amounts of debt may also enable future welfare state expansion. Moreover, tax increases, targeted primarily at upper-income individuals, will provide additional sources of revenue for successive governments.

The decentralization of political power may inhibit the ability of future governments to expand welfare benefits. The Cameron administration has not only delegated more power to regional and local governments; it has also cut funding for central government agencies. In the case of the NHS, decentralization may lead to the eventual privatization of health care, though

[54] Whether the changes to the welfare state under Cameron constitute "systemic retrenchment" depends in part on their effect on the subsequent trajectory of social protection in the United Kingdom.

the effects of restructuring are uncertain. Apart from their support of a nationally-managed health care system, the Labour opposition has also favored decentralized administration (Labour Party 2010). With relative consensus over decentralization, the political reforms of the current administration may remain intact for years to come.

In evaluating Thatcher's success in reducing the influence of trade unions, Pierson claims that it was unclear whether her administration's actions would permanently weaken the bargaining power of unions. Yet the Labour government of Blair and Brown did not repeal many of the reforms implemented by the Thatcher government. Although union density did not drop dramatically, as was the case under Conservative rule, rates of unionization continued to decline gradually in the late 1990s and early 2000s. It is also important to consider the possibility that the continued decline in unionization rates, a common trend across developed countries over the past several decades, reflects broader economic trends, such as de-industrialization (Visser 2006).

The logic of "blame avoidance" (Pierson 1996, 179) helps to explain why the current government has cut certain programs while leaving others relatively intact. As the Thatcher administration realized, privatizing the provision of health care would be too unpopular and expensive to be politically viable. Appealing to the broadening consensus over political decentralization, the Cameron administration has attempted to cut administrative costs and weaken national oversight over the NHS without explicitly privatizing health care. Similarly, defunding universal pension systems is presumably politically costly. The administration has resorted to incremental measures, such as increasing the retirement age (Directgov 2011).

Changing the indexing of benefits allowed the government to cut costs without radically altering the structure of benefit provision. The coalition attempted to justify stricter means testing and benefit eligibility, and the substitution of universal benefits with tax credits for low-income families in terms of the principles of "freedom, fairness, and responsibility" (HM Government 2010). Emphasizing means testing not only ensures that benefit payments go to the most deserving individuals and families; it also provides an incentive for would-be beneficiaries to seek employment. Substituting means-tested tax credits for universal benefits facilitates the political process of retrenchment in two ways. First, means-tested benefits are easier targets for retrenchment than universal benefits; they provide publicly funded assistance to a poor, often political weak subset of the electorate rather than the electorate as a whole. Second, explaining cuts in terms of popular principles – freedom, fairness, responsibility, and decentralization – has enabled the Cameron government has been able to minimize the political damage of welfare retrenchment.

Although the cuts to welfare spending appear extensive compared to prior measures, many British citizens accepted that fiscal and economic conditions necessitated unprecedented tax increases and spending cuts. Widespread economic pessimism has shifted the blame for austerity from the government to the economy at large and given the administration the political opportunity to cut funding for welfare programs. While the Coalition's policies led to strikes and protests, voters had little confidence in Labour and its leader Ed Miliband to fix the economy

(Rigby 2011). In the absence of a popular alternative to deep spending cuts, many citizens continued to support the current administration's policies.

Conclusion

The case of retrenchment under the first Cameron administration demonstrates the necessity of considering the broader economic and political context which bounds the logic of welfare politics. Economically, high levels of public debt in the absence of economic growth have generated significant fiscal pressures on the British treasury. Politically, the rightward shift in British politics, the weakening of unions, and the absence of a popular alternative to austerity have moderated public perception of the coalition government's agenda. Within the context of austerity, the logic of blame avoidance explains where cuts are likely to take place, and how the government justifies such cuts. While the administration continued to fund pensions and the NHS, it reduced funding through less contentious measures: enforcing means testing, limiting eligibility, and substituting means-tested tax credits for universal benefits. In attempting to reform the NHS, the administration favored decentralized management over the politically infeasible explicit privatization of services.

This study has demonstrated the limitations of the new politics model of retrenchment in comparative political analysis. Although the logic of blame avoidance helps to explain which programs are likely to be defunded, privatized, or eliminated under conditions of retrenchment, it fails to identify when retrenchment is likely to occur in the first place. The case of the Cameron administration shows that massive cuts to welfare programs may occur in the absence of broad electoral support, provided that the political and economic context favors retrenchment.

Appendix 8. Public Spending and GDP Growth in the United Kingdom, 1963-2016

Fiscal Year	Public Expenditures (£bn)	Public Expenditures as %GDP	GDP Growth Q2-Q1	Change in Public Expenditures as %GDP	Change in GDP Growth Q2-Q1
1963-64	12	38.5	8.7		
1964-65	13	38.1	3.5	-0.4	-5.2
1965-66	14.5	39.6	2.1	1.5	-1.4
1966-67	16	41.4	0.6	2.5	-1.5
1967-68	18.3	44.5	5.3	3.1	4.7
1968-69	19.3	43.4	1.3	-1.1	-3
1969-70	20.3	42.5	1.7	-0.9	0.4
1970-71	22.7	42.7	1.1	0.2	-0.6
1971-72	25.2	42.6	1	-0.1	-0.1
1972-73	28.2	41.9	9.2	-0.7	8.2
1973-74	33.4	44.3	-3.3	2.4	-12.5
1974-75	43.7	48.6	1	4.3	4.3
1975-76	55.7	49.7	-0.3	1.1	-1.3
1976-77	63.6	48.5	3.9	-1.2	4.2
1977-78	69.4	45.6	1.6	-2.9	-2.3
1978-79	78.5	45.1	2.7	-0.5	1.1
1979-80	93.5	44.6	2.1	-0.5	-0.6
1980-81	112.4	47	-4.6	2.4	-6.7
1981-82	125.5	47.7	1.8	0.7	6.4
1982-83	138.3	48.1	3	0.4	1.2
1983-84	149.7	47.8	4.5	-0.3	1.5
1984-85	159.9	47.5	2	-0.3	-2.5
1985-86	166.5	45	2.8	-2.5	0.8
1986-87	172.7	43.6	3.9	-1.4	1.1
1987-88	183.3	41.6	5.7	-2	1.8
1988-89	190.7	38.9	3.2	-2.7	-2.5
1989-90	210.2	39.2	1.8	0.3	-1.4
1990-91	227.5	39.4	-1.6	0.2	-3.2
1991-92	254.2	41.9	-0.3	2.5	1.3
1992-93	274.2	43.7	1.5	1.8	1.8
1993-94	286	43	3.8	-0.7	2.3
1994-95	299	42.5	3.9	-0.5	0.1
1995-96	311.1	41.8	2.8	-1.7	-1.1
1996-97	315.8	39.9	2.9	-1.9	0.1

1997-98	322.4	38.2	4.1	-1.7	1.2
1998-99	331.7	37.3	3.3	-0.9	-0.8
1999-00	343.9	36.4	4.2	-0.9	0.9
2000-01	363.7	36.8	3.1	0.4	-0.9
2001-02	391.1	37.9	1.3	1.1	-1.8
2002-03	422.2	38.7	2.2	0.8	0.9
2003-04	456.2	39.4	3.5	0.7	1.3
2004-05	492.8	40.6	2	1.2	-1.5
2005-06	524.6	41.3	3.4	0.7	1.4
2006-07	550.6	40.9	2.7	-0.4	-0.7
2007-08	582.5	41.1	2	0.2	-0.7
2008-09	629.8	43.9	-5.7	2.8	-7.7
2009-10	669.3	47.5	0	3.6	5.7
2010-11	696.8	47.3	1.7	-0.2	1.7
2011-12	699.8	45.5			
2012-13	711	43.9			
2013-14	722	42.2			
2014-15	737.5	40.9			
2015-16	757.5	39.8			

Source: The Guardian Datablog
http://www.guardian.co.uk/news/datablog/2010/apr/25/uk-public-spending-1963
http://www.guardian.co.uk/news/datablog/2009/nov/25/gdp-uk-1948-growth-economy

8. Conclusion

I conclude my study of the political causes and effects of fiscal adjustments by summarizing the theoretical, empirical, and methodological contributions of the dissertation. I use the case study of the United Kingdom in 2010-11 to illustrate the limitations of applying general theories of adjustment to specific cases. Narrative analysis can show how the omission of variables measuring the complex social, economic, and political environment in which governments legislate and administer fiscal policies. Yet "qualitative" analysis suffers from many of the deficiencies as the quantitative studies critiqued in this dissertation. For example, researchers may still choose cases to support their prior beliefs, rather than randomly sampling cases from a population. I advocate for more transparent statistical analysis to estimate the effects of variables, and for researchers to acknowledge that these estimates are likely to vary substantially across different contexts.

The preceding analyses of the political causes and effects of government deficits illustrate the difficulty of generalizing about the relationship between political variables and fiscal and economic outcomes. Many scholars have constructed theories of the politics of fiscal adjustments by reasoning deductively from tested or untested assumptions. Others have taken an inductive approach, observing associations between variables, and then speculating about the reasons for their association. In both cases, political economists must be careful when attempting to draw general conclusions from data in particular samples.

In evaluating the validity of theories of fiscal adjustment, I advocate three practices. First, researchers must test the implications of theories on data not used to generate the hypotheses. Second, when pooling observations across countries and time, researchers should test for, and if necessary include fixed effects terms measuring unobserved country and time-specific variation. Third, rather than providing selective evidence for hypothesized effects, researchers should evaluate multiple implications of a theory, accepting the theory only if the effects are generally and significantly consistent with its empirical implications. These practices have guided each of the statistical analyses presented in this dissertation. Failure to reproduce the conclusions of five prior studies in Chapter Two, one study in Chapter Three, and two studies in Chapter Four shows that estimates reported as statistically significant in one sample frequently fail to retain the same magnitude and significance in other samples.

It is possible that contextual differences explain inconsistencies between samples. The observable implication is that estimates of the interaction between treatment variables and variables measuring these contextual differences should be significant. However, I find no evidence that the electoral effects of fiscal adjustments and macroeconomic conditions vary with the political context. For instance, the number of parties in government does not influence the extent to which voters reward or punish governments for changes in GDP.

The conclusions of published research on the politics of fiscal adjustments are highly sensitive to the particular sample, model specification, and measurement of concepts as variables. Researchers must carefully explain and defend their choice of observations and variables. In the appendix, I have listed the data sources, defined all variables, and provided the code necessary to reproduce the analysis.

Although I find little evidence for the conclusions of prior studies of the politics of fiscal adjustments, I identify several general effects in my own original analysis. The next section of this chapter summarizes the findings of both my reanalysis of previous models and my original model specifications. Using the case of the austerity measures introduced by the Cameron Ministry in the United Kingdom during its first two years in office, I show that general effects may help us to understand specific cases. Similarly, deviations from general trends in particular cases may generate hypotheses for future attempts to identify general causes of fiscal adjustments. However, understanding the precise nature of policy choices in particular cases requires attention to context. In the final section, I suggest that a combination of statistical and narrative analysis may generate knowledge about political phenomena, but only if researchers explicitly state their assumptions and follow correct practices when sampling observations and modeling relationships between variables.

General conclusions

Following the introductory chapter, I reexamined in Chapter Two the most-cited studies of the effects on government deficits of government ideology, political cohesion, government stability, and the timing of elections. I also reexamined Edin and Ohlsson's extension (1991) of Roubini and Sachs' study (1989), which disaggregates the authors' political cohesion variable into factors measuring single-party administrations, two-party coalitions, three-party coalitions, and minority governments. I performed three sets of replications: one within-sample using the authors' specifications, one within-sample using the models indicated by a set of specification tests, and one out-of-sample, including fixed effects and heteroscedasticity-consistent standard errors when indicated. None of the 16 estimated effects reported by the authors as statistically significant retained the same direction and significance in each of the three samples.

Although the conclusions from Chapter Two are largely negative, the chapter is constructive in the broader context of the dissertation. The chapter motivated the remaining set of studies by demonstrating the inability of prior research to explain variation in deficits and fiscal adjustment. It highlighted the necessity of careful attention to sample and model specification in the estimation of the relationship between political and fiscal variables. Furthermore, by showing that estimated effects vary significantly across countries and time, and that a substantial majority of the variation in fiscal outcomes remains unexplained by political variables, this chapter emphasized the importance of attention to context in explaining particular outcomes.

Chapter Three examined the effects of macroeconomic conditions on the change in incumbent party vote share. Having shown that the most-cited theories of fiscal adjustment fail to replicate, I turn to questioning the basic assumption supporting these theories: that voters tend to punish governments for raising taxes and cutting spending. Since deficits decrease with changes in GDP, it is necessary to include a control variable measuring economic growth when estimating the electoral consequences of deficits. However, the effect of deficits on income is arguably the most plausible mechanism by which deficits affect incumbent reelection prospects. Thus, in order to understand how voters respond to fiscal outcomes, it is necessary to examine how these same voters respond to changes in income.

Unsurprisingly, I found that electoral support for incumbents increases with economic growth. More surprisingly, I showed that these effects increase with the distance between economic outcomes and subsequent elections. Less surprisingly, in light of the conclusions of Chapter Two, I found that the predominant explanation of cross-national variation in economic voting effects (Powell and Whitten 1993) fails to replicate. Voters are no more likely to sanction governments for economic performance when governments are more cohesive.

As with Chapter Two, I began Chapter Three by showing that the much of the conclusions of the most-cited studies of a particular topic (in this case, the electoral effects of macroeconomic conditions) are inconsistent with the empirical evidence. However, I also affirmatively showed that voters reward governments when economic growth is relatively high and punish them when growth is low. Although the association between growth and change in incumbent vote share is generally positive, I identified a set of qualifications to this general relationship. For instance, voters sanction parties of the chief executive but not junior coalition partners. While research has shown that American voters are generally unconcerned with economic conditions prior to the year of election when choosing whether or not to vote for incumbents (Achen and Bartels 2004; Healy and Lenz 2014), I found that this result does not generalize to the broader sample of countries. Assuming that governments are electorally-motivated and sufficiently informed about voters' preferences, identifying these qualifications may help us to understand why governments choose particular fiscal policies.

Chapter Four estimated the direct electoral effects of fiscal policies. Again, I began by attempting to reproduce the conclusions of prior research, in this case Brender and Drazen's (2008) article in the American Economic Review. I showed that the authors' conclusion that voters reward governments for reducing budget deficits does not hold for observations outside of their original sample. However, the failure of these findings to replicate is not due to an inaccurate and imprecise measurement of electoral outcomes, as suggested by Nyman (2014), but rather to variation in effects across countries and time.

Including country fixed effects and expanding the sample to elections in high-income democracies through 2014, I showed that voters systematically punish governments for election-year cuts to government spending, but not for tax measures or election-term changes in fiscal variables. Together, Chapters Three and Four describe the electoral constraints facing governments. If parties in government are electorally motivated and informed, electoral effects should influence the choice of policies. Identifying the electoral consequences of fiscal policies and their macroeconomic effects may thus help us to understand variation in the adoption of such policies.

Chapter Five examined the relationship between government cohesion and pension reform. Political economists have typically claimed that more cohesive governments are more likely to raise taxes or cut spending to balance budgets, particularly when economic growth is relatively low (Alesina and Drazen 1991; Roubini and Sachs 1989). On the other hand, according to the most-cited political science theory of welfare retrenchment (Pierson 1996), it should be easier for coalition governments to cut benefits, since the electoral costs of reform are presumably lower in such cases. Using an original measure of government cohesion based on the number of policymakers and their ideological distance, I showed that cohesion has no non-negligible effect on the estimated change in pension generosity.

Having completed the necessary groundwork, attempting to replicate prior studies and estimating the direct and indirect electoral effects of fiscal policies, Chapter Five attempted to explain a specific set of policy choices. The null estimated effect of government cohesion on change in pension generosity emphasizes again the difficulty of identifying general political causes of policy outcomes. Governments may choose policies for a variety of reasons, many of which may be specific to the particular place and time in which the policies are considered and ultimately chosen. I examined this issue in greater detail in Chapter Seven. The objective of Chapter Five was simply to test the more general relationship between government cohesion and pension reform.

In Chapter Six, I estimated the effect of government deficits on political parties' electoral positions on welfare state expansion. The null effect presented in Chapter Five showed that relationships between attributes of government and policy choices are often tenuous at best. In sharp contrast, Chapter Six demonstrated a highly significant relationship between deficits and electoral support for welfare spending, strongly suggesting that political parties respond to fiscal constraints. I also found support for a mechanism linking the two variables. The effect of deficits on electoral platforms is limited to mainstream parties. Deficits do not appear to affect the platforms of niche parties, which tend to adopt the preferences of their core supporters and party leadership rather than the electorate as a whole (Adams et al. 2006). Moreover, since niche parties rarely win elections, these parties tend to be less concerned with the feasibility of their policy proposals.

Chapter Six thus identified a clear political effect of government deficits. Using electoral platforms enabled me to examine the relationship between deficits and welfare retrenchment. It is perhaps impossible to identify the effect of deficits on welfare retrenchment using spending data alone. Holding other fiscal variables constant, expanding welfare spending increases the government deficit. By using electoral support for welfare spending, which does not increase automatically with the budget balance, I was able to estimate how fiscal conditions affect political support for the welfare state. The observation that political parties explicitly withdraw support for welfare policies when deficits are challenged the hypothesis that policymakers are likely to conceal the costs of retrenchment. I detailed this process of "credit claiming for retrenchment" under fiscal constraints in Chapter Seven.

In Chapters Three through Six, I identified several conditional political consequences of reductions in the budget deficit. Voters reward incumbents for growth, but only assign responsibility to the party of the chief executive. Voters directly punish governments for cutting spending, but only in election years. Deficits affect the electoral positions on welfare policy of political parties, but only those of the "mainstream" center-left and center-right.

The variation in estimated effects across countries and time suggests that the relationship between political and fiscal variables depends critically on the particular political and economic context in which policymakers legislate and enact fiscal policies. Pooled analysis alone cannot explain the causes and consequences of government deficits in particular cases. To understand the politics of specific episodes of fiscal adjustment, it is necessary to examine these cases in greater detail.

In Chapter Seven, I examined the legislation and administration of austerity measures during the first two years of David Cameron's term as Prime Minister of the United Kingdom. I used the case of the British fiscal adjustments of 2010 and 2011 to show how conditions specific to a particular place and time influence the adoption of budget cuts. In this case, these cuts were substantially larger than those predicted by the models presented in this dissertation. I argued that the coalition government was able to enact relatively far-reaching adjustments not by concealing the costs of retrenchment, but by presenting their proposals as appealing to the shared values of "freedom, fairness, and responsibility."

The condition of the opposition mattered as well. British voters did not trust the Labour Party and its leader Ed Miliband to manage the recovery, with Labour having presided over the worst economic collapse since the Great Depression and Miliband perceived as a relatively weak alternative to Cameron on economic issues. Despite massive popular protests, the Cameron administration ultimately secured a landslide victory in the 2015 general election, following an economic recovery and an election-year budget that called for a more gradual reduction in the deficit.

The limitations of pooled analysis and case studies

Recognizing the shortcomings of pooling observations across countries and time, many political scientists have rejected the practice in favor of experimental or quasi-experimental studies typically occurring within a single country. Yet experimental and quasi-experimental studies have little to no external validity. Field experiments are necessarily influenced by the social and political environment in which the team of researchers administers the particular treatment. If the objective of political science research is general knowledge about the relationship between political and other variables, rather than merely the identification of context-specific effects, then macro-level comparative research should remain an integral part of the discipline.

Moreover, many treatment variables of interest to observers of political phenomena are not randomly assigned. Ideally, identifying the electoral effects of fiscal policies would involve taking the difference in means between a treatment group of voters randomly assigned a fiscal shock and a control group of voters not assigned the shock. While such cases may exist for particular programs – for instance, governments may change taxes or benefits for citizens above or below a particular income threshold – attempts to identify the aggregate electoral consequences of fiscal adjustments typically fail to meet the standards of quasi-experimental research.

An increasing number of political scientists may argue that we should abandon the study of such effects, and limit our research to questions that can be answered using experimental and quasi-experimental research designs. I will not argue that one approach is generally more useful than the other. For understanding the causes and consequences of fiscal policies, it is impossible to adopt an experimental or quasi-experimental design without compromising the external validity of my conclusions and changing the particular research questions that have motivated my study. Pooled analysis may be flawed, but in the absence of randomly assigned treatment it is frequently the best tool available to researchers.

Nevertheless, adopting a research strategy based on pooling observations across countries and time necessitates confronting the numerous shortcomings of the method. The fact that estimates tend to depend on the sample and variables chosen requires the researcher to explicate the assumptions behind each model specification. That is the approach I have taken here.

Pooled analysis and the case of the United Kingdom, 2010-15

Political scientists often advocate for "mixed method" or "multimethod" research, using quantitative analysis to identify causal relationships between variables and narrative or "qualitative" case studies to illustrate the context in which such relationships are situated, as well as the mechanisms linking treatment and response variables. In this section, I evaluate the extent to which pooled and narrative analysis may help us to understand the fiscal policy outcomes of the first Cameron administration in the United Kingdom. I then assess the relative strengths and weaknesses of each approach.

In Chapter Two, I find no statistically significant evidence that government cohesion affects government expenditures, revenues, or deficits. Nor are government expenditures, revenues, and deficits significantly different in election years. However, I show that right-wing governments tend to increase deficits ($p < 0.05$). The model (Table 2.3) suggests that the fiscal adjustment in 2011 would have been *larger* if Labour were in government, by 0.2% of GDP. This difference is slightly less than 10% of the actual change in budget balance: a contraction of 2.03% of GDP from 2010 to 2011. A more sophisticated model might consider the interaction between partisanship and economic conditions (e.g. Cusack 1999). Although left-wing governments tend to run lower deficits than right-wing governments, they tend to run relatively higher deficits when unemployment is high and economic growth is low.

Observers of British politics might counter that this is insufficient. Consider the binary measure of partisanship used in the model. In Britain, the dominant left-wing party abandoned its commitment to nationalization of industry in the 1990s, and only recently has begun to turn leftward again. Expert surveys and coded manifesto data suggest that "new Labour" was not a truly left-wing party, placing Labour in the 1990s and first decade of the 2000s closer to centrist parties. Similarly, grouping the Conservative party with Christian democratic parties obscures significant differences in ideology among parties classified as "right-wing."

One might argue that only by attention to context can we understand why the Cameron administration implemented their particular policies. The rightward shift of Labour, the interaction between the particular British form of partisan politics and economic conditions, the occurrence of the largest global financial crisis in nearly eighty years in a country with an economy increasingly dependent on the financial sector, the inability of Labour to articulate a coherent alternative to austerity, and numerous other factors may have all contributed to the particular magnitude and composition of the budget cuts. Yet ad hoc analysis grants researchers too much discretion at every stage, from the selection of variables to their measurement to the choice of which case to examine in the first place. Without explicitly modeling, measuring, and testing the relationships between variables, one can easily construct multiple narratives with contradictory conclusions.[55]

Pooled analysis fails to explain much of the variation in specific cases, and much contextual variation between observations is unaccounted for in simple regression models. However, narrative analysis alone cannot explain outcomes, even (or especially) for individual cases. When the number of variables necessarily exceeds the number of cases, it is impossible to test hypotheses concerning the relationship between variables. When researchers have discretion to choose particular cases or variables, analysis is likely to reflect researchers' biases. As this dissertation, particularly Chapter Two has shown, the latter problem is obviously not limited to narrative case study research.

Nonetheless, quantitative analysis, when correctly conducted, has a substantial advantage over narrative case studies. Statistical modeling requires researchers to explicitly state their assumptions. Although researchers may have numerous degrees of freedom in selecting the assumptions of models, statistical analysis shows how certain assumptions generate particular estimates. When models are explicitly defined, it is possible for researchers to attempt to reproduce the conclusions of prior analyses using alternative samples and specifications. Moreover, specification tests enable researchers to test for consistency between models. The ability to reassess the findings of prior studies, central to this dissertation, and necessary for academic research to be credible, is impossible when the assumptions of prior studies are not precisely stated.

