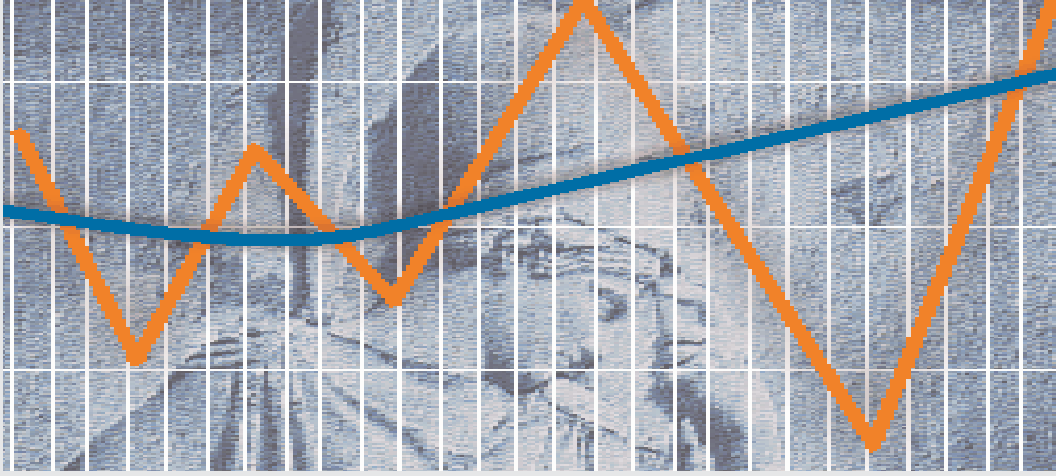

ifo Beiträge zur Wirtschaftsforschung

73

Essays on the Behavior of Firms and Politicians

Marina Riem

ifo Institut
Leibniz-Institut für Wirtschaftsforschung
an der Universität München e.V.

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Preface

This volume was prepared by Marina Riem while she was working at the ifo Institute. It was completed in July 2016 and accepted as a doctoral thesis by the Department of Economics at the University of Munich in November 2016. This dissertation consists of six self-contained chapters that are related to the behavior of firms and politicians in a broader sense.

After an introduction to the topic, the first part of the dissertation elaborates on how institutional and political framework conditions influence the behavior of firms. Chapter 2 examines the determinants of inter vivos transfers of ownership in German family firms. Survey evidence indicates that owners of larger firms, and firms with strong current business conditions, transfer ownership at higher rates than others. Chapter 3 investigates how political uncertainty influences corporate investment decisions employing data on firms' self-reported investment realizations, plans and revisions. The results show that realized investment ratios decreased in years when state elections occurred relative to the average investment ratio in years with no state election. Firms however seem to anticipate electoral uncertainty already when making investment plans and hardly revise their plans. Chapter 4 examines whether political uncertainty influences how firm owners perceive their present state and future development of business. The results show that firm owners expect their business to develop better before state elections and worse after state elections.

The second part of this dissertation investigates how partisanship and self-interest of politicians shape their ethos and behavior. Chapter 5 describes how partisanship shapes the attitudes and actions of politicians in Germany. The results show that German state politicians' and governments' words differed from actions regarding budget consolidation and the German debt brake. Chapter 6 examines whether parties punish politicians who vote against the party line in roll-call votes. The results do not show that parties account for the voting behavior by punishing politicians who have voted against the party line. Chapter

7 investigates how ideological positions of German economic research institutes influenced policy advice in the Joint Economic Forecast.

Keywords: Inter vivos transfers, transfer taxes, family firms, firm-level investment, user cost of capital, political uncertainty, elections, survey data, panel data, business perceptions, government ideology, public debt, debt brake, balanced-budget rule, constitution, expressive rhetoric, voting against the party line, adherence to the party line, roll-call votes, proportional representation, party lists, selectorate, decision making in committees, minority voting, policy preferences, Joint Economic Forecast of German economic research institutes.

JEL-Codes: C23, D22, D24, D31, D72, D81, D92, H24, H25, H32, H60, H70, H72, H73, I23.

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Contents

List of Figures

List of Tables

Chapter 1

Introduction

Business and politics are closely intertwined. Government policies significantly influence the competitive environment of firms (Boddewyn 1988). Developments in the private economy influence, in turn, government behavior. Policy makers are constantly faced with decisions – whether to change policy, and if so, which policies to adopt. The extent to which political influences (such as partisan differences, the demands of competing constituency, and re-election concerns) alter policy outcomes, is a source of uncertainty for corporate decisions. Businesses can respond to public policy in a passive or proactive way (Weidenbaum 1980, Boddewyn and Brewer 1994, Hillman and Hitt 1999). Firms passively react only post hoc to new legislation or try to factor in government policy into the planning process, but do not participate in the public policy process. When firms proactively engage in political behavior, they compete for rents not only within the market, but also through efforts in the political arena to manipulate regulations, laws and other institutions governing the market. Corporate political behavior can take various forms, such as lobbying, making campaign contributions, and maintaining close relationships with political actors. Scholars describe the economic advantages that firms may gain from such political behavior (Fisman 2001, Johnson and Mitton 2003, Mian and Khwaja 2005).[1] Benefits also can run in the reverse direction – from firms to politicians. In fact, politicians and policymakers are prone to the same biases that plague private actors. Governments are unlikely to be benevolent, since

[1] The value of engaging in political behavior can, for example, include preferential treatment by state-owned enterprises (e.g. banks), lighter taxation, and preferential treatment in competition for government contracts, relaxed regulatory oversight of the firm in question, or stiffer regulatory oversight of its rivals (Faccio 2006).

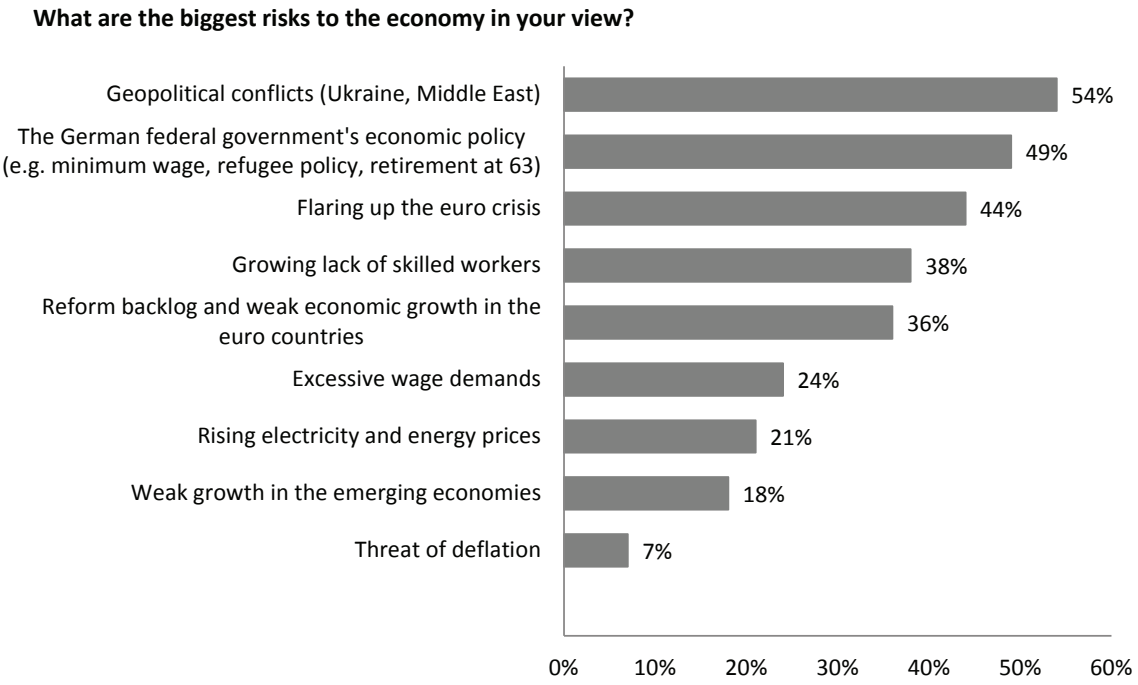
politicians have their own interests at heart (Frye and Shleifer 1997, Shleifer and Vishny 1998). The public choice theory describes that politicians are utility maximizers, rational, and egoistic (Downs 1957, Buchanan and Tullock 1962, Müller 1976). Or as the journalist Alistair Cooke summarized when James M. Buchanan won the Nobel prize in 1986, "public choice embodies the homely but important truth that politicians are, after all, no less selfish than the rest of us". For example, politicians manipulate economic variables for political purposes, when they use fiscal and monetary instruments to improve economic conditions prior to an election (Nordhaus 1975). It is also conceivable that politicians try to influence decisions by the corporate sector (Shleifer and Vishny 1994).

Successful policy analysis should consider the motives of private actors (such as firms) and the "public" or governmental actors that formulate and enforce policy (such as politicians). Policy analysis must also carefully consider the institutional environment in which these private and public actors interact (such as markets, elections, bureaucracies). It is a worthwhile endeavor to investigate at the micro level how firms react to changes in their institutional and political environment and how partisan differences and re-election concerns shape the behavior of political actors. This dissertation consists of six chapters that are related to the behavior of firms and politicians in a broader sense. All chapters are self-contained.

In the first part of this dissertation I elaborate on how institutional and political framework conditions influence the behavior of firms. Political forces and institutions set the rules for the environment firms operate in. When firm managers are asked what the biggest risks to the German economy are, 49% of managers indicate that risks come from the federal government's economic policy (see Figure 1.1). German economic policy influenced firms' labor costs when politicians introduced a minimum wage in January 2016. Lowering the retirement age to 63 increased the pressure on the social security system. 56% of firm managers think that immigration will put a burden on the German economy as the major barriers to recruiting refugees are the lack of language skills and unsuitable qualification levels (ifo Manager Survey December 2015).

To provide decision makers with information for the design of policies, it is important to identify the necessities and specific challenges of companies. Firm owners, especially of small and medium enterprises, see securing their company stock as a difficult task. In a business survey firms name "succession planning" and "generational change in ownership and management" as fields of current and future challenges (May-Strobl and Welter 2015).

FIG. 1.1: Risks for the economy in Germany



NOTE: The ifo Managers Survey is as a supplement to the ifo Business Survey in cooperation with the business weekly "Wirtschaftswoche". The telephone survey is conducted among managers in manufacturing, construction, wholesaling, retailing, as well as the service sector.
SOURCE: ifo Manager Survey December 2015.

The German government repeatedly reformed inheritance and gift taxation at the request of the constitutional court.[2] An issue in the public debate is the special tax relief for transfers of family business assets. The German inheritance and gift tax law grants generous tax privileges to family firms to ensure that otherwise healthy companies would not run out of liquidity if faced by a sudden tax debt following a succession. The judges however ruled that the legislation violated the constitutional principle of fair taxation. The constitutional court demanded a reform of the tax relief for business assets until mid-2016 (see constitutional court decision 1 BvL 21/12, December 17, 2014). As 92% of firms in Germany are family-owned (Gottschalk et al. 2011), politicians and business representatives argue that the privilege preserves jobs. The new legislation which the governing coalition suggested in June 2016 still grants substantial tax privileges to firms and is thus heavily discussed in the media (Feld and Schrinner 2016, Hildebrand and Schrinner 2016). It is unclear whether the *Bundesrat* (the second chamber of legislative power) will settle on the compromise of the inheritance and gift tax reform and pass the bill (Spiegel Online 2016). Around 135,000 family firms will pass to the next generation by 2018 (Kay and Suprinovic 2013). The question whether business assets should be granted tax reliefs in case of inter vivos (lifetime) transfers or inheritance is controversially debated in the economic literature (see, for example, van Suntum et al. 2008, BMF 2012 and Maiterth 2013).[3] It is useful to consider the effects of transfer taxes on incentives to transfer ownership of family firms. In Chapter 2, which is based on joint work with James R. Hines Jr., Niklas Potrafke, and Christoph Schinke (see Hines Jr. et al. 2016), we examine the determinants of inter vivos transfers of ownership in German family firms between 2000 and 2013. We show theoretically that when firm owners have inside information on their business conditions, they may have incentives to make early inter vivos transfers to save transfer taxes. Survey evidence indicates that owners of larger firms, and firms with strong current business conditions, transfer ownership at higher rates than others. When a firm's self-described business condition improves from "normal" to "good", the likelihood of an inter vivos transfer increases by 46 percent. We also show that inter vivos transfer rates

[2] A major reform of the inheritance and gift tax law took place in 2009. The tax relief for business assets will be reformed again by mid-2016.

[3] See Pérez-González (2006), Bennedsen et al. (2007), Grossmann and Poutvaara (2009) and Grossmann and Strulik (2010) for studies on tax reliefs and firm succession. For survey evidence on the effect of inheritance and gift taxation and tax reliefs for business assets on economic activity of family firms, see Potrafke et al. (2014).

rose following the 2009 reform that reduced transfer taxes. These patterns suggest that transfer taxes significantly influence rates and timing of inter vivos ownership transfers.
Concerns about policy uncertainty have intensified in the wake of the global financial crisis, serial crises in the Eurozone, and partisan policy disputes in some European countries. German firm managers also name "lack of planning security because of politics" and "growing estrangement between the economy and politics/published opinions" as main challenges (May-Strobl and Welter 2015). Economic policy uncertainty affects real economic outcomes. For example, the IMF (2012, 2013) describes that uncertainty about European fiscal, regulatory and monetary policies contributed to a steep economic decline in 2008/2009 and slow recoveries afterwards. Theoretical work on this topic suggests that high uncertainty gives firms an incentive to delay investment and hiring when investment projects are irreversible or workers are costly to hire and fire (Bernanke 1983).[4] In a representative survey conducted by Forsa in 2014, 19% of executive managers from German corporations named institutional and political framework conditions as main motive for restrained private investment activity (Fratzscher et al. 2014).
Elections are an important source of economic uncertainty, because the outcome of an electoral race affects subsequent government decisions. As Mattozzi (2008, p.43) summarizes, "political uncertainty [...] arises because different candidates running for office, if elected, will implement different policies". In Chapter 3, I investigate how political uncertainty influences corporate investment decisions employing a unique panel dataset of German manufacturing firms. I use data on firms' self-reported investment realizations, plans and revisions. The firm-specific user cost of capital captures the current institutional framework,[5] but does not reflect the uncertainty about changes in government policies firms are faced with. I therefore augment the neoclassical investment model by a measure of political uncertainty resulting from the electoral process. The results show that realized investment ratios decreased by 10.5% in years when state elections occurred relative to the average investment ratio in years with no state election. Firms however seem to anticipate electoral uncertainty already when making investment plans and hardly revise their plans.