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[55] I provide an example of this in my introduction to Chapter Four.

Suggestions for future research

In this dissertation, I have challenged much of the conventional academic wisdom concerning the political causes and effects of fiscal adjustments. The conclusions of most prior studies do not replicate (Chapter Two). More cohesive governments are no more likely to reduce budget deficits (Chapter Two) or reduce pension generosity (Chapter Five). Clarity of government responsibility has no effect on economic voting (Chapter Three).

Yet I have also shown that fiscal adjustments have clear political consequences. Voters punish governments for reducing budget deficits in election years (Chapter Four). Voters are also likely to sanction governments for the macroeconomic effects of adjustments, even in non-election years (Chapter Three). Fiscal constraints lead governments to reduce support for welfare state expansion (Chapter Six). Contextual variation affects governments' particular policy choices (Chapter Seven). However, it is difficult to explain variation in the political causes (Chapter Two) and electoral effects (Chapter Three) of adjustments over time.

Arguably the primary goal of political science research today is to identify causal relationships between variables in which either the treatment or outcome is conceptually "political." Researchers must decide which phenomena to study, which variables to examine, how to measure such variables, and how to estimate the relationship between variables. Given the number of degrees of freedom at each stage of the research process, scholars must explicitly state and justify their assumptions, model specifications, and conclusions. For research to be reproducible and falsifiable, scholars must make data available, provide code used to generate the output from statistical models, and carefully define variables. I hope that the analyses in this dissertation embody these standards of transparency.

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Appendix A. Economic Voting Dataset Codebook

Variables are defined in levels for all years in which incumbent is in office, plus prior year (so that change over prior year can be calculated for all years in which incumbent is in office).

<u>Abbreviation / Source (for Appendices 1 and 2)</u>

AC	Author’s coding
ACL	Alesina, Carloni, and Lecce 2012
ALFS	OECD *Annual Labour Force Statistics* (2015)
CPDS	Comparative Political Data Set (Armingeon et al. 2015)
BD	Brender and Drazen 2008
BL	Benoit and Laver 2006
DPI	Database of Political Institutions (Budge et al. 2001)
EO 60	OECD *Economic Outlook* (December 1996)
EO 74	OECD *Economic Outlook* (December 2003)
EO 76	OECD *Economic Outlook* (December 2004)
EO 98	OECD *Economic Outlook* (November 2015)
MF	R package ‘mFilter’ (Balcilar 2007)
MPD	Manifesto Project Database (Budge et al. 2001; Klingemann et al. 2001; Volkens et al. 2014a, 2014b)
NA	OECD *National Accounts* (2015)
NES	Various national election sources (see references)
PG	ParlGov (Döring and Manow 2015)

PIV	Polity IV Project (Marshall, Gurr, and Jaggers 2014)
PW	Powell and Whitten 1993
QNA	OECD *Quarterly National Accounts* (2015)
RR	Reinhart and Rogoff (2011)
RS	OECD *Revenue Statistics* (2015)
SOCX	OECD *Social Expenditure Database* (2015)
WDI	World DataBank *World Development Indicators* (2015)

Variable	**Description**
ELECTORAL DATA (PG, NES)	
Country	Name of country.
time	Year and quarter in which party of the incumbent chief executive (CE) at **t2** enters office (format: year.quarter).
t0	Year of election prior to first election of election cycle, used for calculating lagged change in vote share of party of incumbent chief executive at **t2**.
t1	Year of first election in election cycle.
t2	Year of second election in election cycle.
CE_Yr1	Year in which party of the incumbent chief executive (CE) at **t2** enters office, such that the party of the chief executive holds office continuously from **CE_Yr1** to **t2**.
CE_Q1	Quarter of **CE_Yr1** in which the party of the CE at **t2** enters office.
q2	Quarter in which the second election of the election cycle is contested.

nYCE Number of years in which the party of the chief executive is in office. Equal to **t2 – CE_Yr1**.

nQCE Number of quarters in which the party of the chief executive is in office. Equal to **nY + Q2 – CE_Q1**.

Party_CE Political party of the incumbent chief executive at **t2**.

Coal_Part Coalition partners of the party of the incumbent chief executive at **t2**.

VoteCE_t1 Total number of votes for **Party_CE** at **t1**.

VoteCP_t1 Total number of votes for **Coal_Part** at **t1**.

VoteGov_t1 Total number of votes for all incumbent parties standing for reelection at **t2**, measured at **t1**.

Tot_t1 Total number of valid votes at **t1**, blank ballots excluded.

PctCE_t1 Votes for **Party_CE** at **t1** as a percentage of valid votes.

PctCP_t1 Voters for **Coal_Part** at **t1** as a percentage of valid votes.

PctGov_t1 Votes for all incumbent parties standing for reelection at **t2** as a percentage of valid votes, measured at **t1**. Equal to **PctCE_t1** + **PctGov_t1**.

VoteCE_t2 Total number of votes for **Party_CE** at **t2**.

VoteCP_t2 Total number of votes for **Coal_Part** at **t2**.

VoteGov_t2 Total number of votes for all incumbent parties at **t2**. Equal to **VoteCE_t2** + **VoteCP_t2**.

Tot_t2 Total number of valid votes at **t2**, blank ballots excluded.

PctCE_t2 Votes for **Party_CE** at **t2** as a percentage of total votes.

PctCP_t2 Votes for **Party_CP** at **t2** as a percentage of total votes.

PctGov_t2 Votes for all incumbent parties at **t2** as a percentage of total votes. Equal to **PctCE_t2** + **PctCP_t2**.

DPctCE Change in percentage of votes for **Party_CE** from **t1** to **t2**. Equal to **PctCE_t2** – **PctCE_t1**.

est_DPctCE Change in percentage of votes for **Party_CE** from **t1** to **t2**, estimated from the bivariate regression of **DPctCE** on the lagged change in percentage of votes for **Party_CE** and the change in the natural log of GDP from **t2 – 1** to **t2**. Equal to -3.66058 + 40.7881 * **DlnGDP_0** – 0.18494 * **DPctCE_1**.

DPctCP Change in percentage of votes for **Party_CP** from **t1** to **t2**.

DPctGov Change in percentage of votes from **t1** to **t2** for all incumbent parties standing for reelection at **t2**. Equal to **DPctCE** + **DPctCP**.

Reelect Binary variable coded as 1 when **Party_CE** is elected for a subsequent term at **t2**, 0 otherwise.

VoteCE_t0 Votes for **Party_CE** at **t0**.

Tot_t0 Total number of valid votes at **t0**, blank ballots excluded.

PctCE_t0 Votes for **Party_CE** at **t0** as a percentage of total votes.

DPctCE_1 Change in percentage of votes for **Party_CE** from **t0** to **t1**.

CHARACTERISTICS OF GOVERNMENT AND POLITICAL SYSTEM

gvfrag Indicator of government voting fragmentation. Binary variable measuring whether (0) or not (1) members of the party or parties in government tend to vote together. Used for replication of Powell and Whitten (AJPS 1993, p. 399-400). Coded as 0 for all governments in Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, the Netherlands, New Zealand, Norway, Sweden, and the United Kingdom. Coded as 1 for all governments in Italy, Japan, and the United States. Not coded for governments in Hungary, Iceland, Israel, Korea, Luxembourg, Poland, Portugal, Slovakia, Slovenia, and Spain (PW).

leginc Binary variable measuring presence (1) or absence (0) of a "participatory and inclusive committee system in the legislature" (Powell and Whitten 1993, p. 400). Coded as 1 for all governments in Austria, Belgium, Denmark when **t2** > 1973, Germany, the Netherlands, Norway, and Sweden. Coded as 0 for all governments in Australia, Canada, Denmark when **t2** ≤ 1973, Finland, France, Greece, Ireland, Italy, Japan, the United Kingdom, and the United States. Not coded for governments in Hungary, Iceland, Israel, Korea, Luxembourg, Poland, Portugal, Slovakia, Slovenia, and Spain (PW).

scopp_t2 Indicator of opposition party control of a second legislative chamber with "significant policymaking powers" (Powell and Whitten 1993, p. 400-01). Not coded for governments in Hungary, Iceland, Israel, Korea, Luxembourg, Poland, Portugal, Slovakia, Slovenia, and Spain. Coded as 1 for Australia at 1963 ≤ **t2** ≤ 1975, 1983 ≤ **t2** ≤ 2004, and **t2** ≤ 2010, and for Germany at **t2** = 1961, 1976 ≤ **t2** ≤ 1980, 1994 ≤ **t2** ≤ 2005, and **t2** = 2013. Coded as 0 for all other governments (PW, AC).

Ndem_t2 Binary variable coded as 1 for observations in which the election at **t2** is one of the first four continuous elections following a switch from a negative to non-negative Polity IV score, excluding the first election signaling a transition to democracy (BD, PG, NES, PIV).

Maj_t2 Binary variable coded as 1 for observations in which the election at **t2** is conducted under majoritarian electoral rules, 0 if seats to the lower house of parliament are allocated according to proportional representation (AC).

Coal_gov Binary variable coded as 1 if the incumbent government is a coalition of multiple political parties and 0 if the government consists of one party at the end of its term in office (i.e. at **t2**, **q2**). The variable is coded as 1 if an election is held in the same or subsequent quarter after the coalition partner has left the government, or if early elections are called in response to a party leaving the government (PG, NES).

Maj_gov Binary variable coded as 1 if the incumbent party or coalition of parties holds a majority of seats in the lower house of parliament at the end of its term in office. The variable is coded as 1 if an election is held in the same or subsequent quarter after the government has lost a majority in parliament, or if early elections are called in response to a government losing its majority status. For the United States, the variable is coded as 1 for unified governments, in which the party of the president holds a majority of seats in both the Senate and House of

Representatives at the time of election. For South Korea, the variable is coded as 1 for governments in which the party of the president holds a majority of seats in the legislature. Minority and divided governments are coded as 0 (PG, NES).

Rwing Binary variable coded as 1 for parties defined in the Manifesto Project Database as liberal, Christian democratic, conservative, and nationalist, 0 otherwise, with author's corrections (MPD, DPI, AC).

Early Binary variable coded as 1 if the election at **t2** was called ahead of schedule, 0 otherwise (PG, NES).

fix_trm Binary variable coded as 1 if rules specify a set date for elections, 0 if elections may be called prior to the end of the incumbent government's maximum term (NES, AC).

euro_t2 Binary variable coded as 1 if the country of the incumbent government at **t2** was a member of the single European currency, 0 otherwise (AC).

npg_n Number of parties in government, **n** year(s) prior to **t2** (PG, NES)

enpg_n Effective number of parties in government, **n** year(s) prior to **t2**, calculated using share of seats in government (Laakso and Taagepera 1979). Equal to the inverse of the summed squared share of seats in government for each party in government (PG, NES).

enpgi_0 Effective number of parties in government at **t2**, rounded to the nearest whole number (PG, NES).

enpp_n Effective number of parties in parliament, **n** year(s) prior to **t2**, calculated using share of seats in parliament (Laakso and Taagepera 1979). Equal to the inverse of the summed square share of seats in parliament for each party in parliament (PG, NES).

enppi_0 Effective number of parties in parliament at **t2**, rounded to the nearest whole number (PG, NES).

enpo_n Effective number of parties in opposition, **n** year(s) prior to **t2**. Equal to **enpp_n** – **enpg_n** (PG, NES).

enpoi_0 Effective number of parties in opposition at **t2**, rounded to the nearest whole number (PG, NES).

rgp_n Ratio of effective number of parties in government to effective number of parties in opposition, **n** year(s) prior to **t2**. Equal to **enpg_n** / **enpp_n** (PG, NES).

rgpq_0 Quartile of **rgp_0** (PG, NES).

QUARTERLY MACROECONOMIC VARIABLES (QNA)

Gross domestic product (GDP) estimates computed using OECD quarterly historical GDP data (constant prices, expenditure approach). GDP per capita estimates calculated using OECD quarterly GDP and population data. Quarterly population data calculated from midyear estimates when unavailable, assuming constant rate of growth between midyear estimates (NA). Data presented in annual rates.

GDP, constant prices, expenditure approach

DGDP_qm GDP, change from quarter **m+1** to quarter **m**, computed for m ∈ (0, 21) quarters prior to election at **t2**, annual rate.

DGDP_yn GDP, change from year **n+1** to year **n**, computed quarterly, annual rate. **DGDP_yn** = **(1/4) SUM [DGDP_q4b + DGDP_q(4b+1) + DGDP_q(4b+2) + DGDP_q(4b+3)]**.

DGDP_cml GDP, sum of quarterly percent changes at annual rates.

DGDP_avg GDP (constant prices, expenditure approach), average quarterly percentage change during party of chief executive’s term in office, annual rate. **DGDP_cml / nQ**.

GDP per capita, constant prices, expenditure approach (GDPPC)

DGDPPC_qa GDPPC, percentage change from quarter **a+1** to quarter **a**, a ∈ (0, 20), annual rate.

DGDPPC_yb GDPPC, percentage change from year **b+1** to year **b**, b ∈ (0, 20), computed quarterly, annual rate. Equal to **(1/4) * SUM [DPCGDP_q4b + DPCGDP_q(4b+1) + DPCGDP_q(4b+2) + DPCGDP_q(4b+3)]**.

DGDPPC_cml GDP, sum of quarterly percent changes at annual rates.

DGDPPC_avg GDPPC, average quarterly percentage change during party of chief executive's term in office, annual rate. Equal to **DPCGDP_cml / nQ**.

ANNUAL FISCAL AND MACROECONOMIC VARIABLES, measured as a percentage of GDP for **n** year(s) prior to the election at **t2**, computed for all continuous years prior to **t2** in which the party of the chief executive at **t2** is in office.

FISCAL VARIABLES

General government receipts (GGREC)

RC15_n GGREC, percentage of nominal GDP, **n** year(s) prior to **t2** (EO 98).

DRC15_trm GGREC, percentage of nominal GDP, average annual percentage change during party of chief executive's term in office (EO 98).

RC03_n **REC_n**, data from EO 74, years not covered in EO 96.

DRC03_trm **DREC_trm**, data from EO 74, terms not covered in EO 98.

DREC_n GGREC, percentage of nominal GDP, change from previous year, **n** year(s) prior to **t2**. Data taken from EO 98 when available, otherwise from EO 74.

DREC_trm GGREC, percentage of nominal GDP, average annual change during party of chief executive's term in office. Data taken from EO 98 when available, otherwise from EO 74.

General government disbursements (GGDIS)

DS15_n GGDIS, percentage of nominal GDP, **n** year(s) prior to **t2** (EO 98).

DDS15_trm GGDIS, percentage of nominal GDP, average annual percentage change during party of chief executive's term in office (EO 98).

DS03_n GGDIS, percentage of nominal GDP, **n** year(s) prior to **t2** (EO 74).

DDS03_trm GGDIS, percentage of nominal GDP, average annual percentage change during party of chief executive's term in office (EO 74).

DDIS_n GGDIS, percentage of nominal GDP, change from previous year, **n** year(s) prior to **t2**. Data taken from EO 98 when available, otherwise from EO 74.

DDIS_trm GGDIS, percentage of nominal GDP, average annual change during party of chief executive's term in office. Data taken from EO 98 when available, otherwise from EO 74.

General government net lending (GGNL)

NL15_n GGNL, percentage of nominal GDP, **n** year(s) prior to **t2**. Equivalent to the difference between receipts and disbursements at **n** year(s) prior to **t2** (EO 98).

NL03_n GGNL, percentage of nominal GDP, **n** year(s) prior to **t2** (EO 74).

NL96_n GGNL, percentage of nominal GDP, **n** year(s) prior to **t2** (EO 60).

NL_n GGNL, percentage of nominal GDP, **n** year(s) prior to **t2**, defined using the most recent edition of the *OECD Economic Outlook* for which data is available for **NL_n** (EO 60, EO 74, EO 98).

DNL_trm GGNL, percentage of nominal GDP, average annual percentage change during party of chief executive's term in office, defined using the most recent edition of the *OECD Economic Outlook* for which data is available for the entire term (EO 60, EO 74, EO 98).

DNL_n GGNL, percentage of nominal GDP, change from previous year, **n** year(s) prior to **t2**, defined using the most recent edition of the *OECD Economic Outlook* for which data is available for **NL_n** at **n** and **n** + **1** year(s) prior to **t2** (EO 60, EO 74, EO 98).

EXP_n Degree of fiscal expansion, **n** year(s) prior to **t2**. Equal to **DNL_n** when **DNL_n** ≤ 0, 0 otherwise (EO 60, EO 74, EO 98).

CON_n Degree of fiscal contraction, **n** year(s) prior to **t2**. Equal to **DNL_n** when **DNL_n** ≥ 0, 0 otherwise (EO 60, EO 74, EO 98).

Cyclically adjusted (structural) net lending (CANL), general government

CA15_n CANL, percentage of potential GDP, **n** year(s) prior to **t2**. The OECD (2008) computes CANL by excluding changes in revenue and expenditure caused by the difference between actual and potential output (EO 98).

DCA15_trm CANL, percentage of potential GDP, average annual percentage change during party of chief executive's term in office (EO 98).

DCA15_n CANL, percentage of potential GDP, change from previous year, **n** year(s) prior to **t2** (EO 98).

CA04_n CANL, **n** year(s) prior to **t2**, data (when available) from EO 76, years not covered in EO 98.

DCA04_trm CANL, percentage of potential GDP, average annual percentage change during party of chief executive's term in office. Data from EO 76 (when available) for years not covered in EO 98.

DCA04_n CANL, percentage of potential GDP, change from previous year, **n** year(s) prior to **t2**. Data from EO 76 (when available) for years not covered in EO 96.

CA96_n CANL, **n** year(s) prior to **t2**, data from EO 60, years not covered in EO 76 or EO 96.

DCA96_trm CANL, percentage of potential GDP, average annual percentage change during party of chief executive's term in office, defined using the most recent edition of the *OECD Economic Outlook* for which data is available for the entire term (EO 60, EO 76, EO 98).

DCANL_n, CANL, percentage of potential GDP, change from previous year, **n** year(s) prior to **t2**, defined using the most recent edition of the *OECD Economic Outlook* for which data is available for **NL_n** at **n** and **n** + **1** year(s) prior to **t2** (EO 60, EO 76, EO 98).

DCANL_trm **DCA15_trm** for terms covered by EO 98 data, **DCA04_trm** for terms covered in EO 76 but not EO 98, **DCA96_trm** for all other terms with available data.

DCANL_n **DCA15_n** for years **n** and **n + 1** prior to **t2** covered by EO 96 data, **DCA04_n** for years **n** and **n + 1** prior to **t2** covered in EO 76 but not EO 98, **DCA96_n** for all other years with available data.

Cyclically-adjusted primary balance (CAPB)

CAPB_n CAPB, percentage of potential GDP, **n** years prior to **t2**. CAPB is equivalent to CANL, excluding interest payments (EO 96).

DCAPB_trm Average annual change in CAPB during party of chief executive's term in office (EO 96).

DCAPB_n Change in **CAPB_n** from previous year (EO 96).

SOCIAL EXPENDITURE (SOCX)

All variables refer to public social expenditure, measured as a percentage of nominal GDP.

Total social expenditure

SX_n Total social expenditure, **n** year(s) prior to **t2**. Includes spending on active labor market programs, disability and unemployment insurance, family, health, housing, old age, and survivors' benefits. As of 2011 (latest available data), other spending categories comprised under 3 percent of total public social expenditure at the OECD level.

DSX_trm Average annual change in total social expenditure during party of chief executive's term in office.

DSX_n Total social expenditure, change from previous year, **n** year(s) prior to **t2**.

Old-age social expenditure

OA_n Old-age social expenditure, **n** year(s) prior to **t2**.

DOA_trm Average annual change in old-age social expenditure during party of chief executive's term in office.

DOA_n Old-age social expenditure, change from previous year, **n** year(s) prior to **t2**.

Survivors' benefits

SV_n Public expenditure on survivors' benefits, **n** year(s) prior to **t2**.

DSV_trm Average annual change in public expenditure on survivors' benefits during party of chief executive's term in office.

DSV_n Public expenditure on survivors' benefits, change from previous year, **n** year(s) prior to **t2**.

Incapacity-related social expenditure

ICP_n Incapacity-related social expenditure, **n** year(s) prior to **t2**.

DICP_trm Average annual change in incapacity-related social expenditure during party of chief executive's term in office.

DICP_n Incapacity-related social expenditure, change from previous year, **n** year(s) prior to **t2**.

Public healthcare expenditure

HEA_n Public healthcare expenditure, **n** year(s) prior to **t2**.

DHEA_trm Average annual change in public healthcare expenditure during party of chief executive's term in office.

DHEA_n Public healthcare expenditure, change from previous year, **n** year(s) prior to **t2**.

Family benefits

FAM_n Public expenditure on family benefits, **n** year(s) prior to **t2**.

DFAM_trm Average annual change in public expenditure on family benefits during party of chief executive's term in office.

DFAM_n Public expenditure on family benefits, change from previous year, **n** year(s) prior to **t2**.

Active labor market programs

ALM_n Public expenditure on active labor market programs, **n** year(s) prior to **t2**.

DALM_trm Average annual change in public expenditure on active labor market programs during party of chief executive's term in office.

DALM_n Public expenditure on active labor market programs, change from previous year, **n** year(s) prior to **t2**.

Unemployment insurance

UI_n Public expenditure on unemployment insurance, **n** year(s) prior to **t2**.

DUI_trm Average annual change in public expenditure on unemployment insurance during party of chief executive's term in office.

DUI_n Public expenditure on unemployment insurance, change from previous year, **n** year(s) prior to **t2**.

Housing benefits

HO_n Public expenditure on housing benefits, **n** year(s) prior to **t2**.

DHO_trm Average annual change in public expenditure on housing benefits during party of chief executive's term in office.

DHO_n Public expenditure on housing benefits, change from previous year, **n** year(s) prior to **t2**.

Other social expenditure

OS_n Other social expenditure, **n** year(s) prior to **t2**.

DOS_trm Average annual change in other social expenditure during party of chief executive's term in office.

DOS_n Other social expenditure, change from previous year, **n** year(s) prior to **t2**.

TAX VARIABLES (RS)

All variables measured as a percentage of nominal GDP.

Total tax revenue

TAX_n Total tax revenue, **n** year(s) prior to **t2**.

DTAX_trm Average annual change in total tax revenue during party of chief executive's term in office.

DTAX_n Total tax revenue, change from previous year, **n** year(s) prior to **t2**.

Income tax

INC_n Income tax revenue, **n** year(s) prior to **t2**.

DINC_trm Average annual change in income tax revenue during party of chief executive's term in office.

DINC_n Income tax revenue, change from previous year, **n** year(s) prior to **t2**.

Social security contributions

SS_n Social security contributions, **n** year(s) prior to **t2**.

DSS_trm Average annual change in social security contributions during party of chief executive's term in office.

DSS_n Social security contributions, change from previous year, **n** year(s) prior to **t2**.

Payroll and workforce taxes

PYR_n Payroll and workforce taxes, **n** year(s) prior to **t2**.

DPYR_trm Average annual change in payroll and workforce taxes during party of chief executive's term in office.

DPYR_n Payroll and workforce taxes, change from previous year, **n** year(s) prior to **t2**.

Property taxes

PRP_n Property taxes, **n** year(s) prior to **t2**.

DPRP_trm Average annual change in property taxes during party of chief executive's term in office.

DPRP_n Property taxes, change from previous year, **n** year(s) prior to **t2**.

Taxes on goods and services

GS_n Taxes on goods and services, **n** year(s) prior to **t2**.

DGS_trm Average annual change in taxes on goods and services during party of chief executive's term in office.

DGS_n Taxes on goods and services, change from previous year, **n** year(s) prior to **t2**.

Other taxes

OTH_n Other taxes, **n** year(s) prior to **t2**.

DOTH_trm Average annual change in other taxes during party of chief executive's term in office.

DOTH_n Other taxes, change from previous year, **n** year(s) prior to **t2**.

Federal or central government tax revenue

FTX_n Federal or central government tax revenue, **n** year(s) prior to **t2**.

DFTX_trm Average annual change in federal or central government tax revenue during party of chief executive's term in office.

DFTX_n Federal or central government tax revenue, change from previous year, **n** year(s) prior to **t2**.

State or regional government tax revenue

STX_n State or regional government tax revenue, **n** year(s) prior to **t2**.

DSTX_trm Average annual change in state or regional government tax revenue during party of chief executive's term in office.

DSTX_n State or regional government tax revenue, change from previous year, **n** year(s) prior to **t2**.

Local government tax revenue

LTX_n Local government tax revenue, **n** year(s) prior to **t2**.

DLTX_trm Average annual change in local government tax revenue during party of chief executive's term in office.

DLTX_n Local government tax revenue, change from previous year, **n** year(s) prior to **t2**.

Tax revenue from social security funds

SSTX_n Tax revenue from social security funds, **n** year(s) prior to **t2**.

DSSTX_trm Average annual change in tax revenue from social security funds during party of chief executive's term in office.

DSSTX_n Tax revenue from social security funds, change from previous year, **n** year(s) prior to **t2**.

Supranational government tax revenue

SNTX_n Supranational government tax revenue, **n** year(s) prior to **t2**.

DSNTX_trm Average annual change in supranational government tax revenue during party of chief executive's term in office.

DSNTX_n Supranational government tax revenue, change from previous year, **n** year(s) prior to **t2**.

ANNUAL MACROECONOMIC VARIABLES

Gross domestic product (GDP) (NA)

GDP_n GDP, annual levels (US dollars, volume estimates, expenditure approach, reference year 2010), **n** year(s) prior to **t2**.

DGDP_trm Average annual change in GDP during party of chief executive's term in office.

DGDP_n Change in **GDP_n** from previous year.

DDGDP_trm Change in growth rate of GDP during party of chief executive's term in office.

lnGDP_n Natural log of **GDP_n**.

DlnGDP_n Change in **lnGDP_n** from previous year.

Gross domestic product per capita (GDPPC) (NA)

POP_n Population, annual levels, **n** years(s) prior to **t2**.

GDPPC_n Ratio of GDP to population (GDPPC), **n** year(s) prior to **t2**.

DGDPPC_n Change in **GDPPC_n** from previous year.

DGDPPC_trm Average annual change in GDPPC during party of chief executive's term in office.

Other measures of output (NA)

DPCE_n Change in private consumption expenditure (PCE), **n** year(s) prior to **t2**.

DPCE_avg Average annual change in PCE during party of chief executive's term in office.

DGCE_n Change in government consumption expenditure (GCE), **n** year(s) prior to **t2**.

DGCE_avg Average annual change in GCE during party of chief executive's term in office.

Variables from Brender and Drazen (2008)

GDP_trend_1 Trend component of real GDP, 1 year prior to **t2**. Calculated by applying a Hodrick-Prescott filter to the GDP time series for each country (MF, NA).

GDP_trend_0 Trend component of real GDP, **t2**. Calculated by applying Hodrick-Prescott filter to GDP time series for each country (MF, NA).

GDPD_trend_ey The difference between the ratio of GDP to its trend component at **t2** and the ratio of GDP to its trend component at **t2** – 1. Equal to **GDP_0**/**GDP_trend_0** – **GDP_1**/**GDP_trend_1** (MF, NA).

BALCH_trm Equal to ½ * (**NL_1** + **NL_2**) – ½ * (**NL_3** + **NL_4**) when data on all four variables are available from the same *Economic Outlook*. Otherwise equal to (EO 60, EO 74, EO 98).

BALCH_termPey Defined as ⅓ * (**NL_0** + **NL_1** + **NL_2**) – ⅓ * (**NL_3** + **NL_4** + **NL_5**), when data on all six variables (NL_0, … , NL_5) are available from the same *Economic Outlook*. Otherwise defined as ½ * (**NL_0** + **NL_1**) – **NL_2** (EO 60, EO 74, EO 98).

Def_Size Deficit to GDP ratio at the beginning of the party of the chief executive's term in office (EO 60, EO 74, EO 98).

BTxDS **BALCH_trm** multiplied by **Def_Size** (EO 60, EO 74, EO 98).

DNL0xDS **DNL_0** multiplied by **Def_Size** (EO 60, EO 74, EO 98).

Inflation (INF) (WDI)

INF_n Change in GDP deflator (INF), **n + 1** to **n** years prior to **t2**. The GDP deflator is the ratio of nominal to real GDP in constant dollars.

DINF_trm Average annual change in INF (second derivative of GDP deflator), **INF_nY** to **INF_0**, where **nY** is the number of years prior to the election (with available data).

DINF_n INF, change from previous year, **n** year(s) prior to **t2**.

INF_avg Average level of inflation during party of chief executive's term in office, excluding **CE_Yr1**.

Unemployment (UNP) (ALFS)

UNP_n Unemployment rate, percentage of civilian labor force (UNP), **n** year(s) prior to **t2**.

DUNP_trm Average annual change in UNP, **UNP_nY** to **UNP_0**, where **nY** is the number of years prior to the election (with available data).

DUNP_n UNP, change from previous year, **n** year(s) prior to **t2**.

Appendix B. Political Causes of Fiscal Adjustments Dataset Codebook

Variable	Description
Country	Name of country (AC).
Year	Year of observation (AC).
Yr7585	Variable indicating whether (1) or not (0) year of observation is between 1975 and 1985.
Elec_Yr	Variable indicating whether (1) or not (0) an election was held in the year (PG, NES).
Left_CE	Variable indicating whether (1) or not (0) the party of the chief executive is socialist, social democratic, or social liberal. Not coded when **NP_CE** = 1. (MPD, AC).
NP_CE	Variable indicating whether (1) or not (0) the party of the chief executive is nonpartisan or multipartisan (PG, AC).
Left_CE2	Variable indicating whether (1) or not (0) the party of the chief executive is socialist, social democratic, or social liberal. Unlike **Left_CE**, **Left_CE2** is coded when **NP_CE** = 1. (MPD, AC).
Party_CE	Abbreviated name of the party of the chief executive (PG).

Fiscal variables (EO)

REC_0	General government receipts, year of observation.
REC_1	General government receipts, year prior to observation.
REC_2	General government receipts, two years prior to observation.
DREC	**REC_0** – **REC_1**

DREC_1 **REC_1 – REC_2**

DIS_0 General government disbursements, year of observation.

DIS_1 General government disbursements, year prior to observation.

DIS_2 General government disbursements, two years prior to observation.

DDIS **DIS_0 – DIS_1**

DDIS_1 **DIS_1 – DIS_2**

NL_0 General government net lending, year of observation.

NL_1 General government net lending, year prior to observation.

NL_2 General government net lending, two years prior to observation.

DNL **NL_0 – NL_1**

DNL_1 **NL_1 – NL_2**

Political variables

ES Excess number of government seats. ES equals the number of seats in government subtracted by the number of seats necessary for a parliamentary majority, and divided by the number of seats necessary for a majority.

ES2 Equal to **ES** when **ES** > 0. Equal to 0 when **ES** < 0.

npg Number of parties in government (PG).

gchan Changes in party composition of government (PG).

EA Variable indicating whether (1) or not (0) country of observation is in East Asia (Japan or South Korea).

50s Variable indicating whether (1) or not (0) observation is from the 1950s.

60s Variable indicating whether (1) or not (0) observation is from the 1960s.

70s Variable indicating whether (1) or not (0) observation is from the 1970s.

80s Variable indicating whether (1) or not (0) observation is from the 1980s.

90s Variable indicating whether (1) or not (0) observation is from the 1990s.

00s Variable indicating whether (1) or not (0) observation is from the 2000s.

10s Variable indicating whether (1) or not (0) observation is from the 2010s.

CPG "Political complexion of parliament and government" (Woldendorp, Keman, and Budge 1993). Equal to 1 if right-wing parties "in government and their supporting parties in parliament" hold more than 66.6 percent of seats; 2 if "right and center parties in government and their supporting parties" hold between 33.3 and 66.6 percent of seats each; 3 if the share of center parties is larger than 50 per cent, or if left and right-wing parties "form a government together not dominated by one side or the other"; 4 if "left and center parties in government and their supporting parties" hold between 33.3 and 66.6 percent of seats each; and 5 if the seat share of left-wing parties "of government and supporting parties in parliament" exceeds 66.6 percent (CPDS).

Economic and fiscal variables

gfcedf Government final consumption expenditure deflator, year of observation (NA).

gfcedf_1 Government final consumption expenditure deflator, year prior to observation (NA).

dgfcedf **gfcedf – gfcedf_1**

dgd_gd_1 **dgfcedf / gfcedf_1**

gdpdf Gross domestic product (GDP) deflator, year of observation (NA).

gdpdf_1 GDP deflator, year prior to observation (NA).

dgdpdf **gdpdf – gdpdf_1**

dYd_Yd_1 **dgdpdf / gdpdf_1**

GFCE Government final consumption expenditure, year of observation (NA).

GFCE_1 Government final consumption expenditure, year prior to observation (NA).

cpr_val Central government primary receipts, year of observation (EO).

cpr_val_1 Central government primary receipts, year prior to observation (EO).

cpd_val Central government primary disbursements, year of observation (EO).

cpd_val_1 Central government primary disbursements, year prior to observation (EO).

nom_gdp Nominal GDP, year of observation (NA).

nom_gdp_1 Nominal GDP, year prior to observation (NA).

gfce_gdp 100 * **GFCE / nom_gdp**

gfce_gdp_1 100 * **GFCE / nom_gdp**

dgfc_gdp **gfce_gdp – gfce_gdp_1**

AC **gfce_gdp * dgd_gd_1 / dYd_Yd_1**

cpr_gdp **cpr_val / nom_gdp**

cpr_gdp_1 **cpr_val_1 / nom_gdp_1**

dcpr_gdp **cpr_gdp – cpr_gdp_1**

cpd_gdp **cpd_val / nom_gdp**

cpd_gdp_1 **cpd_val_1 / nom_gdp_1**

dcpd_gdp **cpd_gdp – cpd_gdp_1**

ydr_0 Age dependency ratio, young, year of observation. Defined as the ratio of the population younger than 15 to the population aged 15-64, multiplied by 100 (WDI).

ydr_1 Age dependency ratio, young, year prior to observation, multiplied by 100 (WDI).

dydr **ydr_0 – ydr_1**

oadr_0 Age dependency ratio, old, year of observation. Defined as the ratio of the population older than 64 to the population aged 15-64, multiplied by 100 (WDI).

oadr_1 Age dependency ratio, old, year prior to observation, multiplied by 100 (WDI).

doadr **oadr_0 – oadr_1**

dr_0 **ydr_0 + oadr_0**

dr_1 **ydr_1 + oadr_1**

ddr **dr_0 – dr_1**

kaopen Chinn-Ito (2006) index of capital account openness, year of observation.

kaopen_1 Chinn-Ito index, year prior to observation.

dkaopen **kaopen – kaopen_1**

ka_open Chinn-Ito index, year of observation, normalized between 0 and 1.

ka_open_1 Chinn-Ito index, year prior to observation, normalized between 0 and 1.

dka_open **ka_open – ka_open_1**

Exp_gdp Exports as a percentage of GDP, year of observation (WDI).

Exp_gdp_1 Exports as a percentage of GDP, year prior to observation.

DExp_gdp **Exp_gdp – Exp_gdp_1**

Imp_gdp Imports as a percentage of GDP, year of observation (WDI).

Imp_gdp_1 Imports as a percentage of GDP, year prior to observation.

DImp_gdp **Imp_gdp – Imp_gdp_1**

Trade_gdp **Exp_gdp + Imp_gdp**

Trade_gdp_1 **Exp_gdp_1 + Imp_gdp_1**

DTrade_gdp **Trade_gdp – Trade_gdp_1**

Characteristics of parties in parliament (PG)

EYP **x** indicates government assumed in office in year of observation, but elected in year prior to year of observation.

rile_parl Mean *rile* score of parties in parliament (Laver and Budge 1992), weighted by share of seats (MPD).

lr_parl Mean *lr* score of parties in parliament (Döring and Manow 2015), weighted by share of seats.

PFRAP Political fragmentation of parliament. Calculated by taking the number of seats for each party in parliament, dividing by the total number of seats, multiplying each of these shares by the distance between a measure of each party's respective ideology and the ideological complexion of parliament, and summing these measures of ideological distance for all parties. The ideological complexion of parliament is calculated by taking the number of seats for each party in parliament, dividing by the total number of seats, multiplying each of these shares by a measure of each party's respective ideology, and summing these measures for all parties.

MDPC Maximum ideological distance between two coalition partners ("party codes").

Pn Name of **n**th largest party in parliament, measured in terms of seats.

Sn Number of seats of **n**th largest party in parliament.

ppct_Pn Share of seats of **n**th largest party in parliament.

rile_Pn *Rile* score of **n**th largest party in parliament.

lr_Pn *Lr* score of **n**th party in parliament.

rile_gov Mean *rile* score of parties in government, weighted by share of seats.

lr_gov Mean *lr* score of parties in government, weighted by share of seats.

S_Parl Total number of seats in parliament.

cm_gov Mean Castles-Mair ideology score of parties in government, weighted by share of seats (Castles and Mair 1984). Scaled between 0 and 1, with 0 indicating the most extreme left value, 2.5 indicating a moderate left-wing party, 5 indicating a centrist party, 7.5 indicating a moderate right-wing party, and 10 indicating the most extreme right value. Most **cm** scores for individual parties fall between these values (Powell and Whitten 1993, p. 404-05).

pw_right Governments defined as "right-wing" according to Powell and Whitten's criteria. Equal to 1 when **cm_gov** > 6.25, indicating a party closer to "moderate right" than "center" (Powell and Whitten 1993, p. 405).

NoM Number of cabinet ministers (CPDS).

D_Gov Government position on decentralization, calculated by multiplying the decentralization score for each individual party by the party's share of seats in government and summing up for all parties (BL).

LR_Gov Government ideology, left-right index, calculated by multiplying the left-right score for each individual party by the party's share of seats in government and summing up for all parties (BL).

N_Gov Degree of nationalism in government ideology, calculated by multiplying the nationalism score for each individual party by the party's share of seats in government and summing up for all parties (BL).

Party_CE Name of party of chief executive.

D_CE Position on decentralization, party of the chief executive (BL).

LR_CE Government ideology, party of the chief executive (BL).

N_CE Degree of nationalism in government ideology, party of the chief executive (BL).

nm_CE Number of ministers, party of chief executive.

cm_CE Castles-Mair ideology score, party of chief executive.

S_Party_CE Seats in parliament, party of chief executive.

PPct_CE Share of seats in parliament, party of chief executive.

GPct_CE Share of seats in government, party of chief executive.

Rile_CE *Rile* score, party of chief executive.

lr_CE *Lr* score, party of chief executive.

CPn Name of **n**th largest coalition partner, measured in terms of seats.

D_CPn Position on decentralization, **n**th largest coalition partner (BL).

LR_CPn Government ideology, **n**th largest coalition partner (BL).

N_CPn Degree of nationalism in government ideology, **n**th largest coalition partner (BL).

nm_CPn Number of ministers of **n**th largest coalition partner.

cm_CPn Castles-Mair ideology score, **n**th largest coalition partner.

PPct_CPn Share of seats in parliament, **n**th largest coalition partner.

GPct_CPn Share of seats in government, **n**th largest coalition partner.

Rile_CPn *Rile* score, **n**th largest coalition partner.

lr_CPn *Lr* score, **n**th largest coalition partner.

SPn Name of **n**th largest party providing support to government, when government holds a minority of seats in parliament. Supporting parties are either explicitly stated in ParlGov or inferred from national political context. When party in government relies on some but not all of a supporting party's membership to secure a majority in parliament, the supporting party is coded instead as **RSP**.

S_SPn Seats in parliament, **n**th largest supporting party.

PPct_SP1 Percentage of seats in parliament, **n**th largest supporting party.

Rile_SP1 *Rile* score, **n**th largest supporting party.

lr_SP1 *Lr* score, **n**th largest supporting party.

RSP Name of party in which government relies on some but not all of its membership to secure a majority in parliament.

NRS Number of seats of **RSP** necessary for government to secure a parliamentary majority.

PPct_RSP Share of seats in parliament, **RSP**.

Rile_RSP *Rile* score, **RSP**.

lr_RSP *Lr* score, **RSP**.

S_Gov Number of seats in parliament held by parties in government.

PPct_Gov Share of seats in parliament held by parties in government.

Central and general government gross debt

CDbt_gdp Gross central government debt, percentage of GDP. Data from Reinhart and Rogoff (2011). If Reinhart and Rogoff data is unavailable, I use data from the OECD's *Government Financial Statistics* (2015).

GFL_gdp Gross financial liabilities, general government, percentage of GDP (EO).

eCDBTgdp Estimated central government debt to GDP, year of observation. Equal to **CDbt_gdp** when **CDbt_gdp** is defined, otherwise equal to the value of

CDbt_gdp estimated from the country-specific regression of **CDbt_gdp** on **GFL_gdp** for the year of observation.

eCDBTgdp_1 Estimated central government debt to GDP, year prior to observation.

DeCDBTgdp **eCDBTgdp – eCDBTgdp_1**

eGFgdp Estimated general government gross financial liabilities, percentage of GDP, year of observation. Equal to **GFL_gdp** when **GFL_gdp** is defined, otherwise equal to the value of **GFL_gdp** estimated from the country-specific regression of **GFL_gdp** on **CDbt_gdp** for the year of observation.

eGFgdp_1 Estimated general government gross financial liabilities, percentage of GDP, year prior to observation.

DeGFgdp **eGFgdp – eGFgdp_1**

DeGFgdp_1 **DeGFgdp**, year prior to observation.

More characteristics of governments and parliaments (PG, NES)

NSE Year of next scheduled election.

YTNSE Years until next scheduled election. Equal to **NSE – Year**.

YTrPCE Years in the term of the party of the chief executive. Equal to 1 in the first year of the party of the chief executive's tenure in office.

fix_trm Variable indicating whether (1) or not (0) term lengths are fixed by law.

enp_gov Expected number of parties in government, calculated using share of seats in government (Laakso and Taagepera 1979). Equal to the inverse of the summed squared share of seats in government for each party in government.

enp_parl Expected number of parties in parliament, calculated using share of seats in parliament (Laakso and Taagepera 1979). Equal to the inverse of the summed squared share of seats in parliament for each party in parliament.

rat_enpgp Ratio of expected number of parties in government to expected number of parties in parliament.

Ndem_t2 Variable indicating whether (1) or not (0) observation is in one of the first four electoral cycles following a transition to democracy. Following Brender and Drazen (2005), I define a democracy as a country with a nonnegative Polity IV score (Marshall, Gurr, and Jaggers 2014).

Maj_t2 Variable indicating whether (1) or not (0) the government in the year of observation was elected by majoritarian (plurality) electoral rules (AC).

PR Variable indicating whether (1) or not (0) the government in the year of observation was elected by proportional representation (AC).

Pres Variable indicating whether (1) or not (0) the system of government is presidential, i.e. the head of state and government in the year of observation are identical. In the sample of observations, **Pres** = 1 for all observations in South Korea and the United States, and 0 otherwise (AC).

Maj_gov Variable indicating whether (1) or not (0) the government holds a majority of seats in parliament. For the United States, the variable is coded as 1 for unified governments, in which the party of the president holds a majority of seats in both the Senate and House of Representatives at the time of election. For South Korea, the variable is coded as 1 for governments in which the party of the president holds a majority of seats in the legislature. Minority and divided governments are coded as 0.

Mw_gov Variable indicating whether (1) or not (0) the government is a minimum-winning coalition. To be a minimum-winning coalition, it is necessary for the government to hold a majority of seats in parliament, and for the subtraction of any party in government to cause the government to lose its parliamentary majority.

Smc_gov Variable indicating whether (1) or not (0) the government is a surplus majority coalition. To be a surplus majority coalition, it is necessary for the government to hold a majority of seats in parliament, and for the government to be able to maintain a majority of seats following the subtraction of at least one coalition partner.

TOG Woldendorp, Keman, and Budge (1993) index of political cohesion. Equal to (1) for single-party majority governments, (2) for minimal winning coalitions, (3) for surplus majority coalitions, (4) for single-party minority governments, (5) for multiparty minority governments, and (6) for caretaker governments.

POL Roubini and Sachs (1989) index of political cohesion. Equal to (0) for one-party majority governments in parliamentary systems or unified governments in presidential systems, (1) for two-party majority governments in parliamentary systems or divided governments in presidential systems, (2) for three or more party majority governments, and (3) for minority governments.

nprt_leg Number of parties required to pass legislation. Equal to the number of parties in government plus the number of supporting parties (AC).

Tax revenue (percentage of GDP) (RS)

INC_0 Income tax revenue, year of observation.

INC_1 Income tax revenue, year prior to observation.

DINC **INC_0 – INC_1**

SS_0 Social security contributions, year of observation

SS_1 Social security contributions, year prior to observation.

DSS **SS_0 – SS_1**

PYR_0 Payroll and workforce taxes, year of observation.

PYR_1 Payroll and workforce taxes, year prior to observation.

DPYR **PYR_1 – PYR_0**

PRP_0 Property taxes, year of observation.

PRP_1 Property taxes, year prior to observation.

DPRP **PRP_1 – PRP_0**

GS_0 Taxes on goods and services, year of observation.

GS_1 Taxes on goods and services, year prior to observation.

DGS **GS_0 – GS_1**

OTH_0 Other taxes, year of observation.

OTH_1 Other taxes, year prior to observation.

DOTH **OTH_0 – OTH_1**

TAX_0 Total taxes, year of observation.

TAX_1 Total taxes, year prior to observation.

DTAX **TAX_0 – TAX_1**

Public social expenditure (percentage of GDP) (SOCX)

HO_0 Housing benefits, year of observation.

HO_1 Housing benefits, year prior to observation.

DHO **HO_0 – HO_1**

UI_0 Public expenditure on unemployment insurance, year of observation.

UI_1 Public expenditure on unemployment insurance, year prior to observation.

DUI **UI_0 – UI_1**

ALM_0 Public expenditure on active labor market programs, year of observation.

ALM_1 Public expenditure on active labor market programs, year prior to observation.

DALM **ALM_0 – ALM_1**

FAM_0	Public expenditure on family benefits, year of observation.
FAM_1	Public expenditure on family benefits, year prior to observation.
DFAM	**FAM_1 – FAM_0**
HEA_0	Public healthcare expenditure, year of observation.
HEA_1	Public healthcare expenditure, year prior to observation.
DHEA	**HEA_1 – HEA_0**
ICP_0	Incapacity-related social expenditure, year of observation.
ICP_1	Incapacity-related social expenditure, year prior to observation.
DICP	**ICP_0 – ICP_1**
SV_0	Public expenditure on survivors' benefits, year of observation.
SV_1	Public expenditure on survivors' benefits, year prior to observation.
DSV	**SV_1 – SV_0**
OA_0	Old-age social expenditure, year of observation.
OA_1	Old-age social expenditure, year prior to observation.
DOA	**OA_0 – OA_1**
OS_0	Other social expenditure, year of observation.
OS_1	Other social expenditure, year prior to observation.
DOS	**OS_0 – OS_1**
SX_0	Total social expenditure, year of observation.
SX_1	Total social expenditure, year prior to observation.

DSX **SX_0 – SX_1**

Other macroeconomic variables

UNP_0 Unemployed persons as a percentage of labor force, year of observation (ALFS).

lnUNP_0 Natural logarithm of unemployment rate, year of observation. Defined for all observations where **UNP_0** > 0.

UNP_1 Unemployment persons as a percentage of labor force, year prior to observation.

lnUNP_1 Natural logarithm of unemployment rate, year prior to observation. Defined for all observations where **UNP_1** > 0.