[4] Other reasons for a negative effect of uncertainty on investment include upward pressure on the cost of finance (Pastor and Veronesi 2013), managerial risk-aversion (Panousi and Papanikolaou 2012), and interactions between nominal rigidities and search frictions (Leduc and Liu 2015).

[5] Büttner et al. (2015) show that the user cost of capital is associated with lower firm-level investment in Germany. Tax legislation influences firms' investment activity, as the less favorable tax treatment of equity compared to debt financing hampers investment.

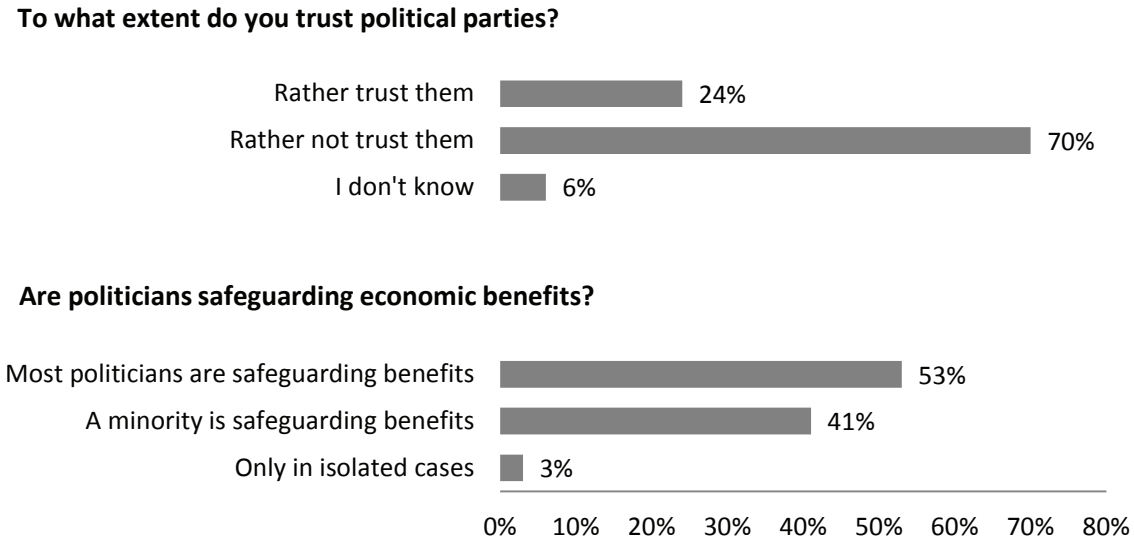
Investment revisions occur because of updated information about realized sales growth and not because of resolved electoral uncertainty. I also find that electoral uncertainty negatively influences add-on investments which face a high degree of irreversibility, while non-capacity expanding investments are not influenced by electoral uncertainty.

Corporate investment behavior is driven by firm owners' business perceptions. Expectations of firm managers also take changes in government policy into account. Using microdata that serve as the foundation of the ifo Business Climate Index, Germany's leading business cycle indicator, I examine in Chapter 4 whether political uncertainty influences how firm owners perceive their present state and future development of business. I use state election months as indicators of times of high political uncertainty. The results show that firm owners are optimistic regarding their expected business development before state elections. After state elections firms change their expectations and expect their business to develop worse. It is conceivable that firm owners are more optimistic prior to state elections because politicians promised individual policies to gratify the firms' needs during election times. Firms might be disappointed after elections as the promises made during election campaigns by politicians turn out to be empty words.

In the second part of this dissertation I investigate how partisanship and self-interest of politicians shape their ethos and behavior. A large part of the German population does not trust politicians who should represent their interests. 70% of persons asked in a survey stated that they rather not trust political parties (see Figure 1.2). People often claim that political decision-making results in outcomes that conflict with the preferences of the general public. Politicians rather act in their self-interest. 53% have the opinion that politicians are safeguarding economic benefits (see Figure 1.2). For example, many advocacy group and pork barrel projects are not the desire of the overall democracy. Politicians however support these projects. Politicians might benefit financially as such projects open the door to future wealth as lobbyists. The project may be of interest to the politician's local constituency, increasing district votes or campaign contributions. Many citizens therefore impeach the credibility of a promise made by a politician.

Long-standing and stable partisan attachments shape political attitudes and behaviors (Campbell et al. 1960). Partisanship can be seen as a "perceptual screen" through which political information is processed (Gerber and Huber 2009). Empirical evidence confirms that partisanship can explain political behavior and assessments of the economy (Wlezien et al. 1997, Bartels 2000, 2002, Evans and Andersen 2006).

FIG. 1.2: Public opinion of German politicians



NOTE: The first question "To what extent do you trust political parties?" was asked among 1548 German citizens over 15 years in November 2015 by the European Commission and TNS Infratest. The second question "Are politicians safeguarding economic benefits?" was asked among 1001 German citizens over 18 years in January 2012 by ARD-DeutschlandTREND and Infratest dimap.

Political parties design economic policy in a way that confirms their ideological identities and gratifies their core voter clientele. The partisan theories describe that left-wing governments appeal more to wage earners and promote expansionary fiscal and monetary policies while right-wing governments appeal more to capital owners and are concerned with reducing inflation and deficits (Hibbs 1977, Alesina 1987). Scholars have tested the partisan theories empirically on various issues, such as for example budget composition (Potrafke 2011a, 2011b), corporate taxation (Osterloh and Debus 2012), the size and scope of government (Bjørnskov and Potrafke 2013), economic freedom (Potrafke 2013), and education policy (Oberndorfer and Steiner 2007, Kauder and Potrafke 2013).

Recent developments in Europe show that ideological identities and therefore political parties matter. Especially since the wake of the Euro crisis, socialist and nationalist movements attracted attention of the media. For example, political parties such as the left-wing party Podemos in Spain, the far-right political party Front National in France, and the left-wing party Syriza in Greece obtained much support. In particular, politicians in Southern European countries advocate pursuing more expansionary policies and promote debt financing to end "austerity" (Lichfield 2014, Evans-Pritchard 2015, Maurice 2016, The Economist 2016). Different views of the role of the European Union sparked a public debate, which gave rise to an anti-democratic turn in Hungary and Poland and to the pro- and anti-European divide in Great Britain which peaked in the Euro referendum in June 2016. In Germany the political party AfD emerged, which attracts voters with topics of Euroscepticism and anti-immigration.

In Chapter 5, which is joint work with Niklas Potrafke and Christoph Schinke (see Potrafke et al. 2016), we describe how partisanship shapes the attitudes and actions of politicians in Germany. We investigate whether right-wing and left-wing governments use policy instruments to achieve budget consolidation at the state level in different manners. In 2009, a new law on German debt brakes was passed: state governments are not allowed to run structural deficits after 2020. Consolidation strategies initiated between 2009 and 2020 influence if a state can comply with the debt brake in 2020. We describe to what extent government ideology predicts if state governments consolidate budgets and which fiscal adjustment path they choose. Attitudes toward budget consolidation, as expressed by politicians' rhetoric in the public debate, differed among parties. Anecdotal evidence and descriptive statistics indicate that left-wing governments ran on average higher structural deficits than right-wing governments between 2010 and 2014. Primary deficits, however,

hardly differed under left-wing and right-wing governments. Revenues of federal taxes were much higher than expected and facilitated budget consolidation. Left-wing governments did not need to run deficits to design generous budgets. It is conceivable that parties confirmed their identity by using expressive rhetoric, but responded to shifts in public opinion after the financial crisis and pursued more sustainable fiscal policies when in office.

Politicians want to be re-elected. Therefore politicians try to maximize votes to increase the probability of electoral success. Politicians not only depend on the support of voters, but politicians also want to be backed by their co-partisans. A potential candidate thus wants to be noticed by fellow party members. A candidate can distinguish himself from co-partisans by past performance and effort in office, political experience and even physical attractiveness, but also by defecting from the party line on roll-call votes. Politicians can use roll-call votes as low-cost signaling devices to stand out on controversial issues. Media coverage on the European crisis management in Germany, for example, celebrated individual politicians who voted - against the majority of their political party - against Greek bailout packages (Focus Online 2015, Wirtschaftswoche 2015). An intriguing question is how political parties cope with self-serving party members. We examine in Chapter 6, which is based on joint work with Björn Kauder and Niklas Potrafke, whether parties punish politicians who vote against the party line in roll-call votes. Using data of German members of parliament over the legislative period 2009-2013, we take into account that the effect of punishment differs along the list of candidates because a candidate is punished more when he loses positions at the threshold of promising list positions. The dataset includes the voting behavior of 257 MPs in 218 roll-call votes. Our results do not show that parties account for the voting behavior by punishing politicians who have voted against the party line. Political parties may attract different groups of voters by tolerating politicians who vote according to their own credo. Qualities other than the voting behavior seem to matter to political parties when nominating candidates.

Politicians need good advisers when deciding how to design policies. Economic research institutes play an important role in the public discourse on economic policy issues. Economists, and also economic research institutes, differ in their attitudes toward desirability of economic policies. The policy positions taken can often be determined by ideology. The media labeled economic research institutes as either neoclassical/supply-side or Keynesian/demand-side oriented. The disagreement on economic policy of both sides sparked in a heated debate in January 2015 where Hans-Werner Sinn, former president of the ifo Institute, was at-

tacked by economists from the German Institute for Economic Research (DIW Berlin) (Bert Rürup, Marcel Fratzscher and Claudia Kemfert) and called "the false prophet" (Münchrath et al. 2015). Another newspaper afterwards proclaimed the "war of the economists" (Siems 2015). We investigate in Chapter 7, which is joint work with Ha Quyen Ngo, Niklas Potrafke, and Christoph Schinke (see Ngo et al. 2016), how ideological positions of German economic research institutes influenced policy advice in the Joint Economic Forecast of German economic research institutes. During the Joint Economic Forecast the leading economic research institutes in Germany prepare biannual reports on the state of the German and the world economy and on economic policy issues. We examine economic policy positions by investigating minority votes in the Joint Economic Forecast. An institute can submit a minority vote, when it does not agree with the majority of institutes regarding the assessment of economic policy issues and recommendations of economic policies. The data set consists of voting behavior over the period 1950–2014. Our results show that the DIW submitted by far the most minority votes, consistent with the popular impression that the DIW exhibits a preference for demand-oriented economic policy. For example, the rate of minority voting of the DIW corresponded to some 300 percent of the rate of minority voting of the RWI Essen. The DIW has differed from other leading economic research institutes, which is in line with the above mentioned newspaper attack. We suggest that minority votes display an economic research institute's identity. When institutes are known to be associated with specific economic policy positions, politicians, clients, and voters well understand how to assess the bias in the policy advice that is given.

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Chapter 2

Inter Vivos Transfers of Ownership in Family Firms*

2.1 Introduction

Successful family firms are commonly transferred from one generation to the next.[1] Succession occurs naturally at an owner's death, but may also be planned in advance with inter vivos (during life) transfers. Business conditions, family considerations, and estate, gift, and inheritance taxes all have the potential to influence the timing and extent of inter vivos transfers. And these transfers, in changing ownership, may affect the operations and productivities of family firms.

This paper considers the determinants of inter vivos transfers of assets in German family firms. The analysis is based on unique survey data covering the years 2000-2013. The

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[1] The majority of firms around the world are family firms (La Porta et al. 1999, Faccio and Lang 2002). See Burkart et al. (2003) on basic theoretical considerations regarding succession in family firms.

evidence indicates that inter vivos ownership transfers are most common in larger firms and those with strong business conditions. Furthermore, inter vivos transfers rose following a German tax reform in 2009 that reduced transfer taxes.[2]

The difficulty of obtaining data has limited the number of empirical studies of inter vivos transfers of family firms. Scholars find that macroeconomic conditions - especially financial factors such as the inability to find financial resources to liquidate the possible exit of heirs, the market environment or increased competition - appear to influence succession plans of family firms (De Massis et al. 2008, Vozikis et al. 2012). While firms are typically the focus of the theory and empirical interest, the units of observation in most data sets are households rather than firms. Empirical studies indicate that transfer taxes influence behavior,[3] and that the amount of inter vivos transfers depends on the incomes of parents and children (McGarry 1999, Arrondel and Laferrère 2001, Stark and Zhang 2002, Bernheim et al. 2004, Hrung 2004, Joulfaian 2004, 2005, Villanueva 2005). Taxpayers forego substantial savings by not making inter vivos transfers that fully exploit annual gift tax exemptions (Poterba 2001, McGarry 2001, 2013, Joulfaian and McGarry 2004). Another strand of related literature considers bequest motives (Kotlikoff 1988, Modigliani 1988, Gale and Scholz 1994, Laitner and Ohlsson 2001, Arrondel and Masson 2006, Kopczuk 2007, Ameriks et al. 2011). Wealth transfers from one generation to the next may be accidental or intentional, with inter vivos transfers relatively clear cases of intentional choices. Firm owners have better information on the business situation of their firm than do outsiders such as external investors, banks or tax authorities. These information asymmetries can influence a firm's financing and investment decision (Leland and Pyle 1977, Myers and Majluf 1984, Miller and Rock 1985). In a similar vein, decisions on ownership structure may depend on the firm's business situation as perceived by the firm owner. A firm's self-assessed current business situation is likely to offer information on firm value that is not contained in balance sheet variables. Balance sheets are backward looking, whereas the assessment of a firm's business situation by its owner reflects soft information and expectations about future developments. As a result, it is valuable to consider the relationship

[2] See Schinke (2016) on how the tax reform influenced inter vivos transfers to different types of recipients including the core family, other close relatives, and unrelated recipients.