DUNP **UNP_0 – UNP_1**

DlnUNP **lnUNP_0 – lnUNP_1**

GDP_lcu_0 Gross domestic product, local currency units, year of observation (WDI).

CDbt Gross central government debt, local currency units, year of observation. Equal to **CDbt_gdp * GDP_lcu_0**.

CDbt_gdp_1 Gross central government debt, percentage of GDP, year prior to observation.

DCDbt_gdp **CDbt_gdp – CDbt_gdp_0**

DCDbt_gdp_1 **DCDbt_gdp**, year prior to observation.

GFL Gross general government financial liabilities, year of observation (EO).

INF Inflation rate (change in GDP deflator), year of observation (WDI).

e (1/2) * **INF** + (1/6) * **INF_1** + (1/6) * **INF_2** + (1/6) * **INF_3**, where **INF_1**, **INF_2**, and **INF_3** are the inflation rates in the three years prior to the year of observation (RS).

tenyr 10-year interest rate on government bonds (EO).

DSC **(tenyr – DGDP) * CDbt**

INT_0 Gross government interest payments, year of observation (EO).

INT_1 Gross government interest payments, year prior to observation.

lnINT_0 Natural logarithm of **INT_0**.

lnINT_1 Natural logarithm of **INT_1**.

i 100 * (**INT_0** / **GFL**) (RS).

ime **i – e**

n (1/2) * **DGDP** + (1/6) * **DGDP_1** + (1/6) * **DGDP_2** + (1/6) * **DGDP_3**, where **DGDP_1**, **DGDP_2**, and **DGDP_3** are the growth rates in the three years prior to the year of observation (RS).

imemn **i – e – n**

ime_1 **emi**, year prior to observation.

D_ime **emi – emi_1**

NFL_gdp_60 General government net financial liabilities, percentage of GDP (EO 60).

NFL_gdp_74 General government net financial liabilities, percentage of GDP (EO 74).

NFL_gdp_98 General government net financial liabilities, percentage of GDP (EO 98).

NFL_gdp General government net financial liabilities, percentage of GDP, data from EO 98 when available, otherwise from EO 74 when available, otherwise from EO 60.

DRB Roubini-Sachs measure of debt-servicing costs. Equal to **imemn * NFL_gdp**.

GDP_0 Gross domestic product at market prices, constant 2005 USD, year of observation (WDI).

HPGDP_0 Gross domestic product, trend component using Hodrick-Prescott Filter on available annual country data ($\lambda = 6.25$).

LNGDP_0 Natural logarithm of GDP per capita, year of observation.

LNHPGDP_0 Natural logarithm of GDP per capita, year prior to observation.

DEVGDP_0 Logged deviation of GDP from trend. Equal to **LNGDP_0 – LNHPGDP_0**.

PCT_OLD Population aged 65 and older, percentage of total population (WDI).

GDP_1 Gross domestic product at market prices, year prior to observation.

DGDP **GDP_0 – GDP_1**

POP_0 Population, year of observation (WDI).

POP_1 Population, year prior to observation (WDI).

GDPPC_0 GDP per capita, year of observation. Equal to **GDP_0** / **POP_0**.

GDPPC_1 GDP per capita, year prior to observation. Equal to **GDP_1** / **POP_1**.

lnGDPPC_0 Natural logarithm of GDP per capita, year of observation.

lnGDPPC_1 Natural logarithm of GDP per capita, year prior to observation.

DlnGDPPC **lnGDPPC_0 – lnGDPPC_1**

lnGDP_0 Natural logarithm of GDP, year of observation.

lnGDP_1 Natural logarithm of GDP, year prior to observation.

DlnGDP **lnGDP_0 – lnGDP_1**

DGR **DGDP** – (1/3) * (**DGDP_1 + DGDP_2** + **DGDP_3**), where **DGDP_1**, **DGDP_2**, and **DGDP_3** are the growth rates in the three years prior to the year of observation (RS).

n (1/2) * (**DGDP**) + (1/6) * (**DGDP_1**) + (1/6) * (**DGDP_2**) + (1/6) * (**DGDP_3**), where **DGDP_1**, **DGDP_2**, and **DGDP_3** are the growth rates in the three years prior to the year of observation (RS).

DUB **UNP_0** – (1/8) * (**UNP_1 + UNP_2 + UNP_3 + UNP_4 + UNP_5 + UNP_6 + UNP_7 + UNP_8)**, where **UNP_1, …, UNP_8** are the unemployment rates in the eight years prior to the year of observation (RS).

Japan Variable coded as 1 for all observations in which **Country** = Japan.

Ideo Measure of ideology coded (0) for left-wing governments, (1) for centrist governments, and (2) for right-wing governments (AC).

Appendix C. R Code

Chapter Two

```
# Set working directory

setwd("C:/Users/pat_donnelly/Dropbox/Documents/Dissertation")

# Load and attach data

ad = read.csv ('Annual Data.csv')
attach (ad)

# Required packages

library (plm)
library (lmtest)

# Table 1

left = subset (ad, Left_CE == 1)
mean (left$REC_0, na.rm = TRUE)
sum (!is.na (left$REC_0))

mean (left$DIS_0, na.rm = TRUE)
sum (!is.na (left$DIS_0))

mean (left$NL_0, na.rm = TRUE)
sum (!is.na (left$NL_0))

right = subset (ad, Right_CE == 1)
mean (right$REC_0, na.rm = TRUE)
sum (!is.na (right$REC_0))

mean (right$DIS_0, na.rm = TRUE)
sum (!is.na (right$DIS_0))

mean (right$NL_0, na.rm = TRUE)
sum (!is.na (right$NL_0))
```

```
np = subset (ad, NP_CE == 1)
mean (np$REC_0, na.rm = TRUE)
sum (!is.na (np$REC_0))

mean (np$DIS_0, na.rm = TRUE)
sum (!is.na (np$DIS_0))

mean (np$NL_0, na.rm = TRUE)
sum (!is.na (np$NL_0))

mean (REC_0, na.rm = TRUE)
sum (!is.na (REC_0))

mean (DIS_0, na.rm = TRUE)
sum (!is.na (DIS_0))

mean (NL_0, na.rm = TRUE)
sum (!is.na (NL_0))

# Table 2

mean (left$DREC, na.rm = TRUE)
sum (!is.na (left$DREC))

mean (left$DDIS, na.rm = TRUE)
sum (!is.na (left$DDIS))

mean (left$DNL, na.rm = TRUE)
sum (!is.na (left$DNL))

mean (right$DREC, na.rm = TRUE)
sum (!is.na (right$DREC))

mean (right$DDIS, na.rm = TRUE)
sum (!is.na (right$DDIS))

mean (right$DNL, na.rm = TRUE)
sum (!is.na (right$DNL))

np = subset (ad, NP_CE == 1)
```

```
mean (np$DREC, na.rm = TRUE)
sum (!is.na (np$DREC))

mean (np$DDIS, na.rm = TRUE)
sum (!is.na (np$DDIS))

mean (np$DNL, na.rm = TRUE)
sum (!is.na (np$DNL))

mean (DREC, na.rm = TRUE)
sum (!is.na (DREC))

mean (DDIS, na.rm = TRUE)
sum (!is.na (DDIS))

mean (DNL, na.rm = TRUE)
sum (!is.na (DNL))

# Table 3, Column 1

ir.ols = plm (DREC ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "pooling")

ir.cfe = plm (DREC ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "within", effect
= "individual")

ir.yfe = plm (DREC ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "within", effect
= "time")

pFtest (ir.cfe, ir.ols)
pFtest (ir.yfe, ir.ols)
bptest (ir.yfe)

coeftest (ir.yfe, vcov = vcovHC)
summary (ir.yfe)

# Table 3, Column 2
```

```
id.ols = plm (DDIS ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "pooling")

id.cfe = plm (DDIS ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "within", effect
= "individual")

id.yfe = plm (DDIS ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "within", effect
= "time")

pFtest (id.cfe, id.ols)
pFtest (id.yfe, id.ols)

bptest (id.yfe)

coeftest (id.yfe, vcov = vcovHC)
summary (id.yfe)

# Table 3, Column 3

in.ols = plm (DNL ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2 +
PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "pooling")

in.cfe = plm (DNL ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "within", effect
= "individual")

in.yfe = plm (DNL ~ Left_CE + NP_CE + Coal_gov + Maj_gov + NoM + enp_gov + Ndem_t2
+ PR + Pres + Elec_Yr + enp_parl + DGDP + UNP_0 + ddr, data = ad, model = "within", effect
= "time")

pFtest (in.cfe, in.ols)
pFtest (in.yfe, in.ols)

bptest (in.yfe)

coeftest (in.yfe, vcov = vcovHC)
summary (in.yfe)
```

```
# Table 5

pk = subset (ad, (Country == "Australia" | Country == "Austria" | Country == "Belgium" |
Country == "Canada" | Country == "Denmark" | Country == "Finland" | Country == "France" |
Country == "Germany" | Country == "Greece" | Country == "Ireland" | Country == "Italy" |
Country == "Japan" | Country == "Netherlands" | Country == "Norway" | Country == "Norway" |
Country == "Portugal" | Country == "Spain" | Country == "Sweden" | Country == "Switzerland"
| Country == "United Kingdom" | Country == "United States") & Year >= 1960 & Year <=
1995)

pk.os = subset (ad, (Country == "Czech Republic" | Country == "Estonia" | Country ==
"Hungary" | Country == "Iceland" | Country == "Israel" | Country == "Korea" | Country ==
"Luxembourg" | Country == "New Zealand" | Country == "Poland" | Country == "Slovak
Republic" | Country == "Slovenia") | (Year < 1960 | Year > 1995))

pk5.twfe = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk, model = "within", effect =
"twoways")

summary (pk5.twfe, vcov = vcovHC)

pk5.ols = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk, model = "pooling")

pk5.cfe = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk, model = "within", effect =
"individual")

pk5.yfe = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk, model = "within", effect =
"time")

pFtest (pk5.cfe, pk5.ols)
pFtest (pk5.yfe, pk5.ols)
bptest (pk5.yfe)

coeftest (pk5.yfe, vcov = vcovHC)
summary (pk5.yfe)

os5.ols = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk.os, model = "pooling")

os5.cfe = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk.os, model = "within", effect
= "individual")
```

```
os5.yfe = plm (DDEF ~ TOG + DDEF_1 + DUNP + INF, data = pk.os, model = "within", effect
= "time")

pFtest (os5.cfe, os5.ols)
pFtest (os5.yfe, os5.ols)
bptest (os5.yfe)

coeftest (os5.yfe, vcov = vcovHC)
summary (os5.yfe)

# Table 6

rs = subset (ad, (Country == "Austria" | Country == "Belgium" | Country == "Denmark" |
Country == "Finland" | Country == "France" | Country == "Germany" | Country == "Ireland" |
Country == "Italy" | Country == "Japan" | Country == "Netherlands" | Country == "Norway" |
Country == "Sweden" | Country == "United Kingdom" | Country == "United States") & Year >=
1960 & Year <= 1985)

rs.os = subset (ad, Country == "Australia" | Country == "Canada" | Country == "Czech
Republic" | Country == "Estonia" | Country == "Greece" | Country == "Hungary" | Country ==
"Iceland" | Country == "Israel" | Country == "Korea" | Country == "Luxembourg" | Country ==
"New Zealand" | Country == "Poland" | Country == "Portugal" | Country == "Slovak Republic" |
Country == "Slovenia" | Country == "Spain" | Country == "Switzerland" | (Year < 1960 | Year >
1985))

pk6.twfe = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "within", effect =
"twoways")

coeftest (pk6.twfe, vcov = vcovHC)
summary (pk6.twfe)

pk6.ols = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "pooling")

pk6.cfe = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "within", effect =
"individual")

pk6.yfe = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "within", effect =
"time")

pFtest (pk6.cfe, pk6.ols)
```

```
pFtest (pk6.yfe, pk6.ols)
bptest (pk6.yfe)

coeftest (pk6.yfe, vcov = vcovHC)
summary (pk6.yfe)

os6.ols = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs.os, model = "pooling")

os6.cfe = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs.os, model = "within", effect =
"individual")

os6.yfe = plm (DDIS ~ POL + DDEF_1 + DUNP + INF, data = rs.os, model = "within", effect =
"time")

pFtest (os6.cfe, os6.ols)
pFtest (os6.yfe, os6.ols)
bptest (os6.yfe)

coeftest (os6.yfe, vcov = vcovHC)
summary (os6.yfe)


# Table 7

pk7.twfe = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "within", effect =
"twoways")

coeftest (pk7.twfe, vcov = vcovHC)
summary (pk7.twfe)

pk7.ols = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "pooling")

pk7.cfe = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "within", effect =
"individual")

pk7.yfe = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs, model = "within", effect =
"time")

pFtest (pk7.cfe, pk7.ols)
pFtest (pk7.yfe, pk7.ols)
```

```
bptest (pk7.ols)

coeftest (pk7.ols, vcov = vcovHC)
summary (pk7.ols)

os7.ols = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs.os, model = "pooling")

os7.cfe = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs.os, model = "within", effect =
"individual")

os7.yfe = plm (DREC ~ POL + DDEF_1 + DUNP + INF, data = rs.os, model = "within", effect =
"time")

pFtest (os7.cfe, os7.ols)
pFtest (os7.yfe, os7.ols)
bptest (os7.yfe)

coeftest (os7.yfe, vcov = vcovHC)
summary (os7.yfe)

# Table 8

pk8.twfe = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "twoways")

coeftest (pk8.twfe, vcov = vcovHC)
summary (pk8.twfe)

pk8.ols = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"pooling")

pk8.cfe = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "individual")

pk8.yfe = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "time")

pFtest (pk8.cfe, pk8.ols)
pFtest (pk8.yfe, pk8.ols)
bptest (pk8.ols)
```

```
coeftest (pk8.yfe, vcov = vcovHC)
summary (pk8.yfe)

os8.ols = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"pooling")

os8.cfe = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"within", effect = "individual")

os8.yfe = plm (DDEF ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"within", effect = "time")

pFtest (os8.cfe, os8.ols)
pFtest (os8.yfe, os8.ols)
bptest (os8.yfe)

coeftest (os8.yfe, vcov = vcovHC)
summary (os8.yfe)

# Table 9

pk9.twfe = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "twoways")

coeftest (pk9.twfe, vcov = vcovHC)
summary (pk9.twfe)

pk9.ols = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"pooling")

pk9.cfe = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "individual")

pk9.yfe = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "time")

pFtest (pk9.cfe, pk9.ols)
pFtest (pk9.yfe, pk9.ols)
bptest (pk9.ols)
```

```
summary (pk9.yfe)

os9.ols = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"pooling")

os9.cfe = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"within", effect = "individual")

os9.yfe = plm (DDIS ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"within", effect = "time")

pFtest (os9.cfe, os9.ols)
pFtest (os9.yfe, os9.ols)
bptest (os9.yfe)

coeftest (os9.yfe, vcov = vcovHC)
summary (os9.yfe)

# Table 10

pk10.twfe = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "twoways")

coeftest (pk10.twfe, vcov = vcovHC)
summary (pk10.twfe)

pk10.ols = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"pooling")

pk10.cfe = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "individual")

pk10.yfe = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk, model =
"within", effect = "time")

pFtest (pk10.cfe, pk10.ols)
pFtest (pk10.yfe, pk10.ols)
bptest (pk10.yfe)
```

```
coeftest (pk10.yfe, vcov = vcovHC)
summary (pk10.yfe)

os10.ols = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"pooling")

os10.cfe = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"within", effect = "individual")

os10.yfe = plm (DREC ~ npg + NoM + CPG + DDEF_1 + DUNP + INF, data = pk.os, model =
"within", effect = "time")

pFtest (os10.cfe, os10.ols)
pFtest (os10.yfe, os10.ols)
bptest (os10.yfe)

coeftest (os10.yfe, vcov = vcovHC)
summary (os10.yfe)

# Table 11

pk11.twfe = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "twoways")

coeftest (pk11.twfe, vcov = vcovHC)
summary (pk11.twfe)

pk11.ols = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "pooling")

pk11.cfe = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "individual")

pk11.yfe = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "time")

pFtest (pk11.cfe, pk11.ols)
pFtest (pk11.yfe, pk11.ols)
bptest (pk11.yfe)
```

```
coeftest (pk11.yfe, vcov = vcovHC)
summary (pk11.yfe)

os11.ols = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk.os, model = "pooling")

os11.cfe = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk.os, model = "within", effect = "individual")

os11.yfe = plm (DDEF ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + DUNP +
INF, data = pk.os, model = "within", effect = "time")

pFtest (os11.cfe, os11.ols)
pFtest (os11.yfe, os11.ols)
bptest (os11.yfe)

coeftest (os11.yfe, vcov = vcovHC)
summary (os11.yfe)

# Table 12

pk12.twfe = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "twoways")

coeftest (pk12.twfe, vcov = vcovHC)
summary (pk12.twfe)

pk12.ols = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "pooling")

pk12.cfe = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "individual")

pk12.yfe = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "time")

pFtest (pk12.cfe, pk12.ols)
pFtest (pk12.yfe, pk12.ols)
bptest (pk12.yfe)
```

```
coeftest (pk12.yfe, vcov = vcovHC)
summary (pk12.yfe)

os12.ols = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk.os, model = "pooling")

os12.cfe = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk.os, model = "within", effect = "individual")

os12.yfe = plm (DDIS ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + DUNP + INF,
data = pk.os, model = "within", effect = "time")

pFtest (os12.cfe, os12.ols)
pFtest (os12.yfe, os12.ols)
bptest (os12.yfe)

coeftest (os12.yfe, vcov = vcovHC)
summary (os12.yfe)

# Table 13

pk13.twfe = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "twoways")

coeftest (pk13.twfe, vcov = vcovHC)
summary (pk13.twfe)

pk13.ols = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "pooling")

pk13.cfe = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "individual")

pk13.yfe = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk, model = "within", effect = "time")

pFtest (pk13.cfe, pk13.ols)
pFtest (pk13.yfe, pk13.ols)
bptest (pk13.yfe)
```

```
coeftest (pk13.yfe, vcov = vcovHC)
summary (pk13.yfe)

os13.ols = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk.os, model = "pooling")

os13.cfe = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + INF, data =
pk.os, model = "within", effect = "individual")

os13.yfe = plm (DREC ~ npg*DUNP + NoM*DUNP + CPG*DUNP + DDEF_1 + DUNP +
INF, data = pk.os, model = "within", effect = "time")

pFtest (os13.cfe, os13.ols)
pFtest (os13.yfe, os13.ols)
bptest (os13.yfe)

coeftest (os13.yfe, vcov = vcovHC)
summary (os13.yfe)

# Table 15

ele = subset (ad, Elec_Yr == 1)
no.ele = subset (ad, Elec_Yr == 0)

mean (ele$REC_0, na.rm = TRUE)
sum (!is.na (ele$REC_0))

mean (ele$DIS_0, na.rm = TRUE)
sum (!is.na (ele$DIS_0))

mean (ele$NL_0, na.rm = TRUE)
sum (!is.na (ele$NL_0))

mean (no.ele$REC_0, na.rm = TRUE)
sum (!is.na (no.ele$REC_0))

mean (no.ele$DIS_0, na.rm = TRUE)
sum (!is.na (ele$DIS_0))

mean (no.ele$NL_0, na.rm = TRUE)
```

```
sum (!is.na (no.ele$NL_0))

mean (REC_0, na.rm = TRUE)
sum (!is.na (REC_0))

mean (DIS_0, na.rm = TRUE)
sum (!is.na (DIS_0))

mean (NL_0, na.rm = TRUE)
sum (!is.na (NL_0))

# Table 16

mean (ele$DREC, na.rm = TRUE)
sum (!is.na (ele$DREC))

mean (ele$DDIS, na.rm = TRUE)
sum (!is.na (ele$DDIS))

mean (ele$DNL, na.rm = TRUE)
sum (!is.na (ele$DNL))

mean (no.ele$DREC, na.rm = TRUE)
sum (!is.na (no.ele$DREC))

mean (no.ele$DDIS, na.rm = TRUE)
sum (!is.na (no.ele$DDIS))

mean (no.ele$DNL, na.rm = TRUE)
sum (!is.na (no.ele$DNL))

mean (DREC, na.rm = TRUE)
sum (!is.na (DREC))

mean (DDIS, na.rm = TRUE)
sum (!is.na (DDIS))

mean (DNL, na.rm = TRUE)
sum (!is.na (DNL))
```

```
# Table 17

bd = subset (ad, Year >= 1960 & Year <= 2001 & !(Country == "Greece" & Year >= 1960 &
Year <= 1966))

bd.old = subset (bd, Ndem_t2 == 0)

bd.new = subset (bd, Ndem_t2 == 1)

bd.os = subset (ad, Year < 1960 | Year > 2001 | (Country == "Greece" & Year >= 1960 & Year
<= 1966))

os.old = subset (bd.os, Ndem_t2 == 0)

os.new = subset (bd.os, Ndem_t2 == 1)

# Table 17, Row 1

ab17.ols = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "pooling")

ab17.cfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "individual")

ab17.yfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "time")

pFtest (ab17.cfe, ab17.ols)
pFtest (ab17.yfe, ab17.ols)

ab17.twfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "twoways")

bptest (ab17.twfe)
summary (ab17.twfe)

# Table 17, Row 2

nb17.ols = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "pooling")
```

```
nb17.cfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "within", effect = "individual")

nb17.yfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "within", effect = "time")

pFtest (nb17.cfe, nb17.ols)
pFtest (nb17.yfe, nb17.ols)

bptest (nb17.ols)
summary (nb17.ols)

# Table 17, Row 3

ob17.ols = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "pooling")

ob17.cfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "individual")

ob17.yfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "time")

pFtest (ob17.cfe, ob17.ols)
pFtest (ob17.yfe, ob17.ols)

ob17.twfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "twoways")

bptest (ob17.twfe)
summary(ob17.twfe)

# Table 17, Row 4

ae17.ols = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "pooling")

ae17.cfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "individual")
```

```
ae17.yfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "time")

pFtest (ae17.cfe, ae17.ols)
pFtest (ae17.yfe, ae17.ols)

ae17.twfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "twoways")

bptest (ae17.twfe)
summary (ae17.twfe)

# Table 17, Row 5

ne17.ols = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "pooling")

ne17.cfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "within", effect = "individual")

ne17.yfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "within", effect = "time")

pFtest (ne17.cfe, ne17.ols)
pFtest (ne17.yfe, ne17.ols)

bptest (ne17.ols)
summary (ne17.ols)

# Table 17, Row 6

oe17.ols = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "pooling")

oe17.cfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "individual")

oe17.yfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "time")
```

```
pFtest (oe17.cfe, oe17.ols)
pFtest (oe17.yfe, oe17.ols)

oe17.twfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "twoways")

bptest (oe17.twfe)
summary (oe17.twfe)

# Table 17, Row 7

ar17.ols = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "pooling")

ar17.cfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "individual")

ar17.yfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "time")

pFtest (ar17.cfe, ar17.ols)
pFtest (ar17.yfe, ar17.ols)

ar17.twfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd, model = "within", effect = "twoways")

bptest (ar17.twfe)
summary (ar17.twfe)

# Table 17, Row 8

nr17.ols = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "pooling")

nr17.cfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "within", effect = "individual")

nr17.yfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.new, model = "within", effect = "time")
```

```
pFtest (nr17.cfe, nr17.ols)
pFtest (nr17.yfe, nr17.ols)

bptest (nr17.ols)
summary (nr17.ols)

# Table 17, Row 9

or17.ols = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "pooling")

or17.cfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "individual")

or17.yfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "time")

pFtest (or17.cfe, or17.ols)
pFtest (or17.yfe, or17.ols)

or17.twfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.old, model = "within", effect = "twoways")

bptest (or17.twfe)
summary (or17.twfe)

# Table 18, Row 1

ab18.ols = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "pooling")

ab18.cfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "individual")

ab18.yfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "time")

pFtest (ab18.cfe, ab18.ols)
pFtest (ab18.yfe, ab18.ols)
```

```
ab18.twfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "twoways")

bptest (ab18.twfe)
summary (ab18.twfe)

# Table 18, Row 2

nb18.ols = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "pooling")

nb18.cfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "within", effect = "individual")

nb18.yfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "within", effect = "time")

pFtest (nb18.cfe, nb18.ols)
pFtest (nb18.yfe, nb18.ols)

bptest (nb18.cfe)
summary (nb18.cfe)

# Table 18, Row 3

ob18.ols = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "pooling")

ob18.cfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "individual")

ob18.yfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "time")

pFtest (ob18.cfe, ob18.ols)
pFtest (ob18.yfe, ob18.ols)

ob18.twfe = plm (NL_0 ~ Elec_Yr + NL_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "twoways")
```

```
bptest (ob18.twfe)
summary (ob18.twfe)

# Table 18, Row 4

ae18.ols = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "pooling")

ae18.cfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "individual")

ae18.yfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "time")

pFtest (ae18.cfe, ae18.ols)
pFtest (ae18.yfe, ae18.ols)

ae18.twfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "twoways")

bptest (ae18.twfe)
summary (ae18.twfe)

# Table 18, Row 5

ne18.ols = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "pooling")

ne18.cfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "within", effect = "individual")

ne18.yfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "within", effect = "time")

pFtest (ne18.cfe, ne18.ols)
pFtest (ne18.yfe, ne18.ols)

bptest (ne18.cfe)
summary (ne18.cfe)
```

```
# Table 18, Row 6

oe18.ols = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "pooling")

oe18.cfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "individual")

oe18.yfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "time")

pFtest (oe18.cfe, oe18.ols)
pFtest (oe18.yfe, oe18.ols)

oe18.twfe = plm (DIS_0 ~ Elec_Yr + DIS_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "twoways")

bptest (oe18.twfe)
summary (oe18.twfe)

# Table 18, Row 7

ar18.ols = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "pooling")

ar18.cfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "individual")

ar18.yfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "time")

pFtest (ar18.cfe, ar18.ols)
pFtest (ar18.yfe, ar18.ols)

ar18.twfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = bd.os, model = "within", effect = "twoways")

bptest (ar18.twfe)
summary (ar18.twfe)
```

```
# Table 18, Row 8

nr18.ols = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "pooling")

nr18.cfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "within", effect = "individual")

nr18.yfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.new, model = "within", effect = "time")

pFtest (nr18.cfe, nr18.ols)
pFtest (nr18.yfe, nr18.ols)

bptest (nr18.ols)
summary (nr18.ols)

# Table 18, Row 9

or18.ols = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "pooling")

or18.cfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "individual")

or18.yfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "time")

pFtest (or18.cfe, or18.ols)
pFtest (or18.yfe, or18.ols)

or18.twfe = plm (REC_0 ~ Elec_Yr + REC_1 + Trade_gdp + PCT_OLD + PCT_1564 +
DEVGDP_0, data = os.old, model = "within", effect = "twoways")

bptest (or18.twfe)
summary (or18.twfe)

# Table 19, Column 2 (Balance)
```

```
coeftest (ab17.cfe, vcov = vcovHC)
coeftest (nb17.cfe, vcov = vcovHC)
coeftest (ob17.cfe, vcov = vcovHC)

# Table 19, Column 2 (Expenditures)

coeftest (ae17.cfe, vcov = vcovHC)
coeftest (ne17.cfe, vcov = vcovHC)
coeftest (oe17.cfe, vcov = vcovHC)

# Table 19, Column 2 (Revenue)

coeftest (ar17.cfe, vcov = vcovHC)
coeftest (nr17.cfe, vcov = vcovHC)
coeftest (or17.cfe, vcov = vcovHC)

# Table 19, Column 3 (Balance)

coeftest (ab17.twfe, vcov = vcovHC)
coeftest (nb17.ols)
coeftest (ob17.twfe, vcov = vcovHC)

# Table 19, Column 3 (Expenditures)

coeftest (ae17.twfe, vcov = vcovHC)
coeftest (ne17.ols)
coeftest (oe17.twfe, vcov = vcovHC)

# Table 19, Column 3 (Revenue)

coeftest (ar17.twfe)
coeftest (nr17.ols, vcov = vcovHC)
coeftest (or17.twfe)

# Table 19, Column 4 (Balance)

coeftest (ab18.twfe, vcov = vcovHC)
coeftest (nb18.cfe)
coeftest (ob18.twfe, vcov = vcovHC)
```

```
# Table 19, Column 4 (Expenditures)

coeftest (ae18.twfe, vcov = vcovHC)
coeftest (ne18.cfe)
coeftest (oe18.twfe, vcov = vcovHC)

# Table 19, Column 4 (Revenue)

coeftest (ar18.twfe, vcov = vcovHC)
coeftest (nr18.ols)
coeftest (or18.twfe, vcov = vcovHC)

# Table 21

rs = subset (ad, (Country == "Austria" | Country == "Belgium" | Country == "Denmark" |
Country == "Finland" | Country == "France" | Country == "Germany" | Country == "Ireland" |
Country == "Italy" | Country == "Japan" | Country == "Netherlands" | Country == "Norway" |
Country == "Sweden" | Country == "United Kingdom" | Country == "United States") & Year >=
1960 & Year <= 1985)

rs.os = subset (ad, Country == "Australia" | Country == "Canada" | Country == "Czech
Republic" | Country == "Estonia" | Country == "Greece" | Country == "Hungary" | Country ==
"Iceland" | Country == "Israel" | Country == "Korea" | Country == "Luxembourg" | Country ==
"New Zealand" | Country == "Poland" | Country == "Portugal" | Country == "Slovak Republic" |
Country == "Slovenia" | Country == "Spain" | Country == "Switzerland" | (Year < 1960 | Year >
1985))

# Table 22, Column 2

rs22.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2, data = rs, model =
"pooling")

summary (rs22.ols)

# Table 22, Column 3

rs22.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2, data = rs, model =
"within", effect = "individual")
```

```
rs22.yfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2, data = rs, model =
"within", effect = "time")

pFtest (rs22.cfe, rs22.ols)
pFtest (rs22.yfe, rs22.ols)
bptest (rs22.cfe)

coeftest (rs22.cfe)
summary (rs22.cfe)

# Table 22, Column 4

os22.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2, data = rs.os, model =
"pooling")

os22.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2, data = rs.os, model =
"within", effect = "individual")

os22.yfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2, data = rs.os, model =
"within", effect = "time")

pFtest (os22.cfe, os22.ols)
pFtest (os22.yfe, os22.ols)

os22.twfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + POL2, data = rs.os, model =
"within", effect = "twoways")

bptest (os22.twfe)

coeftest (os22.twfe, vcov = vcovHC)
summary (os22.twfe)

# Table 23, Column 2

rs23.ols = plm (DEF_0 ~ DEF_1*POL2 + DUB*Japan + DRB + DGR, data = rs, model =
"pooling")

summary (rs23.ols)

# Table 23, Column 3
```

```
rs23.cfe = plm (DEF_0 ~ DEF_1*POL2 + DUB*Japan + DRB + DGR, data = rs, model =
"within", effect = "individual")

rs23.yfe = plm (DEF_0 ~ DEF_1*POL2 + DUB*Japan + DRB + DGR, data = rs, model =
"within", effect = "time")

pFtest (rs23.cfe, rs23.ols)
pFtest (rs23.yfe, rs23.ols)
bptest (rs23.cfe)

coeftest (rs23.cfe, vcov = vcovHC)
summary (rs23.cfe)

# Table 23, Column 4

os23.ols = plm (DEF_0 ~ DEF_1*POL2 + DUB*Japan + DRB + DGR, data = rs.os, model =
"pooling")

os23.cfe = plm (DEF_0 ~ DEF_1*POL2 + DUB*Japan + DRB + DGR, data = rs.os, model =
"within", effect = "individual")

os23.yfe = plm (DEF_0 ~ DEF_1*POL2 + DUB*Japan + DRB + DGR, data = rs.os, model =
"within", effect = "time")

pFtest (os23.cfe, os23.ols)
pFtest (os23.yfe, os23.ols)

os23.twfe = plm (DEF_0 ~ DEF_1*POL2 + DUB + DRB + DGR + POL2, data = rs.os, model =
"within", effect = "twoways")

bptest (os23.twfe)

coeftest (os23.twfe, vcov = vcovHC)
summary (os23.twfe)

# Table 24, Column 2

rs24.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2*Yr7585, data = rs,
model = "pooling")
```

```
summary (rs24.ols)

# Table 24, Column 3

rs24.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2*Yr7585, data = rs,
model = "within", effect = "individual")

rs24.yfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2*Yr7585, data = rs,
model = "within", effect = "time")

pFtest (rs24.cfe, rs24.ols)
pFtest (rs24.yfe, rs24.ols)
bptest (rs24.cfe)

coeftest (rs24.cfe, vcov = vcovHC)
summary (rs24.cfe)

# Table 24, Column 4

os24.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2*Yr7585, data = rs.os,
model = "pooling")

os24.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + POL2*Yr7585, data = rs.os,
model = "within", effect = "individual")

pFtest (os24.cfe, os24.ols)

bptest (os24.cfe)

coeftest (os24.cfe, vcov = vcovHC)
summary (os24.cfe)

# Note: POL divided by 100 for models in Tables 26-27 in accordance with authors'
specifications

# Table 26, Column 2

rs26.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL), data = rs,
model = "pooling")
```

```
summary (rs26.ols)

# Table 26, Column 3

rs26.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL), data = rs,
model = "within", effect = "individual")

rs26.yfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL), data = rs,
model = "within", effect = "time")

pFtest (rs26.cfe, rs26.ols)
pFtest (rs26.yfe, rs26.ols)
bptest (rs26.cfe)

coeftest (rs26.cfe)
summary (rs26.cfe)

# Table 26, Column 4

os26.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL), data = rs.os,
model = "pooling")

os26.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL), data = rs.os,
model = "within", effect = "individual")

os26.yfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL), data = rs.os,
model = "within", effect = "time")

pFtest (os26.cfe, os26.ols)
pFtest (os26.yfe, os26.ols)

os26.twfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + as.factor(POL), data = rs.os, model
= "within", effect = "twoways")

bptest (os26.twfe)

coeftest (os26.twfe, vcov = vcovHC)
summary (os26.twfe)
```

```
# Table 27, Column 2

rs27.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL)*Yr7585, data =
rs, model = "pooling")

summary (rs27.ols)

# Table 27, Column 3

rs27.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL)*Yr7585, data
= rs, model = "within", effect = "individual")

rs27.yfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL)*Yr7585, data
= rs, model = "within", effect = "time")

pFtest (rs27.cfe, rs27.ols)
pFtest (rs27.yfe, rs27.ols)
bptest (rs27.cfe)

coeftest (rs27.cfe, vcov = vcovHC)
summary (rs27.cfe)

# Table 27, Column 4

os27.ols = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL)*Yr7585, data
= rs.os, model = "pooling")

os27.cfe = plm (DEF_0 ~ DEF_1 + DUB*Japan + DRB + DGR + as.factor(POL)*Yr7585, data
= rs.os, model = "within", effect = "individual")

pFtest (os27.cfe, os27.ols)

bptest (os27.cfe)

coeftest (os27.cfe, vcov = vcovHC)
summary (os27.cfe)

# Table 28
```

```
ds = subset (ad, (Country == "Belgium" | Country == "Denmark" | Country == "France" |
Country == "Germany" | Country == "Greece" | Country == "Ireland" | Country == "Italy" |
Country == "Luxembourg" | Country == "Netherlands" | Country == "Portugal" | Country ==
"Spain" | Country == "United Kingdom") & Year >= 1981 & Year <= 1989)

ds.os = subset (ad, Country == "Australia" | Country == "Austria" | Country == "Canada" |
Country == "Czech Republic" | Country == "Estonia" | Country == "Finland" | Country ==
"Hungary" | Country == "Iceland" | Country == "Israel" | Country == "Japan" | Country ==
"Korea" | Country == "New Zealand" | Country == "Norway" | Country == "Poland" | Country
== "Slovak Republic" | Country == "Slovenia" | Country == "Sweden" | Country ==
"Switzerland" | Country == "United States" | (Year < 1981 | Year > 1989))

# Table 28, Column 2

ds28.ols = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds, model = "pooling")

summary (ds28.ols)

# Table 28, Column 3

ds28.cfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds, model = "within",
effect = "individual")

ds28.yfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds, model = "within",
effect = "time")

pFtest (ds28.cfe, ds28.ols)
pFtest (ds28.yfe, ds28.ols)
bptest (ds28.cfe)

summary (ds28.cfe)

# Table 28, Column 4

os28.ols = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds.os, model =
"pooling")

os28.cfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds.os, model =
"within", effect = "individual")
```

```
os28.yfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds.os, model =
"within", effect = "time")

pFtest (os28.cfe, os28.ols)
pFtest (os28.yfe, os28.ols)

os28.twfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchan, data = ds.os, model =
"within", effect = "twoways")

bptest (os28.twfe)

coeftest (os28.twfe, vcov = vcovHC)
summary (os28.twfe)

# Table 29, Column 2

ds29.ols = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds, model =
"pooling")

summary (ds29.ols)

# Table 29, Column 3

ds29.cfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds, model = "within",
effect = "individual")

ds29.yfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds, model = "within",
effect = "time")

pFtest (ds29.cfe, ds29.ols)
pFtest (ds29.yfe, ds29.ols)
bptest (ds29.cfe)

summary (ds29.cfe)

# Table 29, Column 4

os29.ols = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds.os, model =
"pooling")
```

```
os29.cfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds.os, model =
"within", effect = "individual")

os29.yfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds.os, model =
"within", effect = "time")

pFtest (os29.cfe, os29.ols)
pFtest (os29.yfe, os29.ols)

os29.twfe = plm (DEF_0 ~ DEF_1 + DUB + DRB + DGR + gchand, data = ds.os, model =
"within", effect = "twoways")

bptest (os29.twfe)

coeftest (os29.twfe, vcov = vcovHC)
summary (os29.twfe)

# Table 31, Column 1

r1.ols = plm (DREC ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "pooling")

r1.cfe = plm (DREC ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "individual")

r1.yfe = plm (DREC ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")

pFtest (r1.cfe, r1.ols)
pFtest (r1.yfe, r1.ols)

bptest (r1.yfe)

coeftest (r1.yfe, vcov = vcovHC)
summary (r1.yfe)

# Table 31, Column 2

r2.ols = plm (DREC ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"pooling")
```

```
r2.cfe = plm (DREC ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "individual")

r2.yfe = plm (DREC ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "time")

pFtest (r2.cfe, r2.ols)
pFtest (r2.yfe, r2.ols)

bptest (r2.yfe)

coeftest (r2.yfe, vcov = vcovHC)
summary (r2.yfe)

# Table 31, Column 3

r3.ols = plm (DREC ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"pooling")

r3.cfe = plm (DREC ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "individual")

r3.yfe = plm (DREC ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "time")

pFtest (r3.cfe, r3.ols)
pFtest (r3.yfe, r3.ols)

bptest (r3.yfe)

coeftest (r3.yfe, vcov = vcovHC)
summary (r3.yfe)

# Table 31, Column 4

r4.ols = plm (DREC ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "pooling")

r4.cfe = plm (DREC ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "individual")
```

```
r4.yfe = plm (DREC ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")

pFtest (r4.cfe, r4.ols)
pFtest (r4.yfe, r4.ols)

bptest (r4.yfe)

coeftest (r4.yfe, vcov = vcovHC)
summary (r4.yfe)

# Table 32, Column 1

d1.ols = plm (DDIS ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "pooling")

d1.cfe = plm (DDIS ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "individual")

d1.yfe = plm (DDIS ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")

pFtest (d1.cfe, d1.ols)
pFtest (d1.yfe, d1.ols)

bptest (d1.yfe)

coeftest (d1.yfe, vcov = vcovHC)
summary (d1.yfe)

# Table 32, Column 2

d2.ols = plm (DDIS ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"pooling")

d2.cfe = plm (DDIS ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "individual")

d2.yfe = plm (DDIS ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "time")
```

```
pFtest (d2.cfe, d2.ols)
pFtest (d2.yfe, d2.ols)

d2.twfe = plm (DDIS ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "twoways")

bptest (d2.twfe)

coeftest (d2.twfe, vcov = vcovHC)
summary (d2.twfe)

# Table 32, Column 3

d3.ols = plm (DDIS ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"pooling")

d3.cfe = plm (DDIS ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "individual")

d3.yfe = plm (DDIS ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "time")

pFtest (d3.cfe, d3.ols)
pFtest (d3.yfe, d3.ols)

d3.twfe = plm (DDIS ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "twoways")

bptest (d3.twfe)

coeftest (d3.twfe, vcov = vcovHC)
summary (d3.twfe)

# Table 32, Column 4

d4.ols = plm (DDIS ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "pooling")

d4.cfe = plm (DDIS ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "individual")
```

```
d4.yfe = plm (DDIS ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")

pFtest (d4.cfe, d4.ols)
pFtest (d4.yfe, d4.ols)

d4.twfe = plm (DDIS ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")

bptest (d4.twfe)

coeftest (d4.twfe, vcov = vcovHC)
summary (d4.twfe)

# Table 33, Column 1

b1.ols = plm (DNL ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "pooling")

b1.cfe = plm (DNL ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "individual")

b1.yfe = plm (DNL ~ Pres + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")

pFtest (b1.cfe, b1.ols)
pFtest (b1.yfe, b1.ols)

bptest (b1.yfe)

coeftest (b1.yfe, vcov = vcovHC)
summary (b1.yfe)

# Table 33, Column 2

b2.ols = plm (DNL ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"pooling")

b2.cfe = plm (DNL ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "individual")
```

```
b2.yfe = plm (DNL ~ Maj_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "time")

pFtest (b2.cfe, b2.ols)
pFtest (b2.yfe, b2.ols)

bptest (b2.yfe)

coeftest (b2.yfe, vcov = vcovHC)
summary (b2.yfe)

# Table 33, Column 3

b3.ols = plm (DNL ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"pooling")

b3.cfe = plm (DNL ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "individual")

b3.yfe = plm (DNL ~ Smc_gov + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model =
"within", effect = "time")

pFtest (b3.cfe, b3.ols)
pFtest (b3.yfe, b3.ols)

bptest (b3.yfe)

coeftest (b3.yfe, vcov = vcovHC)
summary (b3.yfe)

# Table 33, Column 4

b4.ols = plm (DNL ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "pooling")

b4.cfe = plm (DNL ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "individual")

b4.yfe = plm (DNL ~ npg + DGDP + UNP_0 + INF + Elec_Yr, data = ad, model = "within",
effect = "time")
```

```
pFtest (b4.cfe, b4.ols)
pFtest (b4.yfe, b4.ols)

bptest (b4.yfe)

coeftest (b4.yfe, vcov = vcovHC)
summary (b4.yfe)

# Table 34

p1 = subset (ad, Year >= 1961 & Year <= 1970)
p2 = subset (ad, Year >= 1971 & Year <= 1977)
p3 = subset (ad, Year >= 1978 & Year <= 1983)
p4 = subset (ad, Year >= 1984 & Year <= 1988)
p5 = subset (ad, Year >= 1989 & Year <= 1993)
p6 = subset (ad, Year >= 1994 & Year <= 1997)
p7 = subset (ad, Year >= 1998 & Year <= 2001)
p8 = subset (ad, Year >= 2002 & Year <= 2005)
p9 = subset (ad, Year >= 2006 & Year <= 2009)
p10 = subset (ad, Year >= 2010 & Year <= 2014)

# Table 34 (Revenue)

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p1,
model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p2,
model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p3,
model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p4,
model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p5,
model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p6,
model = "pooling"))
```

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p7, model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p8, model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p9, model = "pooling"))

summary (plm (DREC ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p10, model = "pooling"))

Table 34 (Expenditure)

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p1, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p2, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p3, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p4, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p5, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p6, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p7, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p8, model = "pooling")) summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p9, model = "pooling"))

summary (plm (DDIS ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p10, model = "pooling"))

Table 34 (Balance)

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p1, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p2, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p3, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p4, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p5, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p6, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p7, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p8, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p9, model = "pooling"))

summary (plm (DNL ~ enp_parl + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p10, model = "pooling"))

Table 35 (Revenue)

```
summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p1,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p2,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p3,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p4,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p5,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p6,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p7,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p8,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p9,
model = "pooling"))

summary (plm (DREC ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p10,
model = "pooling"))

# Table 35 (Expenditure)

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p1,
model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p2,
model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p3,
model = "pooling"))
```

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p4, model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p5, model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p6, model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p7, model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p8, model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p9, model = "pooling"))

summary (plm (DDIS ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p10, model = "pooling"))

Table 35 (Balance)

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p1, model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p2, model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p3, model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p4, model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p5, model = "pooling"))

```
summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p6,
model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p7,
model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p8,
model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p9,
model = "pooling"))

summary (plm (DNL ~ enp_gov + DGDP + DUNP + INF + Elec_Yr + Left_CE2, data = p10,
model = "pooling"))
```