[3] On inheritance and inter vivos transfer taxation and legislation see e.g. Gale et al. (2001), Kopczuk (2009, 2013a,b), Ellul et al. (2010), Hines Jr.(2010, 2013), Wrede (2014). Transfer taxes may give rise to declines in investment, slow sales growth, and a depletion of cash reserves around family successions (Tsoutsoura 2015).

between a firm's self-assessed business situation and any transfers of firm ownership to the next generation.

The paper's analysis of inter vivos transfers of assets in family firms is based on data that include evidence from a survey conducted among German family firms on inheritances, inter vivos transfers and taxation. The data include Germany's most important business cycle and firm survey information that serve as the foundation of the Ifo Business Climate Index, Germany's leading business cycle indicator. The new survey data include information on the years when firms made inter vivos ownership transfers. These data are matched with Ifo business survey data, which include information on how firm owners assess the current economic situation, business expectations, whether firm activity is constrained, and many other firm-specific characteristics. The data incorporate balance sheet information from external sources (Amadeus Bureau van Dijk and Hoppenstedt Firmeninformationen GmbH), and cover the years 2000 to 2013. Business survey and balance sheet data are pre-processed and provided by the Economics and Business Data Center, Munich.

German tax authorities generally base their assessments of the values of transferred firms on average revenues over three business years prior to transfer.[4] Consequently, new information for the current business year, which is available only to firm owners, reveals likely future changes in taxable values and thereby affects incentives to make current inter vivos transfers.

The results indicate that when a firm's self-described business situation improves, for example, from "normal" to "good," then the chance of an inter vivos transfer rises by 46 percent. The reason for this timing may be that owners of firms with strong business situations anticipate higher tax valuations in the future, and therefore accelerate ownership transfers as part of prudent tax planning.

2.2 Inter Vivos Transfers and Family Firms

Despite the importance of estate planning and the availability of simple methods of tax avoidance, the evidence suggests that wealthy people make surprisingly few inter vivos transfers, thereby foregoing substantial potential tax savings (McGarry 2001, 2013). Empirical studies describe many factors that influence inter vivos transfers. Inheritance and

[4] See §201 subsection two of the valuation law (*Bewertungsgesetz*).

gift taxes affect the timing of transfers, typically encouraging inter vivos transfers compared to bequests (Bernheim et al. 2004, Joulfaian 2004). Capital gain taxes can be offsetting considerations, since the favorable tax treatment of appreciated assets held until death can create some situations in which taxpayers benefit from avoiding inter vivos transfers (Poterba 2001, Joulfaian 2005). The composition of household wealth also influences the chance of making inter vivos transfers. When wealth is held in illiquid forms, such as private business, households are less likely to make inter vivos transfers than when wealth was held in more liquid forms (Poterba 2001). The amount of inter vivos transfers also increases with the lifetime income of parents (Poterba 2001, Hrung 2004): an additional dollar of parental lifetime income appears to increase inter vivos transfers by 0.7 cents in Germany and by 1.2 cents in the United States (Villanueva 2005). Another issue is the allocation of inter vivos gifts among heirs. Empirical studies indicate that parents make greater inter vivos transfers to children with lower incomes than to other children (McGarry 1999, 2016). The appeal of this type of redistribution is very intuitive, though as a theoretical matter there are models with the opposite prediction, that parents would make greater inter vivos transfers to children with higher incomes than to children with lower incomes (Stark and Zhang 2002).

Family firms may be special cases due to tacit knowledge on the part of the founder or successor (Cabrera-Suárez et al. 2001, Kanniainen and Poutvaara 2007). Family firms display a great deal of stakeholder focus and feel more accountable to employees and banks than to shareholders (Mullins and Schoar 2016). Studies often find that family firms outperform other firms (McConaughy et al. 1998, Anderson and Reeb 2003).[5] Following ownership succession, firms whose incoming CEOs are related to the departed CEO or firm founder tend to underperform relative to firms with new CEOs who are not related to firm insiders (Pérez-González 2006, Bennedsen et al. 2007, Grossmann and Strulik 2010, Molly et al. 2010). Family firms have also been found to be less tax aggressive than non-family firms (Chen et al. 2010).

Owners of family firms may make provisions for succession during their lifetimes. In some situations there are incentives to purchase life insurance that will provide liquidity when

[5] On how family ownership, control, organization, and management influence firm value and firm performance see Villalonga and Amit (2006) and Bertrand et al. (2008).

estate taxes are due (Holtz-Eakin et al. 2001).[6] Several studies examine the succession planning of family businesses (e.g. Sharma et al. 1997, 2003). Sharma et al. (2003) find that even in cases where owners of family firms wanted to preserve their firms, the need to find successors did not induce succession planning. Succession planning appears to start only when trusted successors are available. Vozikis et al. (2012) predict that financial factors such as limited internal financial resources (high opportunity costs of obtaining external financing, inability to sustain transfer tax burdens, low capital stocks, and high earnings variability) impede succession planning. De Massis et al. (2008) describe potential obstacles to a smooth succession. These obstacles include private family conflicts (e.g. low ability or motivation of potential successors, family rivalries, and absence of mutual trust), financial issues (e.g. tax burdens or financial resources that are inadequate to liquidate possible exit of heirs) or changes in the economic environment of the firm (decline in business performance, loss of key customers, decreasing business scale). The willingness of offspring to join family firms correlates positively with business size (Stavrou 1999).
There are substantial transaction costs associated with transferring ownership of a family firm (Bjuggren and Sund 2005). Rates of ownership transfers are likely to be sensitive to changes in estate, gift and inheritance taxes, such as the 2004 abolition of transfer taxes in Sweden. Bjuggren and Sund (2001) describe the role of the legal system in facilitating smooth transition of family firms from one generation to the next.

2.3 German Inheritance and Gift Taxes

Germany does not tax estates, but it does tax receipt of inheritances and inter vivos gifts. Tax rates rise with the amount of gift or inheritance received, and rates are conditioned on the closeness of any family connection between those who give and those who receive. The lowest tax rates and highest exempt amounts apply to gifts to spouses, followed successively by children, grandchildren, other close relatives, and finally by all others. The German government grants special tax relief for transfers of family business assets, this favorable tax treatment intended to preserve jobs in family businesses. For this purpose, business assets include agricultural and forestry assets and privately held shares in corporations

[6] In the absence of sufficient life insurance coverage, liquidity problems driven by the estate tax liabilities may force heirs of family firms to sell business assets (Astrachan and Tutterow 1996, Brunetti 2006, Houben and Maiterth 2011).

when the owner holds more than 25% of the shares. Inter vivos transfers are subject to the same tax rules as inheritances.

Until 2008, business assets were assessed at tax values that were typically considerably lower than market values, the outcome of tax practices rather than explicit exemptions for family firms (Houben and Maiterth 2011). In addition, there was a statutory tax exemption of € 225,000 for transfers of business assets in family firms, and the remaining taxable amount was reduced by 35%.

Since 2009, business assets have been assessed at estimated market values. Firms with fewer than 20 employees can be transferred tax free. Owners of larger firms can choose between two types of tax relief, of which the first reduces the taxable amount of business assets by 85%. To be eligible for this relief, no more than 50 percent of business assets may consist of non-operating assets such as leased real estate, securities or cultural property; firm owners must commit to keeping the firm in business for at least five years; and the sum of wages and salaries over the following five years must be at least 400 percent of an historical average. An additional tax allowance of € 150,000 may apply to the remaining 15 percent of business assets if this value is small. The second option is even more generous, exempting 100 percent of business assets, but can be chosen only if non-operating assets constitute no more than 10 percent of total business assets; the firm stays in business for at least seven years; and the sum of wages and salaries over the following seven years is at least 700 percent of an historical average.

Transfers of any business assets that remain after tax relief and exemptions, together with other assets such as real estate and financial assets, are subject to gift and inheritance taxation. Personal tax exemptions apply, e.g. € 400,000 for a transfer from parent to child (€ 205,000 until 2008). Tax exemptions can be used every ten years, making inter vivos transfers an effective instrument for reducing taxes. Tax rates are progressive and vary between 7% and 50%, depending on the degree of kinship between transferor and beneficiary, and the type of property transferred. Transfers to close relatives such as children are subject to lower rates of tax than transfers to more distant relatives such as cousins, which in turn are subject to lower rates of tax than transfers to unrelated individuals; furthermore, transfers of business assets are taxed at the low rates applicable to transfers to children, regardless of the beneficiary.

For example, consider a firm worth € 15 million with over 20 employees that a firm owner transfers inter vivos to a child in 2010. Using the 85% tax relief option, business assets of

€ 2.25 million are subject to taxation at the time of the transfer. Deducting the personal tax exemption of € 400,000, the taxable transfer is € 1.85 million. At a tax rate of 19%, the gift tax due is € 351,500.

2.4 Analytical Framework

It is useful to consider the effects of transfer taxes on incentives to transfer ownership of family firms. This section analyzes aspects of these incentives created by changing economic and legal environments.

2.4.1 Timing of Ownership Transfers

Let q_t denote a family firm's true value at time t, and s_t denote the signal of firm value observed by the tax authority and other outsiders. The original owner's (flow) after-tax return at time t of maintaining ownership is given by $v\left(q_t\right)$, whereas the after-tax return is $w\left(q_t\right)$ if successors own the firm. These returns can differ if ownership affects firm performance or if the same return is taxed at different rates if received by different potential owners. In the absence of transfer tax considerations families would choose to transfer ownership in period t only if $w\left(q_t\right) > v(q_t)$. Transfer taxes complicate this decision.

A family chooses inter vivos transfers to maximize the present value ψ, given by:

$$\psi = \int_0^{t^*} e^{-rt} v\left(q_t\right) dt + \int_{t^*}^{\infty} e^{-rt} w\left(q_t\right) dt - e^{-rt^*} \tau(s_{t^*}, t^*), \tag{2.1}$$

in which r is the decision maker's discount rate, t^* is the date of ownership transfer, and $\tau(s_{t^*}, t^*)$ is the transfer tax imposed in period t^* on a transfer of a family firm with observable value s_{t^*}. Time is an argument of the transfer tax function because tax laws vary over time, so the tax obligation associated with a transfer of a firm with a given observable value is time-dependent.

Differentiating ψ with respect to t^* produces:

$$e^{rt^*} \frac{d\psi}{dt^*} = v\left(q_{t^*}\right) - w\left(q_{t^*}\right) + r\tau\left(s_{t^*}, t^*\right) - \frac{\partial \tau\left(s_{t^*}, t^*\right)}{\partial s_t^*} \frac{ds_{t^*}}{dt^*} - \frac{\partial \tau\left(s_{t^*}, t^*\right)}{\partial t^*}. \tag{2.2}$$

The right side of equation (2.2) is the (undiscounted) value of slightly delaying ownership transfer at time t^*, so an optimizing decision maker solving for an interior solution with continuous variables transfers the firm at time t^* only if this expression equals zero. The first two terms on the right side of equation (2.2) are familiar from the transfer decision in the absence of taxation, and have the intuitive property that delaying transfer is more attractive the greater is the difference between $v(q_{t^*})$ and $w(q_{t^*})$. Indeed, if $v(q_{t^*})$ exceeds $w(q_{t^*})$ to a sufficient degree at all times t, then the decision maker never transfers ownership of the firm until it becomes absolutely necessary (such as at the death of the original owner). Such situations arise if the original owner is a much more productive owner/manager of the firm than is the potential successor, at least as evaluated by the relevant decision maker (who is commonly the original owner).

The third through fifth terms on the right side of equation (2.2) capture the tax effects of delaying ownership transfer. The third term is the product of the discount rate and the tax cost of transfer, and reflects simply that delaying the incursion of a given tax liability reduces its present value. The fourth term on the right side of equation (2.2) is the product of the marginal tax rate and the change in the taxable value of a family firm. A rising taxable value reduces the attractiveness of delaying a transfer, since with a positive marginal tax rate it is clearly better to transfer ownership of a firm when it is valued at € 50 million than when it is valued at € 100 million. Conversely, if a firm is declining in value then there is a tax benefit associated with delaying transfer. Notably, if the taxable value of a firm rises at the discount rate, and tax obligations are scalar functions of taxable transfers, then the third and fourth terms on the right side of equation (2.2) sum to zero. Consequently, other considerations equal, taxable firm values that rise faster than the discount rate are associated with accelerated transfers, whereas taxable values that rise more slowly than the discount rate are associated with delayed transfers.

The fifth term on the right side of equation (2.2) is the change over time in the tax due on the transfer of a firm of given taxable value. If tax rates are rising, then this term reflects that it is costly to delay ownership transfers; and conversely, if tax rates are falling, then it is beneficial to delay transfers.

Optimal ownership transfers incorporate all of these considerations. A local maximum at time t^* is characterized by a positive value of $\frac{d\psi}{dt^*}$ just prior to t^*, a zero value at t^*, and a negative value immediately following t^*. These properties reflect changing relative productivities of original owners and successors together with changing degrees to which

tax liabilities evolve over time. One of the tax considerations may be that the decision maker anticipates that the taxable value of the firm will rise more or less slowly than the discount rate.