Chapter Three

```
# Set working directory

setwd("C:/Users/pat_donnelly/Dropbox/Documents/Dissertation")

# Load data

evd = read.csv ('Economic Voting Data.csv')

# Required packages

library (plm)
library (lmtest)

# Attach data

attach (evd)

# Table 1

summary (lm (DPctCE ~ DGDPPC_q0))
summary (lm (DPctCE ~ DGDPPC_q1))
```

```
summary (lm (DPctCE ~ DGDPPC_q2))
summary (lm (DPctCE ~ DGDPPC_q3))
summary (lm (DPctCE ~ DGDPPC_q4))
summary (lm (DPctCE ~ DGDPPC_q5))
summary (lm (DPctCE ~ DGDPPC_q6))
summary (lm (DPctCE ~ DGDPPC_q7))
summary (lm (DPctCE ~ DGDPPC_q8))
summary (lm (DPctCE ~ DGDPPC_q9))
summary (lm (DPctCE ~ DGDPPC_q10))
summary (lm (DPctCE ~ DGDPPC_q11))
summary (lm (DPctCE ~ DGDPPC_q12))
summary (lm (DPctCE ~ DGDPPC_q13))
summary (lm (DPctCE ~ DGDPPC_q14))
summary (lm (DPctCE ~ DGDPPC_q15))
summary (lm (DPctCE ~ DGDPPC_q16))
summary (lm (DPctCE ~ DGDPPC_q17))
summary (lm (DPctCE ~ DGDPPC_q18))
summary (lm (DPctCE ~ DGDPPC_q19))
summary (lm (DPctCE ~ DGDPPC_q20))

# Table 2

# Specify regression models

ols.q0 = plm (DPctCE ~ DGDPPC_q0 + DGDPPC_q1 + DGDPPC_q0 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

cfe.q0 = plm (DPctCE ~ DGDPPC_q0 + DGDPPC_q1 + DGDPPC_q0 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

yfe.q0 = plm (DPctCE ~ DGDPPC_q0 + DGDPPC_q1 + DGDPPC_q0 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "time")

# F tests for consistency between fixed effects and pooled OLS

pFtest (cfe.q0, ols.q0)
pFtest (yfe.q0, ols.q0)

# Breusch-Pagan test for heteroscedasticity on model suggested by F tests (alpha = .05)
```

```
bptest (ols.q0)

# Print estimates from model suggested by specification tests

coeftest (ols.q0, vcov = vcovHC)
summary (ols.q0)

# Repeat OLS specifications for DYPC_q1 through DYPC_q12

ols.q1 = plm (DPctCE ~ DGDPPC_q2 + DGDPPC_q3 + DGDPPC_q1 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q2 = plm (DPctCE ~ DGDPPC_q3 + DGDPPC_q4 + DGDPPC_q2 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q3 = plm (DPctCE ~ DGDPPC_q4 + DGDPPC_q5 + DGDPPC_q3 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q4 = plm (DPctCE ~ DGDPPC_q5 + DGDPPC_q6 + DGDPPC_q4 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q5 = plm (DPctCE ~ DGDPPC_q6 + DGDPPC_q7 + DGDPPC_q5 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q6 = plm (DPctCE ~ DGDPPC_q7 + DGDPPC_q8 + DGDPPC_q6 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q7 = plm (DPctCE ~ DGDPPC_q8 + DGDPPC_q9 + DGDPPC_q7 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "pooling")

ols.q8 = plm (DPctCE ~ DGDPPC_q9 + DGDPPC_q10 + DGDPPC_q8 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "pooling")

ols.q9 = plm (DPctCE ~ DGDPPC_q10 + DGDPPC_q11 + DGDPPC_q9 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "pooling")

ols.q10 = plm (DPctCE ~ DGDPPC_q11 + DGDPPC_q12 + DGDPPC_q10 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "pooling")
```

```
ols.q11 = plm (DPctCE ~ DGDPPC_q12 + DGDPPC_q13 + DGDPPC_q11 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "pooling")

ols.q12 = plm (DPctCE ~ DGDPPC_q13 + DGDPPC_q14 + DGDPPC_q12 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "pooling")

# Repeat CFE specifications for DYPC_q1 through DYPC_q12

cfe.q1 = plm (DPctCE ~ DGDPPC_q2 + DGDPPC_q3 + DGDPPC_q1 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q2 = plm (DPctCE ~ DGDPPC_q3 + DGDPPC_q4 + DGDPPC_q2 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q3 = plm (DPctCE ~ DGDPPC_q4 + DGDPPC_q5 + DGDPPC_q3 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q4 = plm (DPctCE ~ DGDPPC_q5 + DGDPPC_q6 + DGDPPC_q4 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q5 = plm (DPctCE ~ DGDPPC_q6 + DGDPPC_q7 + DGDPPC_q5 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q6 = plm (DPctCE ~ DGDPPC_q7 + DGDPPC_q8 + DGDPPC_q6 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q7 = plm (DPctCE ~ DGDPPC_q8 + DGDPPC_q9 + DGDPPC_q7 + DPctCE_1 + PctCE_t1
+ nQCE, data = evd, model = "within", effect = "individual")

cfe.q8 = plm (DPctCE ~ DGDPPC_q9 + DGDPPC_q10 + DGDPPC_q8 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "within", effect = "individual")

cfe.q9 = plm (DPctCE ~ DGDPPC_q10 + DGDPPC_q11 + DGDPPC_q9 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "within", effect = "individual")

cfe.q10 = plm (DPctCE ~ DGDPPC_q11 + DGDPPC_q12 + DGDPPC_q10 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "within", effect = "individual")

cfe.q11 = plm (DPctCE ~ DGDPPC_q12 + DGDPPC_q13 + DGDPPC_q11 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "within", effect = "individual")
```

cfe.q12 = plm (DPctCE ~ DGDPPC_q13 + DGDPPC_q14 + DGDPPC_q12 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "individual")

Repeat YFE specifications for DYPC_q1 through DYPC_q12

yfe.q1 = plm (DPctCE ~ DGDPPC_q2 + DGDPPC_q3 + DGDPPC_q1 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q2 = plm (DPctCE ~ DGDPPC_q3 + DGDPPC_q4 + DGDPPC_q2 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q3 = plm (DPctCE ~ DGDPPC_q4 + DGDPPC_q5 + DGDPPC_q3 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q4 = plm (DPctCE ~ DGDPPC_q5 + DGDPPC_q6 + DGDPPC_q4 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q5 = plm (DPctCE ~ DGDPPC_q6 + DGDPPC_q7 + DGDPPC_q5 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q6 = plm (DPctCE ~ DGDPPC_q7 + DGDPPC_q8 + DGDPPC_q6 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q7 = plm (DPctCE ~ DGDPPC_q8 + DGDPPC_q9 + DGDPPC_q7 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q8 = plm (DPctCE ~ DGDPPC_q9 + DGDPPC_q10 + DGDPPC_q8 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q9 = plm (DPctCE ~ DGDPPC_q10 + DGDPPC_q11 + DGDPPC_q9 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q10 = plm (DPctCE ~ DGDPPC_q11 + DGDPPC_q12 + DGDPPC_q10 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

yfe.q11 = plm (DPctCE ~ DGDPPC_q12 + DGDPPC_q13 + DGDPPC_q11 + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

```
yfe.q12 = plm (DPctCE ~ DGDPPC_q13 + DGDPPC_q14 + DGDPPC_q12 + DPctCE_1 +
PctCE_t1 + nQCE, data = evd, model = "within", effect = "time")

# Repeat F tests for consistency between fixed effects and pooled OLS

pFtest (cfe.q1, ols.q1)
pFtest (yfe.q1, ols.q1)

pFtest (cfe.q2, ols.q2)
pFtest (yfe.q2, ols.q2)

pFtest (cfe.q3, ols.q3)
pFtest (yfe.q3, ols.q3)

pFtest (cfe.q4, ols.q4)
pFtest (yfe.q4, ols.q4)

pFtest (cfe.q5, ols.q5)
pFtest (yfe.q5, ols.q5)

pFtest (cfe.q6, ols.q6)
pFtest (yfe.q6, ols.q6)

pFtest (cfe.q7, ols.q7)
pFtest (yfe.q7, ols.q7)

pFtest (cfe.q8, ols.q8)
pFtest (yfe.q8, ols.q8)

pFtest (cfe.q9, ols.q9)
pFtest (yfe.q9, ols.q9)

pFtest (cfe.q10, ols.q10)
pFtest (yfe.q10, ols.q10)

pFtest (cfe.q11, ols.q11)
pFtest (yfe.q11, ols.q11)

pFtest (cfe.q12, ols.q12)
pFtest (yfe.q12, ols.q12)
```

```
# Repeat Breusch-Pagan tests for heteroscedasticity on models suggested by F tests

bptest (ols.q1)
bptest (cfe.q2)
bptest (cfe.q3)
bptest (cfe.q4)
bptest (cfe.q5)
bptest (cfe.q6)
bptest (cfe.q7)
bptest (cfe.q8)
bptest (cfe.q9)
bptest (ols.q10)
bptest (ols.q11)
bptest (ols.q12)

# Print estimates from models suggested by specification tests

coeftest (ols.q1, vcov = vcovHC)
summary (ols.q1)

summary (cfe.q2)

coeftest (cfe.q3, vcov = vcovHC)
summary (cfe.q3)

coeftest (cfe.q4, vcov = vcovHC)
summary (cfe.q4)

coeftest (cfe.q5, vcov = vcovHC)
summary (cfe.q5)

coeftest (cfe.q6, vcov = vcovHC)
summary (cfe.q6)

coeftest (cfe.q7, vcov = vcovHC)
summary (cfe.q7)

summary (cfe.q8)
```

```
summary (cfe.q9)

summary (ols.q10)

summary (ols.q11)

summary (ols.q12)

# Table 3

# Pooled OLS models

ols.y0 = plm (DPctCE ~ DGDPPC_0 + DGDPPC_1 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "pooling")

ols.y1 = plm (DPctCE ~ DGDPPC_1 + DGDPPC_2 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "pooling")

ols.y2 = plm (DPctCE ~ DGDPPC_2 + DGDPPC_3 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "pooling")

ols.y3 = plm (DPctCE ~ DGDPPC_3 + DGDPPC_4 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "pooling")

# Country fixed effects models

cfe.y0 = plm (DPctCE ~ DGDPPC_0 + DGDPPC_1 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "individual")

cfe.y1 = plm (DPctCE ~ DGDPPC_1 + DGDPPC_2 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "individual")

cfe.y2 = plm (DPctCE ~ DGDPPC_2 + DGDPPC_3 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "individual")

cfe.y3 = plm (DPctCE ~ DGDPPC_3 + DGDPPC_4 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "individual")

# Year fixed effects models
```

```
yfe.y0 = plm (DPctCE ~ DGDPPC_0 + DGDPPC_1 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "time")

yfe.y1 = plm (DPctCE ~ DGDPPC_1 + DGDPPC_2 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "time")

yfe.y2 = plm (DPctCE ~ DGDPPC_2 + DGDPPC_3 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "time")

yfe.y3 = plm (DPctCE ~ DGDPPC_3 + DGDPPC_4 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "within", effect = "time")

# F tests for consistency between fixed effects and pooled OLS

pFtest (cfe.y0, ols.y0)
pFtest (cfe.y1, ols.y1)
pFtest (cfe.y2, ols.y2)
pFtest (cfe.y3, ols.y3)

pFtest (yfe.y0, ols.y0)
pFtest (yfe.y1, ols.y0)
pFtest (yfe.y2, ols.y0)
pFtest (yfe.y3, ols.y0)

# Breusch-Pagan tests for heteroscedasticity on models suggested by F tests

bptest (cfe.y0)
bptest (cfe.y1)
bptest (cfe.y2)
bptest (ols.y3)

# Print estimates from models suggested by specification tests

coeftest (cfe.y0, vcov = vcovHC)
summary (cfe.y0)

coeftest (cfe.y1, vcov = vcovHC)
summary (cfe.y1)

summary (cfe.y2)
```

```
summary (ols.y3)

# Table 4, Column 1

r.trm.ols = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "pooling")

r.trm.cfe = plm (DPctCE_1 ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "within", effect = "individual")

r.trm.yfe = plm (DPctCE_1 ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "within", effect = "time")

pFtest (r.trm.cfe, r.trm.ols)
pFtest (r.trm.yfe, r.trm.ols)
bptest (r.trm.cfe)
summary (r.trm.cfe)

# Table 4, Column 2

ce.trm.ols = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "pooling")

ce.trm.cfe = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "individual")

ce.trm.yfe = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "time")

pFtest (ce.trm.cfe, ce.trm.ols)
pFtest (ce.trm.yfe, ce.trm.ols)
bptest (ce.trm.cfe)
coeftest (ce.trm.cfe, vcov = vcovHC)
summary (ce.trm.cfe)

# Table 4, Column 3

gov.trm.ols = plm (DPctGov ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "pooling")
```

```
gov.trm.cfe = plm (DPctGov ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "within", effect = "individual")

gov.trm.yfe = plm (DPctGov ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "within", effect = "time")

pFtest (gov.trm.cfe, gov.trm.ols)
pFtest (gov.trm.yfe, gov.trm.ols)
bptest (gov.trm.cfe)
summary (gov.trm.cfe)

# Table 4, Column 4

cp.trm.ols = plm (DPctCP ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "pooling")

cp.trm.cfe = plm (DPctCP ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "individual")

cp.trm.yfe = plm (DPctCP ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "time")

pFtest (cp.trm.cfe, cp.trm.ols)
pFtest (cp.trm.yfe, cp.trm.ols)
bptest (cp.trm.yfe)
summary (cp.trm.yfe)

# Table 5, Column 1

r.trm.ols = plm (Reelect ~ DGDPPC_0 + DGDPPC_1 + DPctCE_1 + PctCE_t1 + nQCE, data =
evd, model = "pooling")

r.trm.cfe = plm (Reelect ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model =
"within", effect = "individual")

r.trm.yfe = plm (Reelect ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model =
"within", effect = "time")

pFtest (r.trm.cfe, r.trm.ols)
```

```
pFtest (r.trm.yfe, r.trm.ols)
bptest (r.trm.cfe)
summary (r.trm.cfe)

# Table 5, Column 2

ce.trm.ols = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "pooling")

ce.trm.cfe = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "individual")

ce.trm.yfe = plm (DPctCE ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "time")

pFtest (ce.trm.cfe, ce.trm.ols)
pFtest (ce.trm.yfe, ce.trm.ols)
bptest (ce.trm.cfe)
coeftest (ce.trm.cfe, vcov = vcovHC)
summary (ce.trm.cfe)

# Table 4, Column 3

gov.trm.ols = plm (DPctGov ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "pooling")

gov.trm.cfe = plm (DPctGov ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "within", effect = "individual")

gov.trm.yfe = plm (DPctGov ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd,
model = "within", effect = "time")

pFtest (gov.trm.cfe, gov.trm.ols)
pFtest (gov.trm.yfe, gov.trm.ols)
bptest (gov.trm.cfe)
summary (gov.trm.cfe)

# Table 4, Column 4
```

```
cp.trm.ols = plm (DPctCP ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "pooling")

cp.trm.cfe = plm (DPctCP ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "individual")

cp.trm.yfe = plm (DPctCP ~ DGDPPC_trm + DPctCE_1 + PctCE_t1 + nQCE, data = evd, model
= "within", effect = "time")

pFtest (cp.trm.cfe, cp.trm.ols)
pFtest (cp.trm.yfe, cp.trm.ols)
bptest (cp.trm.yfe)
summary (cp.trm.yfe)

# Table 6, Column 2

iug.exp.ols = plm (DPctGov ~ INF_0 + UNP_0 + DGDP_0 + PctGov_t1, data = evd, model =
"pooling")

summary (iug.exp.ols)

# Table 6, Column 3

iug.exp.cfe = plm (DPctGov ~ INF_0 + UNP_0 + DGDP_0 + PctGov_t1, data = evd, model =
"within", effect = "individual")

iug.exp.yfe = plm (DPctGov ~ INF_0 + UNP_0 + DGDP_0 + PctGov_t1, data = evd, model =
"within", effect = "time")

pFtest (iug.exp.cfe, iug.exp.ols)
pFtest (iug.exp.yfe, iug.exp.ols)
bptest (iug.exp.cfe)
coeftest (iug.exp.cfe, vcov = vcovHC)
summary (iug.exp.cfe)

# Table 6, Column 4

iug.ce.ols = plm (DPctCE ~ INF_0 + UNP_0 + DGDP_0 + PctCE_t1, data = evd, model =
"pooling")
```

```
iug.ce.cfe = plm (DPctCE ~ INF_0 + UNP_0 + DGDP_0 + PctCE_t1, data = evd, model =
"within", effect = "individual")

iug.ce.yfe = plm (DPctCE ~ INF_0 + UNP_0 + DGDP_0 + PctCE_t1, data = evd, model =
"within", effect = "time")

pFtest (iug.ce.cfe, iug.ce.ols)
pFtest (iug.ce.yfe, iug.ce.ols)
bptest (iug.ce.cfe)
coeftest (iug.ce.cfe, vcov = vcovHC)
summary (iug.ce.cfe)

# Table 7, Column 2

pol.exp.ols = plm (DPctGov ~ pfrag + leginc + scopp_t2 + npg_0 + Min_gov + PctGov_t1 +
DPctCE_1, data = evd, model = "pooling")

pol.exp.cfe = plm (DPctGov ~ pfrag + leginc + scopp_t2 + npg_0 + Min_gov + PctGov_t1 +
DPctCE_1, data = evd, model = "within", effect = "individual")

pol.exp.yfe = plm (DPctGov ~ pfrag + leginc + scopp_t2 + npg_0 + Min_gov + PctGov_t1 +
DPctCE_1, data = evd, model = "within", effect = "time")

pFtest (pol.exp.cfe, pol.exp.ols)
pFtest (pol.exp.yfe, pol.exp.ols)
bptest (pol.exp.ols)
summary (pol.exp.ols)

# Table 7, Column 3

pol.ce.ols = plm (DPctCE ~ pfrag + leginc + scopp_t2 + npg_0 + Min_gov + PctCE_t1 +
DPctCE_1, data = evd, model = "pooling")

pol.ce.cfe = plm (DPctCE ~ pfrag + leginc + scopp_t2 + npg_0 + Min_gov + PctCE_t1 +
DPctCE_1, data = evd, model = "within", effect = "individual")

pol.ce.yfe = plm (DPctCE ~ pfrag + leginc + scopp_t2 + npg_0 + Min_gov + PctCE_t1 +
DPctCE_1, data = evd, model = "within", effect = "time")

pFtest (pol.ce.cfe, pol.ce.ols)
```

```
pFtest (pol.ce.yfe, pol.ce.ols)
bptest (pol.ce.ols)
summary (pol.ce.ols)

# Table 9

# Subset into 'clearer' and 'less clear' responsibility

cl = subset (evd, Country == "Australia" | Country == "Austria" | Country == "Canada" | Country
== "France" | Country == "Greece" | Country == "Ireland" | Country == "Japan" | Country ==
"New Zealand" | Country == "Sweden" | Country == "United Kingdom" | Country == "United
States")

lc = subset (evd, Country == "Belgium" | Country == "Denmark" | Country == "Finland" |
Country == "Germany" | Country == "Italy" | Country == "Netherlands" | Country == "Norway"
| Country == "Switzerland")

# Table 9, Column 2

lc.ols = plm (DPctGov ~ DGDP_0 + INF_0*Rwing + UNP_0*Rwing + Min_gov + PctGov_t1 +
DPctCE_1, data = lc, model = "pooling")

lc.cfe = plm (DPctGov ~ DGDP_0 + INF_0*Rwing + UNP_0*Rwing + Min_gov + PctGov_t1 +
DPctCE_1, data = lc, model = "within", effect = "individual")

lc.yfe = plm (DPctGov ~ DGDP_0 + INF_0*Rwing + UNP_0*Rwing + Min_gov + PctGov_t1 +
DPctCE_1, data = lc, model = "within", effect = "time")

pFtest (lc.cfe, lc.ols)
pFtest (lc.yfe, lc.ols)
bptest (lc.ols)
summary (lc.ols)

# Table 9, Column 4

cl.ols = plm (DPctGov ~ DGDP_0 + INF_0*Rwing + UNP_0*Rwing + Min_gov + PctGov_t1 +
DPctCE_1, data = cl, model = "pooling")

cl.cfe = plm (DPctGov ~ DGDP_0 + INF_0*Rwing + UNP_0*Rwing + Min_gov + PctGov_t1 +
DPctCE_1, data = cl, model = "within", effect = "individual")
```

```
cl.yfe = plm (DPctGov ~ DGDP_0 + INF_0*Rwing + UNP_0*Rwing + Min_gov + PctGov_t1 +
DPctCE_1, data = cl, model = "within", effect = "time")

pFtest (cl.cfe, cl.ols)
pFtest (cl.yfe, cl.ols)
bptest (cl.ols)
coeftest (cl.ols, vcov = vcovHC)
summary (cl.ols)

# Table 10, Column 1

# Create variable measuring quartile of effective number of parties in government, for
observations with available data on other covariates

# Remove observations with missing values on covariates

evd2 = subset (evd, is.na (DGDP_0) == FALSE & is.na (PctCE_t1) == FALSE & is.na
(DPctCE_1) == FALSE & is.na (nQCE) == FALSE)

# Create factor variables measuring effective number of parties in government and ratio of
effective number of parties in government to parliament

evd2 = evd2 [order (evd2$enpg_0),]

evd2$enpq = as.factor (c(rep(1,166), rep(2,62), rep(3,62), rep(4,62)))

evd2 = evd2 [order (evd2$rgp_0),]

evd2$gpq = as.factor (c(rep(1,88), rep(2,88), rep(3,88), rep(4,88)))

# Column 1 Regressions

enp.ols = plm (DPctCE ~ DGDP_0*enpq + PctCE_t1 + DPctCE_1 + nQCE, data = evd2, model
= "pooling")

enp.cfe = plm (DPctCE ~ DGDP_0*enpq + PctCE_t1 + DPctCE_1 + nQCE, data = evd2, model
= "within", effect = "individual")
```

```
enp.yfe = plm (DPctCE ~ DGDP_0*enpq + PctCE_t1 + DPctCE_1 + nQCE, data = evd2, model
= "within", effect = "time")

pFtest (enp.cfe, enp.ols)
pFtest (enp.yfe, enp.ols)
bptest (enp.cfe)
coeftest (enp.cfe, vcov = vcovHC)
summary (enp.cfe)

# Table 10, Column 2

gpq.ols = plm (DPctCE ~ DGDP_0*gpq + PctCE_t1 + DPctCE_1 + nQCE, data = evd2, model =
"pooling")

gpq.cfe = plm (DPctCE ~ DGDP_0*gpq + PctCE_t1 + DPctCE_1 + nQCE, data = evd2, model
= "within", effect = "individual")

gpq.yfe = plm (DPctCE ~ DGDP_0*gpq + PctCE_t1 + DPctCE_1 + nQCE, data = evd2, model
= "within", effect = "time")

pFtest (gpq.cfe, gpq.ols)
pFtest (gpq.yfe, gpq.ols)
bptest (gpq.cfe)
summary (gpq.cfe)

# Table 10, Column 3

pc.ols = plm (DPctCE ~ DGDP_0*enpq + DGDP_0*gpq + PctCE_t1 + DPctCE_1 + nQCE, data
= evd2, model = "pooling")

pc.cfe = plm (DPctCE ~ DGDP_0*enpq + DGDP_0*gpq + PctCE_t1 + DPctCE_1 + nQCE, data
= evd2, model = "within", effect = "individual")

pc.yfe = plm (DPctCE ~ DGDP_0*enpq + DGDP_0*gpq + PctCE_t1 + DPctCE_1 + nQCE, data
= evd2, model = "within", effect = "time")

pFtest (pc.cfe, pc.ols)
pFtest (pc.yfe, pc.ols)
bptest (pc.cfe)
summary (pc.cfe)
```

```
# Table 11, Column 1

epg.ols = plm (DPctCE ~ enpg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"pooling")

epg.cfe = plm (DPctCE ~ enpg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "individual")

epg.yfe = plm (DPctCE ~ enpg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "time")

pFtest (epg.cfe, epg.ols)
pFtest (epg.yfe, epg.ols)
bptest (epg.ols)
coeftest (epg.ols, vcov = vcovHC)
summary (epg.ols)

# Table 11, Column 2

epp.ols = plm (DPctCE ~ enpp_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"pooling")

epp.cfe = plm (DPctCE ~ enpp_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "individual")

epp.yfe = plm (DPctCE ~ enpp_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "time")

pFtest (epp.cfe, epp.ols)
pFtest (epp.yfe, epp.ols)
bptest (epp.ols)
coeftest (epp.ols, vcov = vcovHC)
summary (epp.ols)

# Table 11, Column 3

enp.ols = plm (DPctCE ~ enpp_0 + enpg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model
= "pooling")
```

```
enp.cfe = plm (DPctCE ~ enpp_0 + enpg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model
= "within", effect = "individual")

enp.yfe = plm (DPctCE ~ enpp_0 + enpg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model
= "within", effect = "time")

pFtest (enp.cfe, enp.ols)
pFtest (enp.yfe, enp.ols)
bptest (enp.ols)
coeftest (epp.ols, vcov = vcovHC)
summary (epp.ols)

# Table 12, Column 1

min.ols = plm (DPctCE ~ Min_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"pooling")

min.cfe = plm (DPctCE ~ Min_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "individual")

min.yfe = plm (DPctCE ~ Min_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "time")

pFtest (min.cfe, min.ols)
pFtest (min.yfe, min.ols)
bptest (min.cfe)
coeftest (min.cfe, vcov = vcovHC)
summary (min.cfe)

# Table 12, Column 2

coal.ols = plm (DPctCE ~ Coal_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"pooling")

coal.cfe = plm (DPctCE ~ Coal_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "individual")

coal.yfe = plm (DPctCE ~ Coal_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"within", effect = "time")
```

```
pFtest (coal.cfe, coal.ols)
pFtest (coal.yfe, coal.ols)
bptest (coal.cfe)
coeftest (coal.cfe, vcov = vcovHC)
summary (coal.cfe)

# Table 12, Column 3

np.ols = plm (DPctCE ~ npg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model =
"pooling")

np.cfe = plm (DPctCE ~ npg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model = "within",
effect = "individual")

np.yfe = plm (DPctCE ~ npg_0 + PctCE_t1 + DPctCE_1 + nQCE, data = evd, model = "within",
effect = "time")

pFtest (np.cfe, np.ols)
pFtest (np.yfe, np.ols)
bptest (np.ols)
coeftest (coal.cfe, vcov = vcovHC)
summary (coal.cfe)

# Table 12, Column 4

mcn.ols = plm (DPctCE ~ Min_gov + Coal_gov + npg_0 + PctCE_t1 + DPctCE_1 + nQCE, data
= evd, model = "pooling")

mcn.cfe = plm (DPctCE ~ Min_gov + Coal_gov + npg_0 + PctCE_t1 + DPctCE_1 + nQCE, data
= evd, model = "within", effect = "individual")

mcn.yfe = plm (DPctCE ~ Min_gov + Coal_gov + npg_0 + PctCE_t1 + DPctCE_1 + nQCE, data
= evd, model = "within", effect = "time")

pFtest (mcn.cfe, mcn.ols)
pFtest (mcn.yfe, mcn.ols)
bptest (mcn.cfe)
coeftest (mcn.ols, vcov = vcovHC)
summary (mcn.ols)
```

```
# Table 13, Column 1

ym.ols = plm (DPctCE ~ DGDP_0*Min_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd,
model = "pooling")

ym.cfe = plm (DPctCE ~ DGDP_0*Min_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd,
model = "within", effect = "individual")

ym.yfe = plm (DPctCE ~ DGDP_0*Min_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd,
model = "within", effect = "time")

pFtest (ym.cfe, ym.ols)
pFtest (ym.yfe, ym.ols)
bptest (ym.cfe)
coeftest (ym.cfe, vcov = vcovHC)
summary (ym.cfe)

# Table 13, Column 2

yc.ols = plm (DPctCE ~ DGDP_0*Coal_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd,
model = "pooling")

yc.cfe = plm (DPctCE ~ DGDP_0*Coal_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd,
model = "within", effect = "individual")

yc.yfe = plm (DPctCE ~ DGDP_0*Coal_gov + PctCE_t1 + DPctCE_1 + nQCE, data = evd,
model = "within", effect = "time")

pFtest (yc.cfe, yc.ols)
pFtest (yc.yfe, yc.ols)
bptest (yc.cfe)
coeftest (yc.cfe, vcov = vcovHC)
summary (yc.cfe)

# Table 13, Column 3

ymc.ols = plm (DPctCE ~ DGDP_0*Min_gov + DGDP_0*Coal_gov + PctCE_t1 + DPctCE_1 +
nQCE, data = evd, model = "pooling")
```

```
ymc.cfe = plm (DPctCE ~ DGDP_0*Min_gov + DGDP_0*Coal_gov + PctCE_t1 + DPctCE_1 +
nQCE, data = evd, model = "within", effect = "individual")

ymc.yfe = plm (DPctCE ~ DGDP_0*Min_gov + DGDP_0*Coal_gov + PctCE_t1 + DPctCE_1 +
nQCE, data = evd, model = "within", effect = "time")

pFtest (ymc.cfe, ymc.ols)
pFtest (ymc.yfe, ymc.ols)
bptest (ymc.cfe)
coeftest (ymc.cfe, vcov = vcovHC)
summary (ymc.cfe)

# Table 14

aus = subset (evd, Country == "Australia")
summary (plm (DPctCE ~ DGDP_0, data = aus, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = aus, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = aus, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = aus, model = "pooling"))

aut = subset (evd, Country == "Austria")
summary (plm (DPctCE ~ DGDP_0, data = aut, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = aut, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = aut, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = aut, model = "pooling"))

bel = subset (evd, Country == "Belgium")
summary (plm (DPctCE ~ DGDP_0, data = bel, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = bel, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = bel, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = bel, model = "pooling"))

can = subset (evd, Country == "Canada")
summary (plm (DPctCE ~ DGDP_0, data = can, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = can, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = can, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = can, model = "pooling"))

cze = subset (evd, Country == "Czech Republic")
summary (plm (DPctCE ~ DGDP_0, data = cze, model = "pooling"))
```

```
summary (plm (DPctCE ~ DGDPPC_0, data = cze, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = cze, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = cze, model = "pooling"))

dnk = subset (evd, Country == "Denmark")
summary (plm (DPctCE ~ DGDP_0, data = dnk, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = dnk, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = dnk, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = dnk, model = "pooling"))

est = subset (evd, Country == "Estonia")
summary (plm (DPctCE ~ DGDP_0, data = est, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = est, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = est, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = est, model = "pooling"))

fin = subset (evd, Country == "Finland")
summary (plm (DPctCE ~ DGDP_0, data = fin, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = fin, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = fin, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = fin, model = "pooling"))

fra = subset (evd, Country == "France")
summary (plm (DPctCE ~ DGDP_0, data = fra, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = fra, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = fra, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = fra, model = "pooling"))

ger = subset (evd, Country == "Germany")
summary (plm (DPctCE ~ DGDP_0, data = ger, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = ger, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = ger, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = ger, model = "pooling"))

gre = subset (evd, Country == "Greece")
summary (plm (DPctCE ~ DGDP_0, data = gre, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = gre, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = gre, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = gre, model = "pooling"))
```

```
hun = subset (evd, Country == "Hungary")
summary (plm (DPctCE ~ DGDP_0, data = hun, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = hun, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = hun, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = hun, model = "pooling"))

isl = subset (evd, Country == "Iceland")
summary (plm (DPctCE ~ DGDP_0, data = isl, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = isl, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = isl, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = isl, model = "pooling"))

irl = subset (evd, Country == "Ireland")
summary (plm (DPctCE ~ DGDP_0, data = irl, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = irl, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = irl, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = irl, model = "pooling"))

isr = subset (evd, Country == "Israel")
summary (plm (DPctCE ~ DGDP_0, data = isr, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = isr, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = isr, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = isr, model = "pooling"))

ita = subset (evd, Country == "Italy")
summary (plm (DPctCE ~ DGDP_0, data = ita, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = ita, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = ita, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = ita, model = "pooling"))

jpn = subset (evd, Country == "Japan")
summary (plm (DPctCE ~ DGDP_0, data = jpn, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = jpn, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = jpn, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = jpn, model = "pooling"))

kor = subset (evd, Country == "Korea")
summary (plm (DPctCE ~ DGDP_0, data = kor, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = kor, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = kor, model = "pooling"))
```

```
summary (plm (DPctCE ~ DGDPPC_trm, data = kor, model = "pooling"))

lux = subset (evd, Country == "Luxembourg")
summary (plm (DPctCE ~ DGDP_0, data = lux, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = lux, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = lux, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = lux, model = "pooling"))

nld = subset (evd, Country == "Netherlands")
summary (plm (DPctCE ~ DGDP_0, data = nld, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = nld, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = nld, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = nld, model = "pooling"))

nzl = subset (evd, Country == "New Zealand")
summary (plm (DPctCE ~ DGDP_0, data = nzl, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = nzl, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = nzl, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = nzl, model = "pooling"))

nor = subset (evd, Country == "Norway")
summary (plm (DPctCE ~ DGDP_0, data = nor, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = nor, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = nor, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = nor, model = "pooling"))

pol = subset (evd, Country == "Poland")
summary (plm (DPctCE ~ DGDP_0, data = pol, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = pol, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = pol, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = pol, model = "pooling"))

prt = subset (evd, Country == "Portugal")
summary (plm (DPctCE ~ DGDP_0, data = prt, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = prt, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = prt, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = prt, model = "pooling"))

svk = subset (evd, Country == "Slovakia")
summary (plm (DPctCE ~ DGDP_0, data = svk, model = "pooling"))
```

```
summary (plm (DPctCE ~ DGDPPC_0, data = svk, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = svk, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = svk, model = "pooling"))

svn = subset (evd, Country == "Slovenia")
summary (plm (DPctCE ~ DGDP_0, data = svn, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = svn, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = svn, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = svn, model = "pooling"))

esp = subset (evd, Country == "Spain")
summary (plm (DPctCE ~ DGDP_0, data = esp, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = esp, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = esp, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = esp, model = "pooling"))

swe = subset (evd, Country == "Sweden")
summary (plm (DPctCE ~ DGDP_0, data = swe, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = swe, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = swe, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = swe, model = "pooling"))

uk = subset (evd, Country == "United Kingdom")
summary (plm (DPctCE ~ DGDP_0, data = uk, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = uk, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = uk, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = uk, model = "pooling"))

us = subset (evd, Country == "United States")
summary (plm (DPctCE ~ DGDP_0, data = us, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0, data = us, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm, data = us, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm, data = us, model = "pooling"))

# Table 15

old = subset (evd, Ndem_t2 == 0)
new = subset (evd, Ndem_t2 == 1)
```

```
summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = old, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = old, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = old, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = old, model = "pooling"))

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = new, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = new, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = new, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = new, model = "pooling"))

fed = subset (evd, Country == "Australia" | Country == "Austria" | Country == "Belgium" | Country == "Canada" | Country == "Germany" | Country == "United States")

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = fed, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = fed, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = fed, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = fed, model = "pooling"))

uni = subset (evd, Country != "Australia" & Country != "Austria" & Country != "Belgium" & Country != "Canada" & Country != "Germany" & Country != "United States")

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = uni, model = "pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = uni, model = "pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = uni, model = "pooling"))
```

```
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = uni, model =
"pooling"))

eur = subset (evd, euro_t2 == 1)

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))

neur = subset (evd, euro_t2 == 0)

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = eur, model =
"pooling"))

# Table 16

p70 = subset (evd, t2 < 1970)
y70s = subset (evd, t2 >= 1970 & t2 < 1980)
y80s = subset (evd, t2 >= 1980 & t2 < 1990)
y90s = subset (evd, t2 >= 1990 & t2 < 2000)
y0007 = subset (evd, t2 >= 2000 & t2 < 2008)
y0815 = subset (evd, t2 >= 2008 & t2 < 2016)

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = p70, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = p70, model =
"pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = p70, model =
"pooling"))
```

```
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = p70, model =
"pooling"))

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y70s, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y70S, model =
"pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y70s, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y70s, model
= "pooling"))

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y80s, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y80S, model =
"pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y80s, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y80s, model
= "pooling"))

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y90s, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y90S, model =
"pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y90s, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y90s, model
= "pooling"))

summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y0007, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y0007, model
= "pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y0007, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y0007,
model = "pooling"))
```

```
summary (plm (DPctCE ~ DGDP_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y0815, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_0 + PctCE_t1 + DPctCE_1 + nQCE, data = y0815, model
= "pooling"))
summary (plm (DPctCE ~ DGDP_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y0815, model =
"pooling"))
summary (plm (DPctCE ~ DGDPPC_trm + PctCE_t1 + DPctCE_1 + nQCE, data = y0815,
model = "pooling"))
```