2.4.2 Taxable and Market Values of Family Business Property

Taxable values need not coincide exactly with actual values as understood by firm owners. The tax authority obtains signals of firm value that are largely accurate but may not incorporate recent information that has not yet been revealed in profitability or other objective measures. In order to capture the tax authority's information acquisition process it is useful to consider a model in which the true value of a family firm at time $\hat{t}$ is given by:

$$q_{\hat{t}} = z_{\hat{t}}\theta_{\hat{t}} + \int_0^{\hat{t}} u_t dt, \tag{2.3}$$

in which $z_{\hat{t}}$ is a vector of observable variables at time $\hat{t}$, $\theta_{\hat{t}}$ is a date-specific coefficient vector, and u_t is a time t innovation, the value of which is known to firm owners but not necessarily to the tax authorities. $z_{\hat{t}}$ and $\theta_{\hat{t}}$ are assumed to be common knowledge. In the formulation of equation (2.3), the true firm value is a function of observable considerations captured in z and also a function of factors that are unknown to outsiders.
The signal of firm value available to the tax authority at time $\hat{t}$ is $s_{\hat{t}}$, given by:

$$s_{\hat{t}} = z_{\hat{t}}\theta_{\hat{t}} + \int_0^{\hat{t}-\gamma} u_t dt + \int_{\hat{t}-\gamma}^{\hat{t}} u_t \left(\frac{\hat{t}-t}{\gamma}\right) dt. \tag{2.4}$$

In this formulation $s_{\hat{t}}$ differs from the true value $q_{\hat{t}}$ in that the calculation of $s_{\hat{t}}$ attaches linearly declining weight to more recent draws of u_t, starting a period of time γ prior to the present. This corresponds to the tax authority not having the same information as taxpayers about recent developments that affect the firm value, with the least weight attaching to the most recent developments.
In the model expressed by equation (2.4), and for unchanging values of z and θ, the tax authority's signal of firm value evolves according to:

$$\frac{ds_{\hat{t}}}{d\hat{t}} = \frac{1}{\gamma}\int_{\hat{t}-\gamma}^{\hat{t}} u_t dt. \tag{2.5}$$

Equation (2.5) implies that if recent draws of u_t are positive, then s_t increases over time, reflecting that the tax authority only gradually incorporates the most recent information in its valuation of the firm. This most recent information, the cumulative draws of u_t between time $\hat{t} - \gamma$ and time $\hat{t}$, might also be described as the current business conditions of the firm. When current business conditions are favorable then the tax authority will gradually revise upward its valuation of the firm, whereas when current business conditions are unfavorable the tax authority will gradually revise downward its valuation of the firm. It is useful to consider the application of the model of firm valuation in equations (2.3)-(2.5) to optimal ownership transfer characterized in equation (2.2). If tax laws are unchanging then $\frac{\partial \tau(s_{t^*},t)}{\partial t^*} = 0$ and the fifth term on the right side of (2.2) disappears. It follows from (2.5) that if current business conditions are favorable, $\frac{ds_{\hat{t}}}{d\hat{t}} > 0$ which, given that $\frac{\partial \tau(s_{t^*},t^*)}{\partial s_{t^*}} > 0$, should encourage earlier transfers of ownership. It is worth bearing in mind that $\frac{d\psi}{dt^*} = 0$ characterizes local optima, of which there may be more than one, and that discrete changes in tax laws or business conditions may produce situations in which there are discrete jumps in the value of ownership transfers.

2.5 Data and Descriptive Statistics

2.5.1 Data

We conducted a survey on inheritances, inter vivos transfers, and transfer taxation (the Inheritance and Gift Tax Survey – IGTS) among owners of family firms in February and March 2014. We first asked participants in the monthly Ifo business survey whether they considered themselves to be family firms.[7] The Ifo business survey is conducted every month among 7,000 German firms, and provides the basis for the Ifo Business Climate Index, Germany's leading business cycle indicator. 4,660 firms identified themselves as family firms. We then sent out the IGTS to the family firms. The response rate was an encouraging 36%.[8] Among other things, respondents provided information on years in which they made inter vivos transfers (exact amounts of transfers are unknown) and the

[7] A firm is defined as a family firm if most voting capital is held by one or several interconnected families.

[8] See Seiler (2010) on nonresponse in business surveys.

years in which they paid gift taxes.[9] Understanding the determinants of this measure of inter vivos transfer is the focus of this study.

The IGTS data on transfers of business ownership were matched to Ifo business survey data. The Ifo business survey includes information on the current state of business,[10] the expected development of employment, and credit conditions. Survey measures based on the self-assessment of managers may contain more information than that embedded in financial statement data. Survey responses related to the current state of business, for example, may reflect not only current turnover and profit figures (Abberger et al. 2009), but also new information, especially when requested in the second half of the year when balance sheet information is old (Hönig 2012). Similarly, self-reported firm credit conditions capture financial restrictions more comprehensively than do standard measures such as leverage, credit ratings, and liquidity. Since our sample includes firms that are not quoted on the stock exchange, financial restrictions can be quite important (Hönig 2012). The business survey data also includes firm characteristics such as numbers of employees, broad industry (construction, retail, manufacturing or services), the founding year, and the legal form of each firm. In addition to the survey-based data, we use balance sheet data such as total assets and total equity, based on the Amadeus Bureau van Dijk and Hoppenstedt Firmeninformationen GmbH data bases.[11] Business survey and balance sheet data are pre-processed and provided by the Economics & Business Data Center at the University of Munich and the Ifo Institute, Munich.[12]

The study uses annual data. In cases where monthly data are available, for instance from the business survey, these data are converted to yearly frequency by computing yearly averages. Balance sheet data are not available for all firms, and not for the year 2013. The sample size therefore decreases considerably when including balance sheet control variables in some regressions.

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[9] The survey questions are "Have there been inter vivos transfers of assets in your firm since the year 2000? Yes, in the year. . . / no," and "Have you paid the gift tax since the year 2000? Yes, in the year . . . /no."

[10] The survey statement is "We evaluate our present state of business as good/satisfactory/bad." Complete questionnaires are available at doi: 10.7805/ebdc-bep-2012.

[11] See Hönig (2009, 2010) on how survey and balance sheet data are linked.

[12] See Seiler (2012) for more information.

2.5.2 Descriptive Statistics

Table 2.5 shows descriptive statistics for the subsamples of firms that did not, and those that did, make inter vivos transfers. The total sample includes 13,706 observations of 1,654 firms. 316 firms reported one or more inter vivos transfers (358 inter vivos transfers in total) since 2000. The share of firms making inter vivos transfers is thus quite small.[13] Since business assets are an illiquid form of wealth, the small share of observed inter vivos transfers in our sample is reasonable (Poterba 2001). One variable in Table 2.5 is reported in categorical form: firm employment, which is measured as an integer from 0-5, with 0 corresponding to 0-19 employees, 1 corresponding to 20-49 employees, 2 corresponding to 50-249 employees, 3 correspdonging to 250-999 employees, 4 corresponding to 1000-4999 employees, and 5 corresponding to 5000 or more employees. Table 2.6 shows pairwise correlations of the variables.

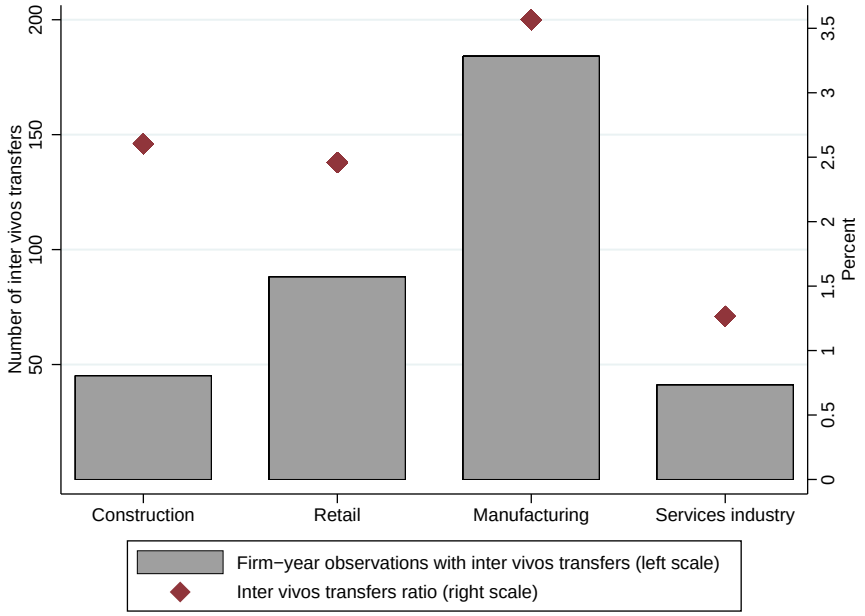
Figures 2.1, 2.2, and 2.3 describe the distribution of inter vivos transfers among firms in or with different industries, legal forms, and numbers of employees. The sample includes firms in the construction (45 inter vivos transfers), retail (88 transfers), manufacturing (184 transfers) and service industries (41 transfers). The rhombi in Figure 2.1 show that relative to the whole sample, inter vivos transfers are more likely to occur in the manufacturing, construction, and retail industries than in services. Figure 2.2 shows that inter vivos transfers mostly occurred in firms operating as partnerships (46 transfers) or corporations (44 transfers), but rarely in proprietorships (one transfer).[14] Figure 2.3 shows that most inter vivos transfers in the sample (126 transfers) are made by firms with between 50 and 249 employees. The rhombi indicate that the likelihood of making inter vivos transfers increases with numbers of employees. While inter vivos transfers occur in only 1.46% of firm-year observations of firms with fewer than 19 employees, they do so in 8% of the cases of firms with more than 5000 employees.

Figure 2.4 shows the average current state of business of firm-year observations with and without inter vivos transfers. The dashed line describes the average current state of business of firms making contemporaneous inter vivos transfers (left scale). The solid line describes the average current state of business of firms not making contemporaneous inter

[13] Given asymmetries in reporting, it is likely that even fewer transfers would have been recorded if the survey instead asked beneficiaries about receipts of transferred business assets (Gale and Scholz 1994).

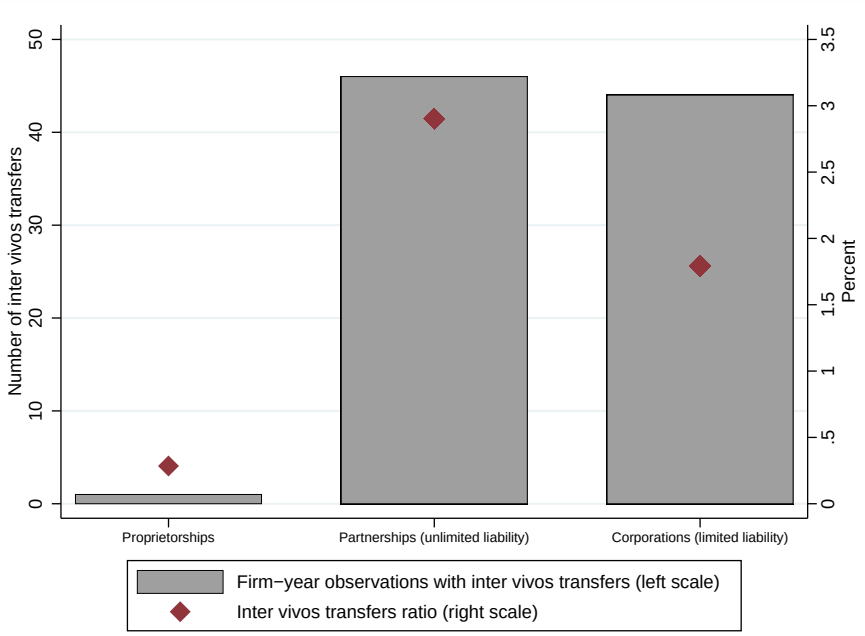
[14] Data on the legal form and the number of employees are not available for the entire sample; consequently, Figures 2.1 to 2.3 are each based on different samples.

FIG. 2.1: Industry and inter vivos transfers



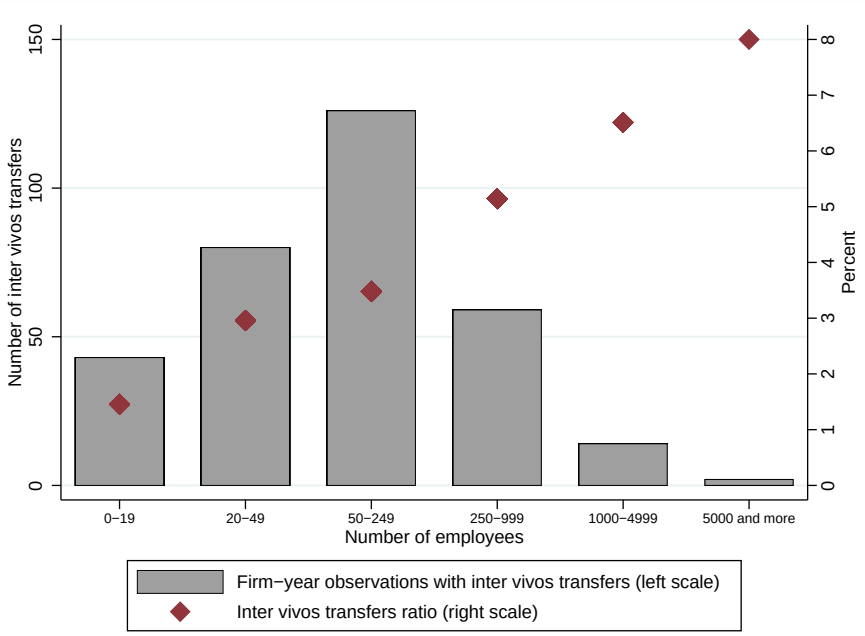
NOTE: The shaded bars depict numbers of firm-year inter vivos transfers (left scale) by industry, whereas the rhombi denote ratios (right scale) of these transfers to total firm-year observations in each industry. SOURCE: Own illustration.

FIG. 2.2: Legal form and inter vivos transfers



NOTE: The shaded bars depict numbers of firm-year inter vivos transfers (left scale) by legal form of business, whereas the rhombi denote ratios (right scale) of these transfers to total firm-year observations of firms with each legal form. SOURCE: Own illustration.