Chapter Four

```
# Set working directory

setwd("C:/Users/pat_donnelly/Dropbox/Documents/Dissertation")

# Load and attach data

evd = read.csv ('Economic Voting Data.csv')
attach (evd)

# Required package

library (plm)

# Table 3, Column 1

bd1 = glm (Reelect ~ BALCH_trm + DNL_0 + DGDPPC_trm + Ndem_t2 + Maj_t2, data = evd,
family = "binomial")

coeftest (bd1, vcov = vcovHC)
summary (bd1)

# Table 3, Column 2

bd2 = glm (Reelect ~ BALCH_trm + DNL_0 + DGDPPC_trm + Ndem_t2 + Maj_t2 + Country,
data = evd, family = "binomial")

coeftest (bd2, vcov = vcovHC)
```

```
summary (bd2)

# Table 3, Column 3

bd3 = plm (DPctCE ~ BALCH_trm + DNL_0 + DGDPPC_trm + Ndem_t2 + Maj_t2 +
PctCE_t1, data = evd, model = "within", effect = "individual")

coeftest (bd3, vcov = vcovHC)
summary (bd3)

# Table 4, Column 4

bd4 = glm (Reelect ~ BALCH_trm + DNL_0 + DGDPPC_trm + DGDPPC_0 + Ndem_t2 +
Maj_t2, data = evd, family = "binomial")

coeftest (bd4, vcov = vcovHC)
summary (bd4)

# Table 4, Column 5

bd5 = plm (DPctCE ~ BALCH_trm + DNL_0 + DGDPPC_trm + DGDPPC_0 + Ndem_t2 +
Maj_t2 + PctCE_t1, data = evd, model = "within", effect = "individual")

coeftest (bd5, vcov = vcovHC)
summary (bd5)

# Table 4, Column 6

bd6 = glm (Reelect ~ BALCH_trm + DNL_0 + DGDPPC_trm + GDPD_trend_ey + Ndem_t2 +
Maj_t2, data = evd, family = "binomial")

coeftest (bd6, vcov = vcovHC)
summary (bd6)

# Table 4, Column 7

bd7 = plm (DPctCE ~ BALCH_trm + DNL_0 + DGDPPC_trm + GDPD_trend_ey + Ndem_t2 +
Maj_t2 + PctCE_t1, data = evd, model = "within", effect = "individual")

coeftest (bd7, vcov = vcovHC)
```

```
summary (bd7)

# Table 5, Column 8

bd8 = glm (Reelect ~ DNL_0 + DGDPPC_trm + BALCH_termPey + Ndem_t2 + Maj_t2, data =
evd, family = "binomial")

coeftest (bd8, vcov = vcovHC)
summary (bd8)

# Table 5, Column 9

bd9 = plm (DPctCE ~ DNL_0 + DGDPPC_trm + BALCH_termPey + Ndem_t2 + Maj_t2 +
PctCE_t1, data = evd, model = "within", effect = "individual")

coeftest (bd9, vcov = vcovHC)
summary (bd9)

# Table 5, Column 10

bd10 = glm (Reelect ~ BALCH_trm + DNL_0 + DGDPPC_trm + BTxDS + DNL0xDS +
Ndem_t2 + Maj_t2, data = evd, family = "binomial")

coeftest (bd10, vcov = vcovHC)
summary (bd10)

# Table 5, Column 11

bd11 = plm (DPctCE ~ BALCH_trm + DNL_0 + DGDPPC_trm + BTxDS + DNL0xDS +
Ndem_t2 + Maj_t2 + PctCE_t1, data = evd, model = "within", effect = "individual")

coeftest (bd11, vcov = vcovHC)
summary (bd11)

# Table 6, Column 1

ny1 = lm (Reelect ~ DCANL_trm + DUNP_trm + DDGDP_trm + DGDP_trm + Rwing, data =
evd, family = "binomial")

coeftest (ny1, vcov = vcovHC)
```

```
summary (ny1)

# Table 6, Column 2

ny2 = plm (DPctCE ~ DNL_trm + Rwing, data = evd, model = "pooling")

coeftest (ny2, vcov = vcovHC)
summary (ny2)

# Table 6, Column 3

ny3 = plm (DPctCE ~ DNL_trm + DUNP_trm + DDGDP_trm + DGDP_trm + Rwing, data =
evd, model = "pooling")

coeftest (ny3, vcov = vcovHC)
summary (ny3)

# Table 6, Column 4

ny4 = plm (DPctCE ~ DCANL_trm + DUNP_trm + DDGDP_trm + DGDP_trm + Rwing, data =
evd, model = "pooling")

coeftest (ny4, vcov = vcovHC)
summary (ny4)

# Table 7, Column 1

tl1 = plm (DPctCE ~ DNL_trm + DGDP_trm, data = evd, model = "within", effect =
"individual")

coeftest (tl1, vcov = vcovHC)
summary (tl1)

# Table 7, Column 2

tl2 = plm (DPctCE ~ DNL_trm + DGDP_trm + DUNP_trm + INF_avg + PctCE_t1 + nQCE +
Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (tl2, vcov = vcovHC)
```

```
summary (tl2)

# Table 7, Column 3

tl3 = plm (DPctCE ~ DCANL_trm, data = evd, model = "within", effect = "individual")

coeftest (tl3, vcov = vcovHC)
summary (tl3)

# Table 7, Column 4

tl4 = plm (DPctCE ~ DCANL_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 +
Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (tl4, vcov = vcovHC)
summary (tl4)

# Table 7, Column 5

tl5 = plm (DPctCE ~ DCANL_trm + DGDP_trm + DUNP_trm + INF_avg + PctCE_t1 + nQCE
+ Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect
= "individual")

coeftest (tl5, vcov = vcovHC)
summary (tl5)

# Table 8, Column 1

ey1 = plm (DPctCE ~ DNL_0 + DGDP_0, data = evd, model = "within", effect = "individual")

coeftest (ey1, vcov = vcovHC)
summary (ey1)

# Table 8, Column 2

ey2 = plm (DPctCE ~ DNL_0 + DGDP_0 + DUNP_0 + INF_0 + DNL_trm + DGDP_trm +
DUNP_trm + INF_avg + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 +
Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (ey2, vcov = vcovHC)
```

```
summary (ey2)

# Table 8, Column 3

ey3 = plm (DPctCE ~ DCANL_0, data = evd, model = "within", effect = "individual")

coeftest (ey3, vcov = vcovHC)
summary (ey3)

# Table 8, Column 4

ey4 = plm (DPctCE ~ DCANL_0 + DCANL_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov +
Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (ey4, vcov = vcovHC)
summary (ey4)

# Table 8, Column 5

ey5 = plm (DPctCE ~ DCANL_0 + DGDP_0 + DUNP_0 + INF_0 + DCANL_trm + DGDP_trm
+ DUNP_trm + INF_avg + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 +
Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (ey5, vcov = vcovHC)
summary (ey5)

# Table 9, Column 1

dl1 = plm (DPctCE ~ DNL_0 + DGDP_0 + PctCE_t1 + nQCE + Coal_gov + Maj_gov +
Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (dl1, vcov = vcovHC)
summary (dl1)

# Table 9, Column 2

dl2 = plm (DPctCE ~ DNL_0 + DNL_1 + DGDP_0 + DGDP_1 + PctCE_t1 + nQCE + Coal_gov
+ Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")
```

```
coeftest (dl2, vcov = vcovHC)
summary (dl2)

# Table 9, Column 3

dl3 = plm (DPctCE ~ DNL_0 + DNL_1 + DNL_2 + DGDP_0 + DGDP_1 + DGDP_2 +
PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd,
model = "within", effect = "individual")

coeftest (dl3, vcov = vcovHC)
summary (dl3)

# Table 9, Column 4

dl4 = plm (DPctCE ~ DNL_0 + DNL_1 + DNL_2 + DNL_3 + DGDP_0 + DGDP_1 + DGDP_2
+ DGDP_3 + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2,
data = evd, model = "within", effect = "individual")

coeftest (dl4, vcov = vcovHC)
summary (dl4)

# Table 9, Column 5

dl4 = plm (DPctCE ~ DCANL_0 + DCANL_1 + PctCE_t1 + nQCE + Coal_gov + Maj_gov +
Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (dl4, vcov = vcovHC)
summary (dl4)

# Table 10, Column 1

dc1 = plm (DPctCE ~ DCANL_0 + DCANL_1 + DCANL_2 + PctCE_t1 + nQCE + Coal_gov +
Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (dc1, vcov = vcovHC)
summary (dc1)

# Table 10, Column 2
```

```
dc2 = plm (DPctCE ~ DCANL_0 + DCANL_1 + DCANL_2 + DCANL_3 + PctCE_t1 + nQCE
+ Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect
= "individual")

coeftest (dc2, vcov = vcovHC)
summary (dc2)

# Table 10, Column 3

dc3 = plm (DPctCE ~ DCANL_0 + DCANL_1 + DGDP_0 + DGDP_1 + PctCE_t1 + nQCE +
Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (dc3, vcov = vcovHC)
summary (dc3)

# Table 10, Column 4

dc4 = plm (DPctCE ~ DCANL_0 + DCANL_1 + DCANL_2 + DGDP_0 + DGDP_1 + DGDP_2
+ PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd,
model = "within", effect = "individual")

coeftest (dc4, vcov = vcovHC)
summary (dc4)

# Table 10, Column 5

dc5 = plm (DPctCE ~ DCANL_0 + DCANL_1 + DCANL_2 + DCANL_3 + DGDP_0 +
DGDP_1 + DGDP_2 + DGDP_3 + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 +
Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (dc5, vcov = vcovHC)
summary (dc5)

# Table 11, Column 1

re1 = plm (DPctCE ~ DREC_trm + DGDP_trm, data = evd, model = "within", effect =
"individual")

coeftest (re1, vcov = vcovHC)
```

```
summary (re1)

# Table 11, Column 2

re2 = plm (DPctCE ~ DDIS_trm + DGDP_trm, data = evd, model = "within", effect =
"individual")

coeftest (re2, vcov = vcovHC)
summary (re2)

# Table 11, Column 3

re3 = plm (DPctCE ~ DREC_trm + DDIS_trm + DGDP_trm, data = evd, model = "within",
effect = "individual")

coeftest (re3, vcov = vcovHC)
summary (re3)

# Table 11, Column 4

re4 = plm (DPctCE ~ DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1 + nQCE + Coal_gov +
Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (re4, vcov = vcovHC)
summary (re4)

# Table 11, Column 5

re5 = plm (DPctCE ~ DREC_trm + DDIS_trm + DGDP_trm + DREC_0 + DDIS_0 + DGDP_0
+ PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd,
model = "within", effect = "individual")

coeftest (re5, vcov = vcovHC)
summary (re5)

# Table 12, Column 1

rd1 = plm (DPctCE ~ DREC_0 + DDIS_0 + DGDP_0, data = evd, model = "within", effect =
"individual")
```

```
coeftest (rd1, vcov = vcovHC)
summary (rd1)

# Table 12, Column 2

rd2 = plm (DPctCE ~ DREC_0 + DDIS_0 + DGDP_0 + PctCE_t1 + nQCE + Coal_gov +
Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (rd2, vcov = vcovHC)
summary (rd2)

# Table 12, Column 3

rd3 = plm (DPctCE ~ DREC_0 + DDIS_0 + DGDP_0 + DREC_1 + DDIS_1 + DGDP_1 +
PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd,
model = "within", effect = "individual")

coeftest (rd3, vcov = vcovHC)
summary (rd3)

# Table 12, Column 4

rd4 = plm (DPctCE ~ DREC_0 + DDIS_0 + DGDP_0 + DREC_1 + DDIS_1 + DGDP_1 +
DREC_2 + DDIS_2 + DGDP_2 + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 +
Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (rd4, vcov = vcovHC)
summary (rd4)

# Table 12, Column 5

rd5 = plm (DPctCE ~ DREC_0 + DDIS_0 + DGDP_0 + DREC_1 + DDIS_1 + DGDP_1 +
DREC_2 + DDIS_2 + DGDP_2 + DREC_3 + DDIS_3 + DGDP_3 + PctCE_t1 + nQCE +
Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (rd5, vcov = vcovHC)
summary (rd5)
```

```
# Table 13, Column 1

se1 = plm (DPctCE ~ DSX_trm + DGDP_trm, data = evd, model = "within", effect =
"individual")

coeftest (se1, vcov = vcovHC)
summary (se1)

# Table 13, Column 2

se2 = plm (DPctCE ~ DSX_trm + DREC_trm + DGDP_trm, data = evd, model = "within", effect
= "individual")

coeftest (se2, vcov = vcovHC)
summary (se2)

# Table 13, Column 3

se3 = plm (DPctCE ~ DSX_trm + DREC_trm + DDIS_trm + DGDP_trm, data = evd, model =
"within", effect = "individual")

coeftest (se3, vcov = vcovHC)
summary (se3)

# Table 13, Column 4

se4 = plm (DPctCE ~ DSX_trm + DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1 + nQCE +
Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (se4, vcov = vcovHC)
summary (se4)

# Table 13, Column 5

se5 = plm (DPctCE ~ DSX_trm + DREC_trm + DDIS_trm + DGDP_trm + DSX_0 + DREC_0 +
DDIS_0 + DGDP_0 + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing
+ t2, data = evd, model = "within", effect = "individual")
```

```
coeftest (se5, vcov = vcovHC)
summary (se5)

# Table 14, Column 1

sy1 = plm (DPctCE ~ DSX_0 + DREC_0 + DDIS_0 + DGDP_0, data = evd, model = "within",
effect = "individual")

coeftest (sy1, vcov = vcovHC)
summary (sy1)

# Table 14, Column 2

sy2 = plm (DPctCE ~ DSX_0 + DREC_0 + DDIS_0 + DGDP_0 + PctCE_t1 + nQCE +
Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (sy2, vcov = vcovHC)
summary (sy2)

# Table 14, Column 3

sy3 = plm (DPctCE ~ DSX_0 + DREC_0 + DDIS_0 + DGDP_0 + DSX_1 + DREC_1 +
DDIS_1 + DGDP_1 + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing
+ t2, data = evd, model = "within", effect = "individual")

coeftest (sy3, vcov = vcovHC)
summary (sy3)

# Table 14, Column 4

sy4 = plm (DPctCE ~ DSX_0 + DREC_0 + DDIS_0 + DGDP_0 + DSX_1 + DREC_1 +
DDIS_1 + DGDP_1 + DSX_2 + DREC_2 + DDIS_2 + DGDP_2 + PctCE_t1 + nQCE +
Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (sy4, vcov = vcovHC)
summary (sy4)

# Table 14, Column 5
```

```
sy5 = plm (DPctCE ~ DSX_0 + DREC_0 + DDIS_0 + DGDP_0 + DSX_1 + DREC_1 +
DDIS_1 + DGDP_1 + DSX_2 + DREC_2 + DDIS_2 + DGDP_2 + DSX_3 + DREC_3 +
DDIS_3 + DGDP_3 + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + Rwing
+ t2, data = evd, model = "within", effect = "individual")

coeftest (sy5, vcov = vcovHC)
summary (sy5)

# Table 15, Column 1

iy1 = plm (DPctCE ~ DNL_0*Coal_gov + DGDP_0 + DNL_trm + DGDP_trm + PctCE_t1 +
nQCE + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (iy1, vcov = vcovHC)
summary (iy1)

# Table 15, Column 2

iy2 = plm (DPctCE ~ DNL_0*Maj_gov + DGDP_0 + DNL_trm + DGDP_trm + PctCE_t1 +
nQCE + Coal_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (iy2, vcov = vcovHC)
summary (iy2)

# Table 15, Column 3

iy3 = plm (DPctCE ~ DNL_0*Maj_t2 + DGDP_0 + DNL_trm + DGDP_trm + PctCE_t1 +
nQCE + Maj_gov + Coal_gov + Ndem_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (iy3, vcov = vcovHC)
summary (iy3)

# Table 15, Column 4
```

```
iy4 = plm (DPctCE ~ DNL_0*Ndem_t2 + DGDP_0 + DNL_trm + DGDP_trm + PctCE_t1 +
nQCE + Maj_gov + Coal_gov + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (iy4, vcov = vcovHC)
summary (iy4)

# Table 15, Column 5

iy5 = plm (DPctCE ~ DNL_0*Rwing + DGDP_0 + DNL_trm + DGDP_trm + PctCE_t1 + nQCE
+ Maj_gov + Coal_gov + Ndem_t2 + Maj_t2 + t2, data = evd, model = "within", effect =
"individual")

coeftest (iy5, vcov = vcovHC)
summary (iy5)

# Table 16, Column 1

is1 = plm (DPctCE ~ DCANL_0*Coal_gov + DCANL_trm + PctCE_t1 + nQCE + Maj_gov +
Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (is1, vcov = vcovHC)
summary (is1)

# Table 16, Column 2

is2 = plm (DPctCE ~ DCANL_0*Maj_gov + DCANL_trm + PctCE_t1 + nQCE + Coal_gov +
Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (is2, vcov = vcovHC)
summary (is2)

# Table 16, Column 3

is3 = plm (DPctCE ~ DCANL_0*Maj_t2 + DCANL_trm + PctCE_t1 + nQCE + Maj_gov +
Coal_gov + Ndem_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (is3, vcov = vcovHC)
summary (is3)
```

```
# Table 16, Column 4

is4 = plm (DPctCE ~ DCANL_0*Ndem_t2 + DCANL_trm + PctCE_t1 + nQCE + Maj_gov +
Coal_gov + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (is4, vcov = vcovHC)
summary (is4)

# Table 16, Column 5

is5 = plm (DPctCE ~ DCANL_0*Rwing + DCANL_trm + PctCE_t1 + nQCE + Coal_gov +
Maj_gov + Ndem_t2 + Maj_t2 + t2, data = evd, model = "within", effect = "individual")

coeftest (is5, vcov = vcovHC)
summary (is5)

# Table 17, Column 1

id1 = plm (DPctCE ~ DDIS_0*Coal_gov + DREC_0 + DGDP_0 + DDIS_trm + DREC_trm +
DGDP_trm + PctCE_t1 + nQCE + Maj_gov + Ndem_t2 + Rwing + Maj_t2 + t2, data = evd,
model = "within", effect = "individual")

coeftest (id1, vcov = vcovHC)
summary (id1)

# Table 17, Column 2

id2 = plm (DPctCE ~ DDIS_0*Maj_gov + DREC_0 + DGDP_0 + DDIS_trm + DREC_trm +
DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Ndem_t2 + Rwing + Maj_t2 + t2, data = evd,
model = "within", effect = "individual")

coeftest (id2, vcov = vcovHC)
summary (id2)

# Table 17, Column 3

id3 = plm (DPctCE ~ DDIS_0*Maj_t2 + DREC_0 + DGDP_0 + DDIS_trm + DREC_trm +
DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Rwing + t2, data = evd,
model = "within", effect = "individual")
```

```
coeftest (id3, vcov = vcovHC)
summary (id3)

# Table 17, Column 4

id4 = plm (DPctCE ~ DDIS_0*Ndem_t2 + DREC_0 + DGDP_0 + DDIS_trm + DREC_trm +
DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Maj_t2 + Rwing + t2, data = evd,
model = "within", effect = "individual")

coeftest (id4, vcov = vcovHC)
summary (id4)

# Table 17, Column 5

id5 = plm (DPctCE ~ DDIS_0*Rwing + DREC_0 + DGDP_0 + DDIS_trm + DREC_trm +
DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + t2, data = evd,
model = "within", effect = "individual")

coeftest (id5, vcov = vcovHC)
summary (id5)

# Table 18, Column 1

is1 = plm (DPctCE ~ DSX_trm*Coal_gov + DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1
+ nQCE + Maj_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (is1, vcov = vcovHC)
summary (is1)

# Table 18, Column 2

is2 = plm (DPctCE ~ DSX_trm*Maj_gov + DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1 +
nQCE + Coal_gov + Ndem_t2 + Maj_t2 + Rwing + t2, data = evd, model = "within", effect =
"individual")

coeftest (is2, vcov = vcovHC)
summary (is2)

# Table 18, Column 3
```

```
is3 = plm (DPctCE ~ DSX_trm*Maj_t2 + DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (is3, vcov = vcovHC)
summary (is3)

# Table 18, Column 4

is4 = plm (DPctCE ~ DSX_trm*Ndem_t2 + DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Maj_t2 + Rwing + t2, data = evd, model = "within", effect = "individual")

coeftest (is4, vcov = vcovHC)
summary (is4)

# Table 18, Column 5

is5 = plm (DPctCE ~ DSX_trm*Rwing + DREC_trm + DDIS_trm + DGDP_trm + PctCE_t1 + nQCE + Coal_gov + Maj_gov + Ndem_t2 + Maj_t2 + t2, data = evd, model = "within", effect = "individual")

coeftest (is5, vcov = vcovHC)
summary (is5)
```