Fig. 2.3: Firm size and inter vivos transfers



Note: The shaded bars depict numbers of firm-year inter vivos transfers (left scale) by firm size as measured by numbers of employees, whereas the rhombi denote ratios (right scale) of these transfers to total firm-year observations among firms of each size category. Source: Own illustration.

vivos transfers (left scale). The bars in the background display numbers of inter vivos transfers made each year (right scale). Annual numbers of inter vivos transfers rise over the sample period. Figure 2.4 indicates that firms making inter vivos transfers in most years had better current business situations than firms not making inter vivos transfers. The years 2000-2001, 2003, and 2005-2006 are exceptions, though the mean current state of business of firms with inter vivos transfers is based on only 4 to 13 observations in each of those years, reflecting that information on the current state of business is available for less than half of the reported inter vivos transfers in years prior to 2006, and making any inference potentially subject to the influence of outliers. The figure also suggests that the current state of business and number of inter vivos transfers are positively correlated. For example, when the financial and economic crisis hit in 2009 and the business situation deteriorated, firms made fewer inter vivos transfers than in preceding or subsequent years. Most reported transfers took place since 2010. It is impossible to rule out recall bias, in which survey respondents are less apt to remember inter vivos transfers made years earlier – though these ownership transfers are so important to owners of family firms that it is difficult to imagine that they could possibly forget even the details of transfers during the preceding 15 years. In a similar vein, some family firms in the sample might not have been in existence at the start of the observation period. Another source of potential bias is sample selection, because, by construction, the sample includes only firms that still operated in 2014. Unsuccessful family firms disappeared from the market and cannot be included.

2.6 Empirical Analysis

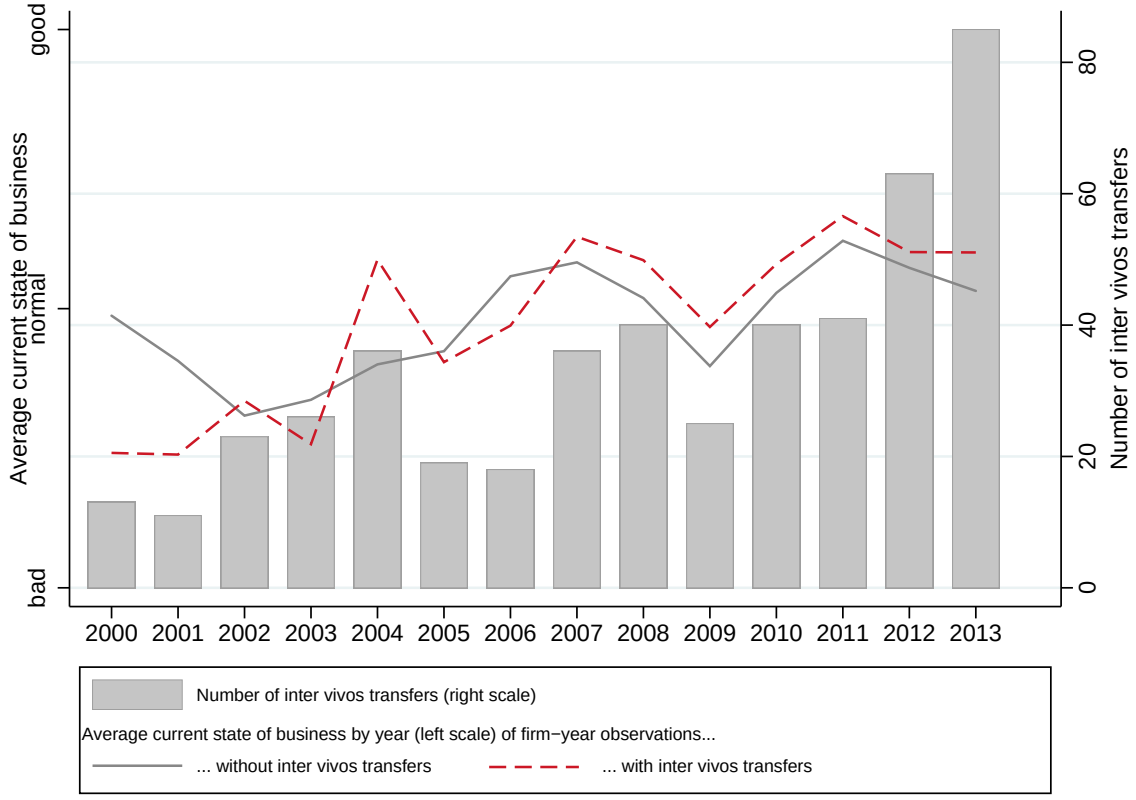
2.6.1 Empirical Strategy

The theory sketched in section 2.4 implies the following baseline empirical model of the ownership transfer decision:

$$T_{it} = \beta_1 c_{it} + \beta_2 x_{it} + \epsilon_{it}, \tag{2.6}$$

in which T_{it} takes the value one if firm i reports an inter vivos transfer in year t, and is zero otherwise. The variable c_{it} in equation (2.6) is the yearly average of firm i's percep-

FIG. 2.4: Business conditions and inter vivos transfers



NOTE: The shaded bars depict numbers of inter vivos transfers (right scale) each year. The solid line is the average current state of business of firms without contemporaneous inter vivos transfers, and the dashed line is the average current state of business of firms with contemporaneous inter vivos transfers. SOURCE: Own illustration.

tion of the current business situation, measured on a scale between one (bad) and three (good). The variable x_{it} is a vector of firm i and year t characteristics, and β_1 a scalar and β_2 a vector of coefficients to be estimated. Control variables include firm sizes as measured by numbers of employees, and a dummy variable for years before the 2009 reform of inheritance and gift taxation. It is reasonable to expect inter vivos transfers to occur more frequently among larger firms with better current business conditions, and in years when the tax regime favors inter vivos transfers relative to inheritances. Additional control variables include firm assets, firm equity, firm age, dummy variables for a firm's legal form of organization, a firm's self-reported credit status, and its expected future development of employment. Equation (2.6) is estimated as a random-effects logit model with classical standard errors.

2.6.2 Results

Table 2.1 presents results of estimating equation (2.6), displayed in odds ratios, for which an odds ratio of 1.0 implies that the associated variable has no effect on the dependent variable, and the p-values reported in Table 2.1 correspond to tests of the hypotheses that the odds ratios equal unity. The regression reported in the first column includes the current business situation as an explanatory variable; the associated 1.439 odds ratio implies that improving business conditions from "bad" to "normal" or "normal" to "good" increases the likelihood of an inter vivos transfer by 43.9 percent. The odds ratio is statistically significant at the 1% level. The regressions reported in columns (2) to (4) include industry fixed effects, and sequentially add a dummy variable for the period before 2009, and numbers of employees (measured in six categories). The 1.456 odds ratio in column (4) implies that when the current business situation increases by one point (from bad to normal or normal to good), the chance of making an inter vivos transfer increases by 45.6 percent. The 0.499 odds ratio of the dummy variable for the period before 2009 in column (4) is smaller than one and statistically significant at the 1% level, indicating that, conditional on other variables, firms were less likely to make inter vivos transfers before the inheritance and gift tax reform in 2009 than after the reform. The odds ratio of the current business situation remains statistically significant at the 1% level. The odds ratio of the number of employees is larger than one and statistically significant at the 1% level in column (4).

TABLE 2.1: Determinants of inter vivos transfers: Baseline regressions

	(1) Inter vivos transfers	(2) Inter vivos transfers	(3) Inter vivos transfers	(4) Inter vivos transfers
Current state of business	1.439***	1.516***	1.420***	1.456***
	(0.000)	(0.000)	(0.000)	(0.000)
Pre estate and gift tax reform 2009			0.543***	0.499***
			(0.000)	(0.000)
Number of employees (cat.)				1.453***
				(0.000)
Industry Fixed Effects	No	Yes	Yes	Yes
Observations	13706	13706	13706	10661
Groups	1654	1654	1654	1639
Pseudo R^2	0.00437	0.0187	0.0276	0.0351
Chi-squared	14.48	62.09	91.41	101.9
Prob > Chi-squared	0.000141	1.05e-12	3.40e-18	9.89e-20
Log likelihood	-1650.3	-1626.5	-1611.9	-1399.7

NOTE: The table presents results of estimating random-effects odds ratio logit models of the likelihood of inter vivos business asset transfers. "Pre estate and gift tax reform 2009" is a dummy variable taking the value 1 for years prior to 2009 and zero otherwise. "Industry fixed effects" are dummy variables for retail, manufacturing, services industries, construction being the reference category. The table reports test results based on classical standard errors; the p-values in parentheses are for tests of no effect of independent variables on odds ratios of inter vivos transfers (corresponding to coefficients of 1.00). The chi-squared test statistic reflects a test that all independent variable coefficients equal 1.00.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.2 presents regressions with additional independent variables. The regressions reported in columns (1) and (2) of Table 2.2 add control variables for the firm's expected development of employment and credit conditions. The odds ratio of the credit conditions variable is statistically significant at the 1% level, its magnitude implying that when credit conditions are difficult, the chance of making an inter vivos transfer decreases by 36.6%. The regressions in columns (3) to (5) control for other firm characteristics: firm age (in years), a firm's legal form of organization, total assets (in logs, column 4), and total equity (in logs, column 5). The odds ratio of firm age (a variable having a maximum value of 882 years) is statistically significant at the 5% level only in the regression reported in column (3). The odds ratio of total assets is statistically significant at the 1% level, and similarly, the odds ratio of total equity is statistically significant at the 5% level; together they indicate that inter vivos transfers are more common among larger and more valuable firms.[15] Including these firm size and value variables somewhat diminishes the statistical significance of the effect of the current business situation, reflecting the collinearity of these variables as well as smaller sample sizes. As noted in section 4.2, good current business situations affect expected future firm value but may not be yet captured in current taxable value. Because firm characteristics are not available for the full sample, the number of observations in columns (3) to (5) of Table 2.2 (including firm age and size) is much smaller than the number of observations in the regressions in Table 2.1. The regression reported in column (6) includes a linear and quadratic time trend to control for whether firms made inter vivos transfers more frequently in recent years. The estimated odds ratio of the squared trend is statistically significant at the 5% level, suggesting that transfers have been more frequent recently; inclusion of time trend variables does not change the estimated positive effects of firm size and the current state of business.

The regression results indicate that better current business situations are associated with greater likelihoods of inter vivos transfers. The association persists when controlling for the 2009 tax reform, industry, firm size, and firm value. This pattern is consistent with firm owners having inside knowledge about a firm's current business situation that is not yet fully captured in taxable value for transfer tax purposes. As a result, when the current business situation is good, a firm's valuation for transfer tax purposes is likely to increase

[15] These specifications, and indeed the available data, do not distinguish between wealth effects (Poterba 2001, Hrung 2004, Villanueva 2005) and ownership effects (more valuable firms have more owners and therefore more potential donors).

TABLE 2.2: Additional determinants of inter vivos transfers

	(1) Inter vivos transfers	(2) Inter vivos transfers	(3) Inter vivos transfers	(4) Inter vivos transfers	(5) Inter vivos transfers	(6) Inter vivos transfers
Current state of business	1.374**	1.444***	2.212***	1.495*	1.538*	1.359***
	(0.012)	(0.002)	(0.001)	(0.097)	(0.079)	(0.004)
Pre estate and gift tax reform 2009	0.502***	0.568***	0.630*	0.962	0.940	1.385
	(0.000)	(0.000)	(0.064)	(0.885)	(0.816)	(0.200)
Number of employees (cat.)	1.451***	1.498***	1.148			1.472***
	(0.000)	(0.000)	(0.269)			(0.000)
Expected development of employment	1.187					
	(0.400)					
Credit conditions		0.634***				
		(0.007)				
Firm age			1.003**	1.000	1.001	
			(0.018)	(0.909)	(0.730)	
Proprietorship			0.165*	0.000	0.000	
			(0.080)	(1.000)	(1.000)	
Corporation			0.694	0.797	0.715	
			(0.149)	(0.406)	(0.216)	
Total assets (log)				1.284***		
				(0.003)		
Total equity (log)					1.183**	
					(0.020)	
Linear time trend						0.971
						(0.735)
Squared time trend						1.011**
						(0.027)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10659	8407	2798	2590	2378	10661
Groups	1639	1222	625	748	706	1639
Pseudo R^2	0.0354	0.0419	0.0492	0.0458	0.0386	0.0434
Chi-squared	102.6	101.9	31.85	27.47	22.43	125.9
Prob > Chi-squared	3.11e-19	1.02e-19	0.0000990	0.00117	0.00762	1.97e-23
Log likelihood	-1399.3	-1163.4	-307.7	-285.9	-279.3	-1387.7

NOTE: The table presents results of estimating random-effects odds ratio logit models of the likelihood of inter vivos business asset transfers. "Pre estate and gift tax reform 2009" is a dummy variable taking the value 1 for years prior to 2009 and zero otherwise. The reference category of the dummy variables "Proprietorship" and "Corporation" is "Partnership." "Industry fixed effects" are dummy variables for retail, manufacturing, and services industries, construction being the reference category. The table reports test results based on classical standard errors; the p-values in parentheses are for tests of no effect of independent variables on odds ratios of inter vivos transfers (corresponding to coefficients of 1.00). The chi-squared test statistic reflects a test that all independent variable coefficients equal 1.00.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

in the future, creating an incentive to accelerate asset transfers. In addition, when a firm's business situation is good, the firm owner perceives the firm to be more successful in the future than when the business situation is bad, and possibly less needy of the value provided by maintaining original ownership. Anticipating the need at some point to pass on a successful firm to the next generation is likely to influence tax planning and encourage immediate transfers of business assets.

2.6.3 Robustness Tests

Tables 2.3 and 2.4 present results of additional regression specifications intended to explore the robustness of the results appearing in Table 2.1.

Unobserved firm-specific characteristics (such as the presence of a qualified successor or the age of the owner) may be correlated with the regressors. It is possible to control for unobserved firm-specific characteristics by estimating fixed effects models that exploit only the within variation of the explanatory variables. Fixed effects estimation of nonlinear panel data is possible for the logit model, but not for the probit model. Column (1) of Table 2.3 reports the results of a fixed-effects logit model, which are consistent with inferences based on the results reported in Table 2.1. Among firms making at least one inter vivos transfer during the observation period, inter vivos transfers are 46.1 percent more likely to occur when the current state of business is good than when the current state of business is normal.

Columns (2) and (3) of Table 2.3 present the results of estimating random-effects probit and OLS models, instead of the baseline random-effects logit model. The results remain qualitatively unchanged. Columns (4) and (5) display the results of logit estimation of the determinants of inter vivos transfers before and after the 2009 reform; in both time periods the likelihood of asset transfer is positively associated with the current state of business. The regression reported in column (1) of Table 2.4 restricts the sample to firms making at most one inter vivos transfer over the observation period, with results that closely resemble those for the whole sample reported in column (4) of Table 2.1. The regression reported in column (2) of Table 2.4 uses data only for firms not older than 250 years, thereby dropping seven of the observations used in the regression reported in column (3) of Table 2.2. The results are almost identical, with the current state of business continuing to be associated

TABLE 2.3: Alternative inter vivos transfer specifications I

	(1) FE Logit	(2) RE Probit	(3) RE OLS	(4) RE Logit: before tax reform	(5) RE Logit: after tax reform
Current state of business	1.461**	0.161***	0.010***	1.394*	1.522***
	(0.010)	(0.000)	(0.000)	(0.090)	(0.001)
Pre estate and gift tax reform 2009	0.497***	-0.286***	-0.019***		
	(0.000)	(0.000)	(0.000)		
Number of employees (cat.)		0.161***	0.011***	1.138	1.611***
		(0.000)	(0.000)	(0.233)	(0.000)
Industry Fixed Effects	No	Yes	Yes	Yes	Yes
Observations	3255	10661	10661	4501	6160
Groups	316	1639	1639	769	1639
Pseudo R^2		0.0344	0.00334	0.00613	0.0405
Within R^2	0.0264				
Chi-squared	40.66	99.76	82.14	5.555	79.68
Prob > Chi-squared	1.48e-09	2.81e-19	1.29e-15	0.235	9.80e-16
Log likelihood	-748.9	-1400.8		-450.0	-944.2

NOTE: The table presents results of estimating models of the likelihood of inter vivos business asset transfers. Column (1) presents the result of a fixed effects logit odds ratio specification; columns (1), (4) and (5) report test results based on classical standard errors, with p-values in parentheses for tests of no effect of independent variables on odds ratios of inter vivos transfers (corresponding to coefficients of 1.00). Column (2) presents the result of a random effect probit specification in which the dependent variable takes the value 1 for firm-years in which there is an inter vivos transfer, and zero otherwise; the column reports estimated classical standard errors. Column (3) presents the result of a random effects OLS specification in which the dependent variable takes the value 1 for firm-years in which there is an inter vivos transfer, and zero otherwise; the column reports estimated Huber/White/sandwich standard errors. Columns (4) and (5) present results of random-effects odds ratio logit models of the likelihood of inter vivos business asset transfers, with the sample restricted to years prior to 2009 in the column (4) regression, and restricted to years after 2008 in the column (5) regression. "Pre estate and gift tax reform 2009" is a dummy variable taking the value 1 for years prior to 2009 and zero otherwise. "Industry fixed effects" are dummy variables for retail, manufacturing, and services industries, construction being the reference category. The chi-squared test statistic reflects a test that the independent variables jointly have no effect.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 2.4: Alternative inter vivos transfer specifications II

	(1) RE Logit: Inter vivos<=1	(2) RE Logit: Firm age<250	(3) RE Logit: Lag state of business	(4) RE Logit: Lead state of business	(5) RE Logit: Inter vivos transfers with transfer tax payment
Current state of business	1.429***	2.209***			1.549
	(0.003)	(0.001)			(0.133)
Pre estate and gift tax reform 2009	0.519***	0.625*	0.492***	0.582***	0.940
	(0.000)	(0.062)	(0.000)	(0.000)	(0.846)
Number of employees (cat.)	1.373***	1.151	1.475***	1.357***	1.727***
	(0.000)	(0.278)	(0.000)	(0.000)	(0.001)
Firm age		1.003			
		(0.332)			
Proprietorship		0.166*			
		(0.081)			
Corporation		0.699			
		(0.164)			
Lagged current state of business			1.444***		
			(0.001)		
Lead current state of business				1.166	
				(0.220)	
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	10309	2791	9600	9038	10661
Groups	1607	624	1614	1612	1639
Pseudo R^2	0.0264	0.0454	0.0381	0.0221	0.0466
Chi-squared	62.99	29.03	101.1	49.29	26.24
Prob > Chi-squared	1.11e-11	0.000313	1.47e-19	6.52e-09	0.0002
Log likelihood	-1160.0	-305.2	-1277.3	-1089.7	-268.2

NOTE: The table presents results of estimating random-effects odds ratio logit models of the likelihood of inter vivos business asset transfers. The sample used in the column (1) regression is restricted to firms making at most one inter vivos ownership transfer over the sample period. The sample used in the column (2) regression is restricted to firms that have been in operation for fewer than 250 years. The dependent variable in the regression reported in column (5) is constructed based only on inter vivos transfers that are accompanied by positive gift tax liability. "Lagged current state of business" is the one year lag of "current state of business." "Lead current state of business" is the one year lead of "current state of business." "Pre estate and gift tax reform 2009" is a dummy variable taking the value 1 for years prior to 2009 and zero otherwise. The reference category of the dummy variables "Proprietorship" and "Corporation" is "Partnership." "Industry fixed effects" are dummy variables for retail, manufacturing, and services industries, construction being the reference category. The table reports test results based on classical standard errors; the p-values in parentheses are for tests of no effect of independent variables on odds ratios of inter vivos transfers (corresponding to coefficients of 1.00). The chi-squared test statistic reflects a test that all independent variable coefficients equal 1.00.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

with asset transfers, but the odds ratio of firm age does not turn out to be statistically significant.

The regression reported in column (3) of Table 2.4 addresses the potential endogeneity of the current state of business variable by using its first lag rather than the contemporaneous value. The estimated odds ratio diminishes in magnitude but remains statistically significant. The regression reported in column (4) drops this lagged variable and instead uses the first lead, as a result of which the estimated odds ratio becomes statistically insignificant. The positive association between the current state of business and the likelihood of inter vivos transfers may depend on whether firm owners transfer assets in excess of exempt amounts. The regression reported in column (5) of Table 6 replaces the dependent variable by a variable that assumes the value one when firms report an inter vivos transfer in a given year and a transfer tax payment in the same year or during the following three years, and zero otherwise.[16] While this specification produces a larger estimated odds ratio of the current state of business, the smaller sample size also produces a larger accompanying standard error, so the odds ratio lacks statistical significance. Thus the data do not support a conclusion that there is a statistically significant effect of the current state of business on the likelihood of taxed inter vivos transfers. Several other specification checks produce results consistent with inferences drawn from the evidence presented in Tables 2.1 – 2.4, and the Appendix 2.10 considers issues with selective responses to the survey.[17]

2.7 Conclusion

Policymakers are understandably concerned about the potential effect of transfer taxes on the liquidity of family firms and the resulting viability of ongoing business operations. One way to address liquidity issues is to encourage inter vivos giving, so that firms choose when to transfer ownership rather than relying on mortality. The results in this paper

[16] 13 percent of inter vivos transfers were accompanied by a tax payment in the same year or during the following three years (see Table 2.5).

[17] Replacing the current state of business variable with 0-1 dummies for either good or bad business conditions (two separate specifications) and replacing the number of employees variable by dummy variable for each category of number of employees produces results very similar to those reported in Table 2.1, as does estimation of standard errors in the Table 2.1 baseline regressions using bootstrap and jackknife procedures or using standard errors robust to heteroskedasticity and clustered at the individual level (Huber/White/sandwich standard errors – see Huber 1967 and White 1980).

indicate that ownership succession is more likely when market conditions are good, which is consistent with tax avoidance and with a desire to transfer ownership of better-performing assets. It may also be the case that when the business situation is good, firm owners have the time and resources to tackle the (not urgent) problem of succession planning.
These patterns suggest that, for a given firm value, intergenerational transfer taxation imposes greater burdens on underperforming firms than on firms that perform well. Well performing firms are more likely to make inter vivos transfers of business assets, which are generally tax favored and can be timed to maximize tax advantage. If an underperforming firm does not manage to prepare for succession in advance, the inheritance tax burden at the moment of the owner's death will be larger than the tax burden of an otherwise-similar well performing firm, the assets of which were transferred during lifetime. The desirability of distinguishing tax burdens in this way may depend on the impact of transfer taxes on the activities of well performing and poorly performing firms, about which currently very little is known.

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2.9 Appendix A: Additional Tables

Table 2.5: Descriptive statistics

	Obs.	Mean	Std. Dev.	Min.	Max.	Source
No inter vivos transfers						
Inter vivos transfers	13348	0.00	0.00	0	0	see below
Current state of business	13348	2.01	0.57	1	3	
Construction	13348	0.13	0.33	0	1	
Retail	13348	0.26	0.44	0	1	
Manufacturing	13348	0.37	0.48	0	1	
Services industries	13348	0.24	0.43	0	1	
Expected development of employment	13341	1.95	0.34	1	3	
Number of employees (cat.)	10337	1.33	1.07	0	5	
Credit conditions	8259	0.31	0.46	0	1	
Proprietorship	4301	0.08	0.27	0	1	
Partnership	4301	0.36	0.48	0	1	
Corporation	4301	0.56	0.50	0	1	
Firm age	3792	40.01	45.59	0	882	
Total assets (log)	3025	14.86	1.87	7	21	
Total equity (log)	2797	13.57	2.10	6	21	
Inter vivos transfers						
Inter vivos transfers	358	1.00	0.00	1	1	
Current state of business	358	2.13	0.56	1	3	
Construction	358	0.13	0.33	0	1	
Retail	358	0.25	0.43	0	1	
Manufacturing	358	0.51	0.50	0	1	
Services industries	358	0.11	0.32	0	1	
Expected development of employment	358	2.00	0.34	1	3	
Number of employees (cat.)	324	1.77	1.07	0	5	
Credit conditions	278	0.17	0.38	0	1	
Proprietorship	91	0.01	0.10	0	1	
Partnership	91	0.51	0.50	0	1	
Corporation	91	0.48	0.50	0	1	
Firm age	87	56.74	98.87	0	880	
Total assets (log)	68	15.75	2.12	8	21	

Table continues on next page

TABLE 2.5: (continued)

	Obs.	Mean	Std. Dev.	Min.	Max.	Source
Total equity (log)	67	14.36	2.56	8	21	
Inter vivos transfer with transfer tax payment	358	0.13	0.34	0	1	
Total sample						
Inter vivos transfers	13706	0.03	0.16	0	1	Own collection (Inheritance and Gift Tax Survey)
Current state of business	13706	2.01	0.57	1	3	Ifo business survey
Construction	13706	0.13	0.33	0	1	Ifo business survey
Retail	13706	0.26	0.44	0	1	Ifo business survey
Manufacturing	13706	0.38	0.48	0	1	Ifo business survey
Services industries	13706	0.24	0.42	0	1	Ifo business survey
Expected development of employment	13699	1.95	0.34	1	3	Ifo business survey
Number of employees (cat.)	10661	1.35	1.07	0	5	Ifo business survey
Credit conditions	8537	0.30	0.46	0	1	Ifo business survey
Proprietorship	4392	0.08	0.27	0	1	Amadeus/ Hoppenstedt
Partnership	4392	0.36	0.48	0	1	Amadeus/ Hoppenstedt
Corporation	4392	0.56	0.50	0	1	Amadeus/ Hoppenstedt
Firm age	3879	40.38	47.48	0	882	Amadeus/ Hoppenstedt
Total assets (log)	3093	14.88	1.88	7	21	Amadeus/ Hoppenstedt
Total equity (log)	2864	13.58	2.12	6	21	Amadeus/ Hoppenstedt
Inter vivos transfer with transfer tax payment	13706	0.01	0.06	0	1	Own collection (Inheritance and Gift Tax Survey)

NOTE: The top panel of the table presents descriptive statistics for firm-year observations in which there are no inter vivos transfers; the middle panel presents descriptive statistics for firm-year observations in which there are positive inter vivos transfers; and the bottom panel presents descriptive statistics for all firm-year observations. The variable "Inter vivos transfers" takes the value one if there is an inter vivos transfer, and zero otherwise. "Current state of business" takes the value 1 for firms that describe their business conditions as "bad" takes the value 2 for firms that describe their business conditions as "satisfactory" and takes the value 3 for firms that describe their business conditions as "good" (monthly survey responses are converted to yearly averages). "Construction," "Retail," "Manufacturing," and "Services Industries" are dummy variables that take the value one if a firm is active in the respective industry and zero otherwise. "Expected development of employment" takes the value 1 for firms that expect the number of employees to "decrease," takes the value 2 for firms that expect the number of employees to

"not change," and takes the value 3 for firms that expect the number of employees to "increase" (monthly survey responses are converted to yearly averages). "Number of employees" takes the value 0 for firms with 0-19 employees, 1 for firms with 20-49 employees, 2 for firms with 50-249 employees, 3 for firms with 250-999 employees, 4 for firms with 1000-4999 employees, and 5 for firms with 5000 or more employees. "Credit conditions" takes the value 1 for firms that describe their credit status as "financially constrained," and zero otherwise. "Propietorship," "Partnership," and "Corporation" are dummy variables that take the value one if a firm has the respective legal form, and zero otherwise. "Firm age" is measured in years. "Total assets (log)" is the natural logarithm of total firm assets. "Total equity (log)" is the natural logarithm of outstanding firm equity value. "Inter vivos transfers with transfer tax payment" takes the value one if there is an inter vivos transfer with accompanying gift tax payment, and zero otherwise.