Chapter Five

```
# Set working directory

setwd("C:/Users/pat_donnelly/Dropbox/Documents/Dissertation")

# Load data

ad = read.csv ('Annual Data.csv')

# Required packages
```

```
library (lmtest)
library (plm)

# Convert DPGEN from percentages to basis points

gc$DPGEN = 100*gc$DPGEN

# Create variable measuring change in old-age dependency ratio

ad$doadr = ad$oadr_0 - ad$oadr_1

# Lag variables by one year

ad ['tenyr_1'] = c (NA, head (ad ['tenyr'], dim(ad)[1] - 1)[[1]])

ad ['DGDP_1'] = c (NA, head (ad ['DGDP'], dim(ad)[1] - 1)[[1]])

ad ['doadr_1'] = c (NA, head (ad ['doadr'], dim(ad)[1] - 1)[[1]])

ad ['DTrade_gdp_1'] = c (NA, head (ad ['DTrade_gdp'], dim(ad)[1] - 1)[[1]])

ad ['DPGEN_1'] = c (NA, head (ad ['DPGEN'], dim(ad)[1] - 1)[[1]])

# Define government cohesion variable

# Compute differences between ideology of party of chief executive and ideology of junior
coalition partners and supporting parties, for all junior coalition partners and supporting parties.

ad$dif1 = abs (ad$Rile_CE - ad$Rile_CP1)
ad$dif2 = abs (ad$Rile_CE - ad$Rile_CP2)
ad$dif3 = abs (ad$Rile_CE - ad$Rile_CP3)
ad$dif4 = abs (ad$Rile_CE - ad$Rile_CP4)
ad$dif5 = abs (ad$Rile_CE - ad$Rile_CP5)
ad$dif6 = abs (ad$Rile_CE - ad$Rile_CP6)
ad$dif7 = abs (ad$Rile_CE - ad$Rile_CP7)
ad$difs1 = abs (ad$Rile_CE - ad$Rile_SP1)
ad$difs2 = abs (ad$Rile_CE - ad$Rile_SP2)
ad$difs3 = abs (ad$Rile_CE - ad$Rile_SP3)
ad$difs4 = abs (ad$Rile_CE - ad$Rile_SP4)
ad$difrs = abs (ad$Rile_CE - ad$Rile_RSP)
```

```
# Remove observations from data frame where Rile_CE == NA. Create copy of new data frame.

gc = subset (ad, ad$Rile_CE > 0 | ad$Rile_CE < 0 | ad$Rile_CE == 0)
gc2 = gc

# Replace NAs with 0s for new data frame 'gc2'

gc2 [is.na (gc2)] = 0

# Compute variable measuring aggregate ideological distance. Append to 'gc'.

gc$dist = gc2$dif1 + gc2$dif1 + gc2$dif2 + gc2$dif3 + gc2$dif4 + gc2$dif5 + gc2$dif6 +
gc2$dif7 + gc2$difs1 + gc2$difs2 + gc2$difs3 + gc2$difs4 + gc2$difrs

# Remove NAs for change in pension generosity from 'gc'

gc = subset (gc, gc$DPGEN > 0 | gc$DPGEN < 0 | gc$DPGEN == 0)

# Subset data by country

aus = subset (gc, Country == "Australia")
aut = subset (gc, Country == "Austria")
bel = subset (gc, Country == "Belgium")
can = subset (gc, Country == "Canada")
den = subset (gc, Country == "Denmark")
fin = subset (gc, Country == "Finland")
fra = subset (gc, Country == "France")
ger = subset (gc, Country == "Germany")
gre = subset (gc, Country == "Greece")
irl = subset (gc, Country == "Ireland")
ita = subset (gc, Country == "Italy")
jpn = subset (gc, Country == "Japan")
kor = subset (gc, Country == "Korea")
nld = subset (gc, Country == "Netherlands")
nzl = subset (gc, Country == "New Zealand")
nor = subset (gc, Country == "Norway")
prt = subset (gc, Country == "Portugal")
esp = subset (gc, Country == "Spain")
swe = subset (gc, Country == "Sweden")
```

```
swi = subset (gc, Country == "Switzerland")
uk = subset (gc, Country == "United Kingdom")
us = subset (gc, Country == "United States")

# Table 1: Compute mean values of 'dist' for each country

mean (aus$dist)
mean (aut$dist)
mean (bel$dist)
mean (can$dist)
mean (den$dist)
mean (fin$dist)
mean (fra$dist)
mean (ger$dist)
mean (gre$dist)
mean (irl$dist)
mean (ita$dist)
mean (jpn$dist)
mean (kor$dist)
mean (nld$dist)
mean (nzl$dist)
mean (nor$dist)
mean (prt$dist)
mean (esp$dist)
mean (swe$dist)
mean (swi$dist)
mean (uk$dist)
mean (us$dist)

# Create variable 'oadr_1q4' equal to 1 if 'oadr_1' is in the top quartile of observations

# Remove observations with missing values on covariates (for computing 'oadr_1q4')

gc3 = subset (gc, gc$NL_1 > 0 | gc$NL_1 < 0 | gc$NL_1 == 0)
gc3 = subset (gc3, gc3$eCDBTgdp_1 > 0 | gc3$eCDBTgdp_1 < 0 | gc3$eCDBTgdp_1 == 0)
gc3 = subset (gc3, gc3$tenyr_1 > 0 | gc3$tenyr_1 < 0 | gc3$tenyr_1 == 0)
gc3 = subset (gc3, gc3$DGDP_1 > 0 | gc3$DGDP_1 < 0 | gc3$DGDP_1 == 0)
gc3 = subset (gc3, gc3$udens > 0 | gc3$udens < 0 | gc3$udens == 0)
gc3 = subset (gc3, gc3$DPGEN_1 > 0 | gc3$DPGEN_1 < 0 | gc3$DPGEN_1 == 0)
```

```
gc3 = gc3 [order (gc3$oadr_1),]
gc3$oadr_1q4 = c(rep(0,511), rep(1,171))

# Table 2: Descriptive Statistics

summary (gc$DPGEN)
sum (is.na (gc$DPGEN) == FALSE)
sd (gc$DPGEN)

summary (gc$dist)
sum (is.na (gc$dist) == FALSE)
sd (gc$dist)

summary (gc$NL_1)
sum (is.na (gc$NL_1) == FALSE)
sd (gc$NL_1, na.rm = TRUE)

summary (gc$eCDBTgdp_1)
sum (is.na (gc$eCDBTgdp_1) == FALSE)
sd (gc$eCDBTgdp_1, na.rm = TRUE)

summary (gc$tenyr_1)
sum (is.na (gc$tenyr_1) == FALSE)
sd (gc$tenyr_1, na.rm = TRUE)

summary (gc$DGDP_1)
sum (is.na (gc$DGDP_1) == FALSE)
sd (gc$DGDP_1, na.rm = TRUE)

summary (gc$UNP_1)
sum (is.na (gc$UNP_1) == FALSE)
sd (gc$UNP_1, na.rm = TRUE)

summary (gc$oadr_1)
sum (is.na (gc$oadr_1) == FALSE)
sd (gc$oadr_1, na.rm = TRUE)

summary (gc3$oadr_1q4)
sum (is.na (gc3$oadr_1q4) == FALSE)
sd ((gc3$oadr_1q4), na.rm = TRUE)
```

```
summary (gc$doadr_1)
sum (is.na (gc$doadr_1) == FALSE)
sd (gc$doadr_1, na.rm = TRUE)

summary (gc$Trade_gdp_1)
sum (is.na (gc$Trade_gdp_1) == FALSE)
sd (gc$Trade_gdp_1, na.rm = TRUE)

summary (gc$DTrade_gdp_1)
sum (is.na (gc$DTrade_gdp_1) == FALSE)
sd (gc$DTrade_gdp_1, na.rm = TRUE)

summary (gc$rile_gov)
sum (is.na (gc$rile_gov) == FALSE)
sd (gc$rile_gov, na.rm = TRUE)

summary (gc$udens)
sum (is.na (gc$udens) == FALSE)
sd (gc$udens, na.rm = TRUE)

summary (gc$YTNSE)
sum (is.na (gc$YTNSE) == FALSE)
sd (gc$YTNSE, na.rm = TRUE)

summary (gc$PR)
sum (is.na (gc$PR) == FALSE)
sd (gc$PR, na.rm = TRUE)

# Table 3: Fiscal, Economic, and Demographic Determinants of Change in Pension Generosity

# Weight DPGEN and DPGEN_1 (again) by 100

gc$DPGEN2 = 100*gc$DPGEN
gc$DPGEN2_1 = 100*gc$DPGEN_1

efd = plm (DPGEN2 ~ NL_1 + eCDBTgdp_1 + tenyr_1 + DGDP_1 + UNP_1 + oadr_1 +
doadr_1 + DPGEN2_1, data = gc, model = "within", effect = "twoways")

coeftest (efd, vcov = vcovHC)
```

```
summary (efd)

# Table 4: Estimated Effect of Government Cohesion on Change in Pension Generosity

# Column 1

gc3$DPGEN2 = 100*gc3$DPGEN
gc3$DPGEN2_1 = 100*gc3$DPGEN_1

cp1 = plm (DPGEN2 ~ dist, data = gc3, model = "within", effect = "twoways")

coeftest (cp1, vcov = vcovHC)
summary (cp1)

# Column 2

cp2 = plm (DPGEN2 ~ dist*oadr_1q4, data = gc3, model = "within", effect = "twoways")

coeftest (cp2, vcov = vcovHC)
summary (cp2)

# Table 5: Estimated Effect of Government Cohesion on Change in Pension Generosity
(continued)

cp3 = plm (DPGEN2 ~ dist + DGDP_1 + oadr_1 + doadr_1 + UNP_1 + Trade_gdp_1 +
DTrade_gdp_1 + rile_gov + udens + YTNSE + PR + DPGEN2_1, data = gc3, model = "within",
effect = "twoways")

coeftest (cp3, vcov = vcovHC)
summary (cp3)

cp4 = plm (DPGEN2 ~ dist*oadr_1q4 + DGDP_1 + oadr_1 + doadr_1 + UNP_1 + Trade_gdp_1
+ DTrade_gdp_1 + rile_gov + udens + YTNSE + PR + DPGEN2_1, data = gc3, model =
"within", effect = "twoways")

coeftest (cp4, vcov = vcovHC)
summary (cp4)
```

Chapter Six

```
# Set working directory

setwd("C:/Users/pat_donnelly/Dropbox/Documents/Dissertation")

# Load and attach data

pd = read.csv ('Parties Data.csv')

# Required package

library (plm)
library (lmtest)

# Remove observations with missing values on covariates

pd2 = subset (pd, pd$per504 > 0 | pd$per504 < 0 | pd$per504 == 0)
pd2 = subset (pd, pd$lag_per504 > 0 | pd$lag_per504 < 0 | pd$lag_per504 == 0)
pd2 = subset (pd2, pd2$budget > 0 | pd2$budget < 0 | pd2$budget == 0)
pd2 = subset (pd2, pd2$growth > 0 | pd2$growth < 0 | pd2$growth == 0)
pd2 = subset (pd2, pd2$unemp > 0 | pd2$unemp < 0 | pd2$unemp == 0)
pd2 = subset (pd2, pd2$trade > 0 | pd2$trade < 0 | pd2$unemp == 0)
pd2 = subset (pd2, pd2$udens > 0 | pd2$udens < 0 | pd2$udens == 0)
pd2 = subset (pd2, pd2$left > 0 | pd2$left < 0 | pd2$left == 0)
pd2 = subset (pd2, pd2$niche > 0 | pd2$niche < 0 | pd2$niche == 0)
pd2 = subset (pd2, pd2$incumbent > 0 | pd2$incumbent < 0 | pd2$incumbent == 0)
pd2 = subset (pd2, pd2$emu > 0 | pd2$emu < 0 | pd2$emu == 0)

# Table 1: Descriptive Statistics

attach (pd2)

summary (per504)
sd (per504, na.rm = TRUE)

summary (budget)
sd (budget, na.rm = TRUE)

summary (growth)
```

```
sd (growth, na.rm = TRUE)

summary (unemp)
sd (unemp, na.rm = TRUE)

summary (trade)
sd (trade, na.rm = TRUE)

summary (udens)
sd (udens, na.rm = TRUE)

summary (left)
sd (left, na.rm = TRUE)

summary (niche)
sd (niche, na.rm = TRUE)

summary (incumbent)
sd (incumbent, na.rm = TRUE)

summary (emu)
sd (emu, na.rm = TRUE)

# Figure 1: Support for Welfare Expenditure in Deficit and Surplus

# Create binary variable equal to 1 if 'budget' > 0

pd3 = pd2 [order (pd2$budget),]
sum (pd3$budget < 0)
pd3$Deficit = c(rep("Deficit",1124), rep("Surplus", 433))

par(mar=c(1,1,1,1))

boxplot (per504 ~ Deficit, data = pd3)

# Figure 2: Support for Welfare Expenditure by Quartile of Government Net Lending

length(pd3$budget)/4

pd3$defq = c (rep(0,389), rep(1,389), rep(2,389), rep(3,390))
```

```
boxplot (per504 ~ defq, data = pd3)

# Table 2: Determinants of Party Support for Welfare Expenditure

ps1 = lm (per504 ~ budget + as.factor (year) + as.factor (countryname))

coeftest (ps1, vcov = vcovHC)
summary (ps1)

ps2 = lm (per504 ~ budget + growth + unemp + trade + udens + left + niche + incumbent + emu
+ lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (ps2, vcov = vcovHC)
summary (ps2)

ps3 = lm (per504 ~ left*budget + growth + unemp + trade + udens + niche + incumbent + emu +
lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (ps3, vcov = vcovHC)
summary (ps3)

ps4 = lm (per504 ~ niche*budget + growth + unemp + trade + udens + left + incumbent + emu +
lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (ps4, vcov = vcovHC)
summary (ps4)

# Table 3: Determinants of Party Support for Welfare Expenditure (Continued)

ps5 = lm (per504 ~ emu*budget + growth + unemp + trade + udens + left + niche + incumbent +
lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (ps5, vcov = vcovHC)
summary (ps5)

ps6 = lm (per504 ~ incumbent*budget + growth + unemp + trade + udens + left + niche + emu +
lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (ps6, vcov = vcovHC)
```

```
summary (ps6)

ps7 = lm (per504 ~ niche*budget + incumbent*budget + growth + unemp + trade + udens + left
+ emu + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (ps7, vcov = vcovHC)
summary (ps7)

# Table 4: Determinants of Party Support for Welfare Expenditure (Segmented Models)

detach (pd2)

# Segment data by quartile of budget balance

nrow(pd3)/4

q1 = subset (pd3, budget <= pd3$budget [389])
q2 = subset (pd3, budget > pd3$budget [389] & budget <= pd3$budget [778])
q3 = subset (pd3, budget > pd3$budget [778] & budget <= pd3$budget [1167])
q4 = subset (pd3, budget > pd3$budget [1167])

attach (pd3)

pa = lm (per504 ~ left*budget + niche*budget + incumbent*budget + emu*budget + growth +
unemp + trade + udens + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (pa, vcov = vcovHC)
summary (pa)

detach (pd3)
attach (q1)

b1 = lm (per504 ~ left*budget + niche*budget + incumbent*budget + emu*budget + growth +
unemp + trade + udens + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (b1, vcov = vcovHC)
summary (b1)

detach (q1)
attach (q2)
```

```
b2 = lm (per504 ~ left*budget + niche*budget + incumbent*budget + emu*budget + growth +
unemp + trade + udens + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (b2, vcov = vcovHC)
summary (b2)

detach (q2)
attach (q3)

b3 = lm (per504 ~ left*budget + niche*budget + incumbent*budget + emu*budget + growth +
unemp + trade + udens + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (b3, vcov = vcovHC)
summary (b3)

detach (q3)
attach (q4)

b4 = lm (per504 ~ left*budget + niche*budget + incumbent*budget + emu*budget + growth +
unemp + trade + udens + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (b4, vcov = vcovHC)
summary (b4)

detach (q4)

# Table 5: Comparison of Linear and Polynomial Regression Estimates

attach (pd3)

bl = lm (per504 ~ budget + growth + unemp + trade + udens + left + niche + incumbent + emu +
lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (bl, vcov = vcovHC)
summary (bl)

bq = lm (per504 ~ budget + I(budget^2) + growth + unemp + trade + udens + left + niche +
incumbent + emu + lag_per504 + as.factor (year) + as.factor (countryname))
```

```
coeftest (bq, vcov = vcovHC)
summary (bq)

bc = lm (per504 ~ budget + I(budget^2) + I(budget^3) + growth + unemp + trade + udens + left
+ niche + incumbent + emu + lag_per504 + as.factor (year) + as.factor (countryname))

coeftest (bc, vcov = vcovHC)
summary (bc)
```