TABLE 2.6: Correlation matrix

	Inter vivos transfers	Current state of business	Expected development of employment	Number of employees (cat.)	Credit conditions	Firm age	Total assets (log)
Current state of business	0.033***						
Expected development of employment	0.024**	0.548***					
Number of employees (cat.)	0.071***	0.116***	0.022*				
Credit conditions	-0.054***	-0.286***	-0.215***	-0.087***			
Firm age	0.052**	-0.117***	-0.077***	0.201***	-0.018		
Total assets (log)	0.069***	0.072***	0.024	0.793***	-0.150***	0.403***	
Total equity (log)	0.057**	0.073***	0.049**	0.705***	-0.172***	0.350***	0.880***

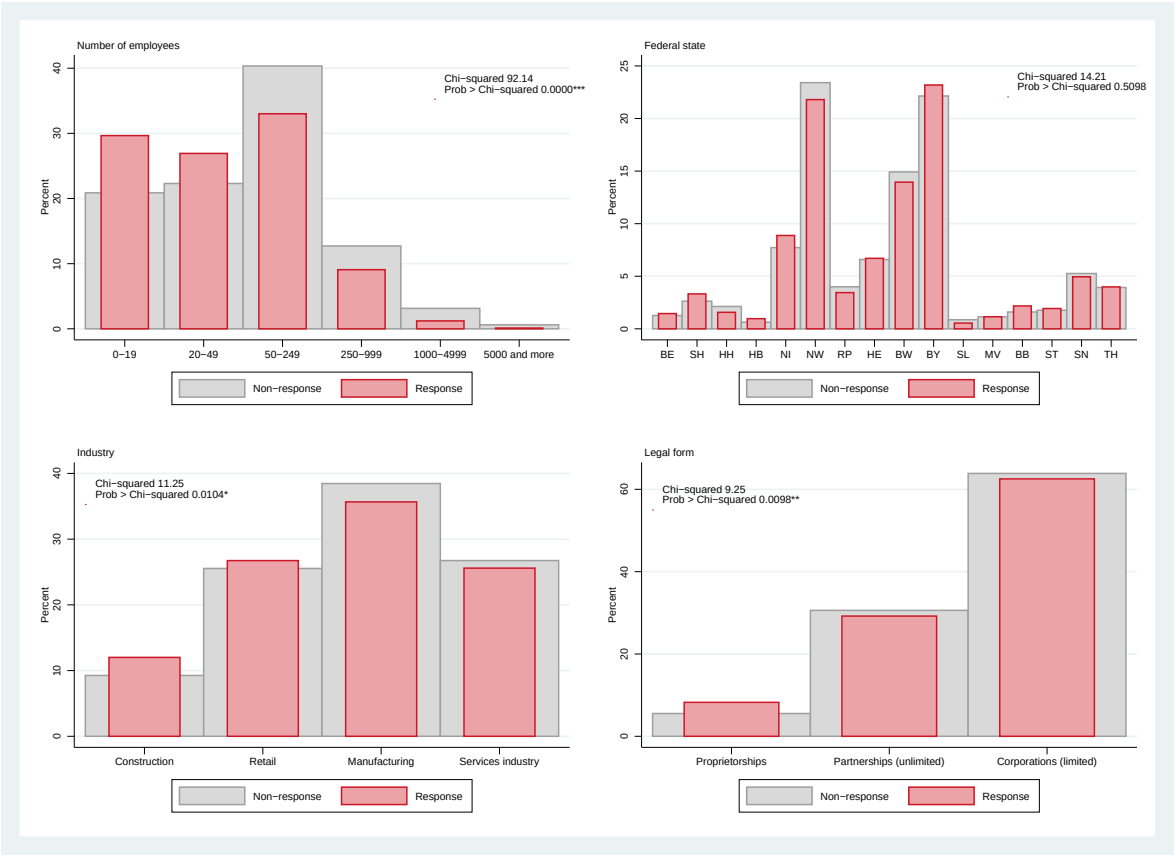
NOTE: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

2.10 Appendix B: Sample Selection

Because the study relies on survey data, response behavior may raise sample selection issues. Firms making inter vivos transfers could be overrepresented in our sample since the topic of the questionnaire is inheritance, inter vivos gifts, and their taxation. Firms unfamiliar with the inheritance and gift tax law because they did not experience a succession or did not make inter vivos transfers may have been less likely to participate because they did not consider themselves to have anything to contribute to the survey. Table 2.7 compares family firms responding to the IGTS to firms not responding. T-tests reported in Table 2.7 indicate that the means of credit conditions and firm age are not statistically different in the two subsamples. Firms responding to the survey had a somewhat worse current state of business and expected development of employment than firms not responding (2.07 and 2.10; 1.98 and 2.00). Firms responding to the survey tend to be somewhat smaller than non-response firms as measured by log total assets and log total equity (14.58 and 14.87; 13.12 and 13.41). A chi-squared test does not reject the null hypothesis that response behavior is independent of the federal state within Germany (p-value of 0.51, see Figure 2.5), but chi-squared tests indicate that response behavior varies with numbers of employees, industry and legal form. Firms responding to the survey tend to have fewer employees than firms choosing not to respond.[18] The results of the chi-squared tests and t-tests notwithstanding, there is little evidence that sample selection is an important issue in interpreting the results, since differences between the subsamples are small and the categorical variables assume multiple values in both of the subsamples. Furthermore, there is little reason to expect that self-classification as a family firm in the Ifo Business Climate Survey to be prone to sample selection, since firms answered this question prior to learning the topic of the IGTS.

[18] Firm size is correlated with industry and legal form: firms in the retail and the services industries have, on average, fewer employees than firms in the construction and manufacturing industries, and firms operating as proprietorships have, on average, fewer employees than firms operating as corporations or partnerships.

FIG. 2.5: Response rates and firm characteristics



NOTE: The figure presents distributions of IGTS survey respondents and non-respondents by size (numbers of employees), federal state within Germany, industry, and legal form of operation. The figures display results of a Pearson chi-squared test that response behavior is independent of numbers of employees / federal state / industry / legal form. SOURCE: Own illustration.

TABLE 2.7: Survey response behavior

	Non-response	Response	Test statistic (difference)
Current state of business	2.10	2.07	0.03*
N	3003	1657	(0.042)
Expected development of employment	2.00	1.98	0.02**
N	3003	1657	(0.009)
Credit conditions	0.26	0.27	-0.01
N	2180	1224	(0.347)
Firm age	40.16	38.09	2.07
N	1983	1113	(0.187)
Total assets (log)	14.87	14.58	0.29***
N	1812	1020	(0.000)
Total equity (log)	13.41	13.12	0.29***
N	1733	975	(0.001)

NOTE: The table presents numbers and mean values of responses to questions about firm characteristics, distinguishing respondents by whether or not they participated in the Inheritance and Gift Tax Survey (IGTS). Observations in the "Non-response" column represent firms not participating in the IGTS; observations in the "Response" column represent firms that did participate in the IGTS. Rows denoted "N" indicate numbers of firm-year observations of firms providing the specified information. Test statistics and p-values correspond to standard t-tests of differences between respondents and non-respondents in mean values of firm characteristics.

Chapter 3

Corporate Investment Decisions under Political Uncertainty*

3.1 Introduction

On a daily basis firms are confronted with considerable uncertainty about demand for their products, costs and profitability. Uncertainty can arise from purely economic shocks such as productivity shocks or changes in tastes or economic policy shocks such as tax and regulatory reforms. Especially during election times uncertainty is high because a change in government can give rise to economic policy reforms. Political forces may well influence managerial decisions at the corporate level. If an election can potentially result in a bad outcome from a firm's perspective, the option value of waiting to commit to an irreversible investment increases. Firms "wait and see" and rationally delay investment until the policy uncertainty is resolved before they decide on new costly investments.

Consistent with neoclassical models of the optimal capital stock, empirical studies have modeled demand for capital focusing on the effects of output and the user cost of capital (UCC). Under uncertainty, the commitment of capital is, however, more expensive than the

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standard user cost of capital.[1] The policy debate also emphasizes that uncertain changes in the tax and regulatory framework and the market environment play a role when firms decide on their investments. The UCC captures the current institutional framework, but does not reflect the uncertainty about changes in government policies firms are faced with. When uncertainty about future government policy is pronounced, firms may postpone their investments. To deal with such unpredicted policy changes I propose to add a measure of policy uncertainty to the empirical model of the neoclassical investment theory.

I investigate how political uncertainty influences corporate investment decisions employing a firm-level dataset of German manufacturing firms that combines survey and financial accounts data. I use survey information on investment (planned and realized investment). I can calculate investment revisions which are defined as the difference between planned and realized investments. Political uncertainty is an economic risk where the future path of government policy is uncertain. Before elections occur, political uncertainty is pronounced because electoral outcomes will influence political leadership and government policies. I use federal and state elections as a measure of political uncertainty. An advantage of focusing on state elections is that, in most instances, they are exogenously determined and the timing of state elections varies between states. I include political uncertainty in addition to the firm-specific standard user cost of capital and sales growth to the neoclassical investment model. To construct the UCC variable I employ detailed information on firms' asset and debt structure, and tax burden and allowance scheme following the German tax system. The results show that electoral uncertainty at the state level decreases realized investment. Investment ratios, i.e. investment over the previous year capital stock, decreased by 10.5% in years where state elections occurred relative to the average investment ratio in years with no state election. Firms seem to anticipate electoral uncertainty already when making investment plans. Firms hardly revise their investment plans. It is conceivable that firms are aware of the risks of investing in an election year but do not make explicit calculations. Rather, firms employ a rule of thumb to hold off on marginal investments that are difficult to reverse. Investment revisions occur because of updated information about realized sales growth and not because of resolved electoral uncertainty. I also find that electoral uncer-

[1] The theoretical model employing a CES production function predicts a user cost elasticity of -1. Empirical studies, however, usually find estimates significantly smaller than -1. The irreversible investment theory describes why the influence of the UCC appears to be small in many empirical studies (e.g. Cummins et al. 1994) as changes in the UCC are relevant only for firms near their individual investment threshold.

tainty negatively influences add-on investments which face a high degree of irreversibility, while non-capacity expanding investments are not influenced by electoral uncertainty.

3.2 Related Literature

3.2.1 Modeling the Investment Decision

The purpose of investment is to reach an optimal level of capital which a firm determines by maximizing its discounted flow of future profits. Absent any frictions, a firm would achieve the optimal level of capital immediately. Adjustment costs and time-to-delivery lags are some of the factors that preclude every firm from reaching the optimal capital stock instantaneously. There are two strands of empirical studies accounting for the dynamics explicitly or implicitly (Chirinko 1993). Optimization problems explicitly formalize the dynamic elements – expectations and adjustment cost technology – in the demand for investment. The most prominent models are the Q-model of investment (Tobin 1969), the Euler equation model (Abel 1980) and the direct forecasting model. Empirical implementation hardly corroborates the formal investment models (e.g. Fazzari et al. 1988, Schaller 1990). In contrast to explicit optimization models, expectations and adjustment costs have also been included implicitly in models of investment. The autoregressive distributed lag (ARDL) models derived by the standard neoclassical framework (Jorgenson 1963) are among the most important tools to study investment dynamics.[2] Distributed lag models rely less on theoretical guidance but have performed well empirically.[3]
In the neoclassical model, the adjustment process specifying the transition to the optimal capital stock is a function of output and price, i.e. the user cost of capital which is defined as the minimal rate of return on investment. The UCC depends on characteristics of the tax system and macroeconomic developments in capital and factor market conditions which are common to all firms. Empirical studies suggest also taking into account

[2] Other modeling strategies, such as VAR models or natural experiments, have been of secondary importance. One exception studying German data comes from the VAR investment model of Breitung et al. (2003).

[3] Within the ARDL framework, unobservable expectations are modeled so that expectations are assumed to be based on extrapolations of past and realized values of the variables included in the model. Instead of being driven by theory, the model specification is "ad-hoc" and thus based on an empirical specification search, e.g. searching for the number of lags that fits the data best.

firm-specific variation in the tax burden or capital structure to study the effect of the UCC on investment (Chirinko et al. 1999, Hassett and Hubbard 2002, Egger et al. 2009, Dwenger 2014). Compared to the large investment literature using Q models, fewer microeconometric studies exist that focus on estimating the effect of changes in taxes and other components of the UCC. Studies using aggregate data provided little support to the view of policy makers who seem to believe in the effectiveness of tax policy and frequently change tax regulations to influence investment behavior. The limited microeconometric research shows that the firm-specific UCC is difficult to measure. Harhoff and Ramb (2001) and Dwenger (2014) examine how taxation reflected in the UCC influences investment in Germany. Using panel data from the German Bundesbank for 1987 until 1997, Harhoff and Ramb (2001) find that the UCC decreases investment. Dwenger (2014) shows that both error correction and distributed lag models suggest that UCC and sales growth significantly influence investment decisions. Estimates of the user cost elasticity, however, are larger in size and match theoretical predictions more closely in the error correction model. Using the same data source as Dwenger (2014), Simmler (2012) examines whether financially constrained and unconstrained firms respond differently to corporate income taxation. Using a switching regression framework, Simmler (2012) shows that the UCC significantly influences investment decisions of financially unconstrained firms. Financially constrained firms do not base their investment decisions on the UCC but on the availability of internal finance and thus on the effective average tax rate which measures liquidity outflow through taxation. Büttner and Hönig (2015) combine balance sheet data with data from Germany's most important business cycle and firm survey for the years 1994-2007.[4] In addition to the negative effect of the UCC on investment, Büttner and Hönig (2015) find that the current and expected business conditions play an important role in investment decisions.

3.2.2 Investment under Uncertainty

Theoretical predictions as to what extent uncertainty influences investment are ambiguous. Early studies showed that uncertainty increases investment of risk-neutral firms. Firms can exploit positive potential of uncertainty whilst insuring against bad outcomes (Oi 1961,

[4] The business cycle and firm survey data is used as the foundation of the ifo Business Climate Index, Germany's leading business cycle indicator.

Hartman 1972, 1976, Abel 1983, Caballero 1991). Firms need to be flexible and quick in adjusting their capital stock.[5] Other studies emphasized the so-called real options effect (McDonald and Siegel 1986, Dixit and Pindyck 1994, Abel and Eberly 1994). The idea is that firms are better off waiting for more predictable conditions when they face irreversible, costly investment decisions and when economic policy uncertainty is high. Scholars also investigate how uncertainty and financial frictions interact (Arellano et al. 2010, Gilchrist et al. 2010, Pastor and Veronesi 2012). When uncertainty is pronounced, firm risk increases and borrowing costs increase as lenders demand higher interest rates, i.e. a risk premium. Scholars examining the so-called risk premium effect predict that investment decreases under uncertainty. Some studies describe that uncertainty merely coincides with bad economic times as firms need to review their operation and investment strategy to survive (Bachmann and Moscarini 2011).

Scholars have investigated the nexus between firm-level investment and uncertainty empirically. Generic uncertainty faced by firms has been measured using a variety of variables, such as the volatility of stock returns, input and output prices, total factor productivity, or firm fundamentals.[6] These studies tend to find a negative effect of uncertainty, although several studies reach ambiguous results.[7] Bloom et al. (2001) find that uncertainty slows down the reaction of firms to sales shocks, but has no long-run effects on capital demand. Böhm et al. (2001) show that uncertainty increases overall investment, but decreases investment of firms in concentrated industries. Volatility measures, especially stock price volatility, may be subject to excess volatility (e.g. due to bubbles) or may be associated with greater optimism about the firms' future prospects (Bond and van Reenen 2007). To address these concerns scholars use the dispersion in expert forecasts from survey data to create measures that capture directly firms' perceived uncertainty. Patillo (1998) and Guiso and Parigi (1999) use surveys on the subjective probability distribution of firms'

[5] The effect applies to firms with low fixed costs (Caballero and Leahy 1996), firms with an option to abandon a project (Roberts and Weitzman 1981) and firms facing bankruptcy, which limits the downside risk of a project (Stiglitz and Weiss 1981).

[6] Leahy and Whited (1996), Bloom et al. (2007), Baum et al. (2008), Bloom (2009) and Panousi and Papanikolaou (2012) look at stock price volatility. Hartman (1972), Abel (1983), and Abel and Eberly (1997) measure uncertainty about future output price changes. Abel and Eberly (1994) use profit uncertainty which incorporates all shocks from both the demand and supply side such as changes in technology, tastes and prices. Bo (2002) and Von Kalckreuth (2003) use sales volatility as a proxy of uncertainty.

[7] See Carruth et al. (2000) and Bo (2001) for detailed surveys of the empirical literature.

own demand changes. Driver et al. (2004) use a survey in which firms convey their expectations about future business conditions. Fuss and Vermeulen (2008) use a survey that provides firms' expectations about their own future demand and price changes. Instead of constructing a measure of uncertainty, Temple et al. (2001) use directly the survey answer where firms report whether demand uncertainty limits their capital expenditure.

3.2.3 Investment under Political Uncertainty

Scholars investigate the relation between policy uncertainty and corporate investment by using election years as indicators of times of high political uncertainty. Election outcomes are relevant to corporate decisions. Newly elected governments can change industry regulation, trade policy, and taxation and may affect the cost structure of firms (Hillman and Hitt 1999). If an election can potentially result in a bad outcome from a firm's perspective, the option value of waiting to invest increases and the firm may rationally delay investment until some or all of the policy uncertainty is resolved.[8] The "bad news principle" suggests that firms wait to invest in anticipation of possible negative changes in macroeconomic, taxation, or monetary policies, or in the regulatory environment in general (Bernanke 1983).[9]

Julio and Yook (2012) find evidence that firms reduce corporate investment before elections using a sample of 48 developed and developing countries. Canes-Wrone and Park (2012) show that the decline of private fixed investment before elections in ten OECD countries depends on electoral competitiveness and partisan polarization. In the US, firm investment and the quantity of home sales (a form of irreversible private investment) declines before gubernatorial elections (Jens 2013, Canes-Wrone and Park 2014, Falk and Shelton 2016). Uncertainty surrounding the legislative process, in particular about tax

[8] Postponing investment as a response to uncertainty is more than shifting investment across time as the same investment opportunity may not be available in the next period (Bernanke 1983). Uncertainty with respect to the duration of reform can impose a hefty tax on investment (Rodrik 1991).

[9] However, in some cases the election might result in good news and increase the expected return of all (mutually exclusive) investment projects the firm chooses from. It could still be optimal for the firm to delay investment if the election outcome would reorder the rankings of the individual projects in terms of expected returns. Political uncertainty is thus not required to result in negative changes but even positive changes in policies have implications for capital allocation between various investment projects and could result in an incentive for firms to delay investment. Indeed, governments frequently modify tax laws with the intent of stimulating the level of investment (Hall and Jorgenson 1967).

and monetary policy, reduces investment (Hassett and Metcalf 1999, Fernandez-Villaverde et al. 2015). Durnev (2010) examines how political uncertainty with respect to election outcomes affects firm investment response to stock prices. The sensitivity of investment to stock prices decreases in election years as the amount of information revealed in stock prices changes when future government policies are uncertain. There are also other explanations for the change of the investment response around elections. Stock prices might be less important during election times in countries where interest groups, political ties and bribes are more common. Firms may try to manipulate their investment to influence election results to protect valuable political connections. Bertrand et al. (2006) find that investment of firms with politically connected CEOs increases before municipal elections in France. Politicians may also try to manipulate firm investment to increase the chance to stay in office (Nordhaus 1975). Government-owned banks might, for example, increase lending before elections (Dinc 2005, Cole 2009).

Economic policies are related to party ideology (Hibbs 1977, Alesina 1987, 1988). Different parties will manipulate demand, labor costs, costs of capital, and the corporate tax rate, which are all central to firm profits, differently. Rightwing parties tend to implement economic policies that are more favorable to firm profits than leftwing parties (Budge et al. 2001). Political parties even target favorable policies to different industries in order to gratify their electoral and sector-specific supporters (Bechtel and Füss 2010). The information of expected government partisanship is reflected in the prices of the stock market. Stock performance of small German firms was better when the probability of a rightwing coalition winning the 2002 federal election increased (Füss and Bechtel 2008). When a rightwing coalition was more likely to win the election, stock market volatility increased. Electoral uncertainty reduced stock market volatility.

In addition to relying only on policy uncertainty resulting from election times, the Economic Policy Uncertainty Index (EPU) constructed by Baker et al. (2015) provides a monthly measure of political uncertainty. The index is a weighted average of components measuring uncertainty related to taxation, government spending and monetary policy and count key terms related to policy uncertainty in newspaper articles. Policy-related uncertainty measured by the EPU index is negatively related to firm and industry level investment, but the relation is not uniform in a cross-section of US firms (Gulen and Ion 2012). The effect is stronger for firms with a higher degree of investment irreversibility, financially constrained firms, and for firms operating in less competitive industries and is associated

with higher cash holdings and lower net debt issuance. Kang et al. (2014) find that economic policy uncertainty in interaction with firm-specific uncertainty depresses investment decisions. The effect of policy uncertainty on investment is greater for firms that have higher firm-specific uncertainty and during recessions. Policy uncertainty, however, does not influence investment behavior of very large firms.
Following the "wait-and-see" theories, the hypothesis to be tested empirically is that corporate investment is lower during periods of high political uncertainty.

3.3 Data and Descriptive Statistics

I use an unbalanced panel of survey and balance sheet data (EBDC Business Investment Panel) for German manufacturing firms over the period 1994-2012.[10] The ifo investment survey includes firm-specific responses on realized investments and investment plans and is conducted semi-annually among 2,500 firms located in Germany. Balance sheet data is provided by the Amadeus Bureau van Dijk and Hoppenstedt databases. The databases contain annual financial reports and also provide information on firm characteristics such as firm age, number of employees and the legal form.[11]
The EBDC Business Investment Panel focuses mainly on corporate investment activity and includes both forward and backward looking statements of realized and planned investment. Each spring and autumn firms are asked about the amount invested in buildings and equipment. I focus both on realized and planned investment. In the ifo investment survey firms are asked how much they have been investing in the previous year. For my realized investment variable I use the response from the autumn survey. If no response from the autumn survey is available, I use the response from the spring survey. In addition, firms are asked to provide an estimate for their planned investment for the same year. The ifo investment survey therefore allows me to consider both realized and planned investment and the resulting investment revisions. Most of the literature dealing with firm level investment

[10] The ifo investment survey and balance sheet data are pre-processed and provided by the Economics & Business Data Center (EBDC) at Ludwig-Maximilians University and the ifo Institute, Munich. An overview on how survey and balance sheet information is linked is provided in Hönig (2009, 2010). For more information on the data the EBDC provides, see Seiler (2012).

[11] Financial reports are based on the accounting and earnings-statement structure of the German Commercial Code (HGB). Balance sheet variables come from unconsolidated statements from individual accounts instead of corporate group accounts.

considers investment ratios defined as investment over total assets in the previous year. I follow this approach.[12]

Table 3.3 shows summary statistics of the main variables.[13] The realized investment ratio has a mean of 0.056 and a standard deviation of 0.053. The planned investment ratio is close to the realized investment with a mean of 0.058 and a standard deviation of 0.053. I investigate the impact of political uncertainty arising from the electoral process. I use state election years as indicators of times of high political uncertainty. Newly elected governments can locally influence the regulatory environment firms operate in. The timing of state elections is predetermined by the constitution and should be independent of fiscal policy. The dates of state elections vary between the German states. During my sample period 43 state elections occurred, i.e. between two and five elections occurred in each state.[14] State governments often set the course in structural policy and infrastructure. In the state of Baden-Württemberg, for example, the newly elected coalition of the SPD and the Greens that followed the rightwing CDU government declared the phase out of nuclear energy. The change in energy policy resulted in uncertainty about energy costs for firms. I first examine the unconditional relationship between firm-level investment and electoral uncertainty. Figure 3.1 shows realized and planned investment in state election versus no state election years. Both realized and planned investment was on average lower in state election years than in years without state elections. I present non-parametric tests of differences in means and medians of investment between state election and no state election years in Table 3.4, part A. I test the difference in means with a simple t-test. The difference in medians is tested with a Wilcoxon-Mann-Whitney test. The mean investment and planned investment ratios are lower in years where state elections occurred. The t-test for the difference in means of the realized investment ratio turns out to be statistically significant, but the t-test of investment plans lacks statistical significance. The median investment and planned investment ratios are only slightly lower or similar in state election

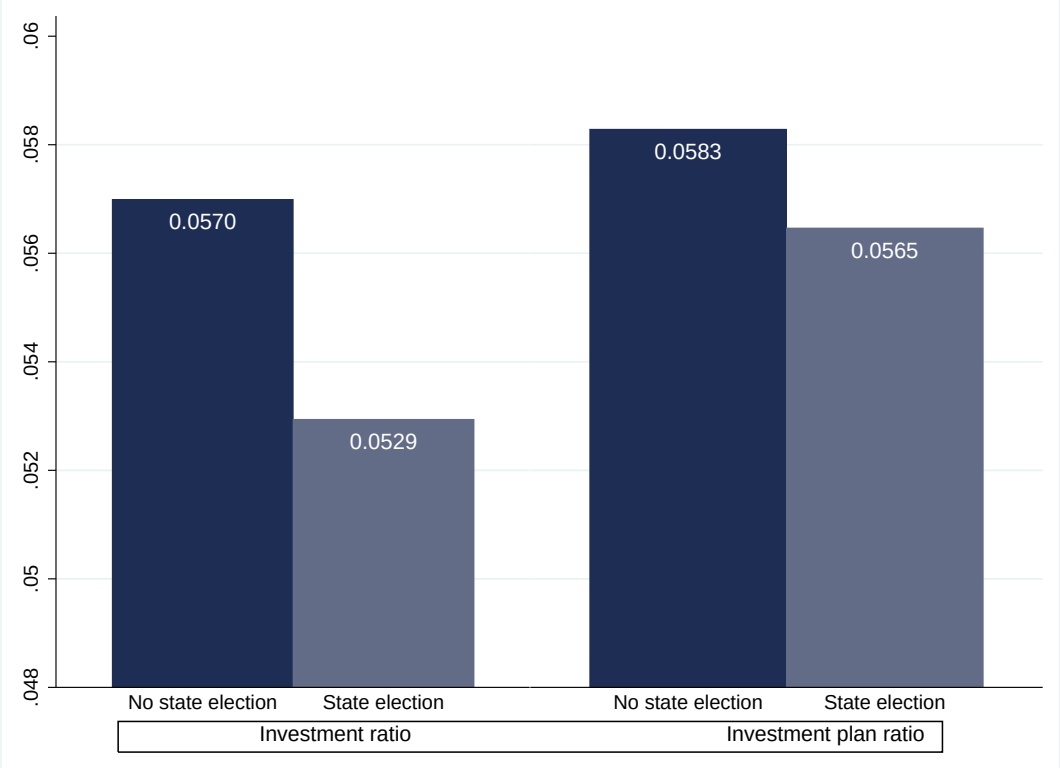
[12] As an alternative to the survey measure of investment I also calculate capital expenditures as a proxy for investment from balance sheets. Capital expenditures are defined as the change in tangible assets, plus depreciations. The correlation between investment from the survey and capital expenditures from the balance sheet is high.

[13] The firm characteristic variables are deflated and trimmed at the 1st and 99th percentiles throughout the analysis.

[14] Note that due to data limitations the sample includes only the 11 West German states.

and no state election years and the tests of difference in medians do not turn out to be statistically significant.

FIG. 3.1: Investment in state election and no state election years

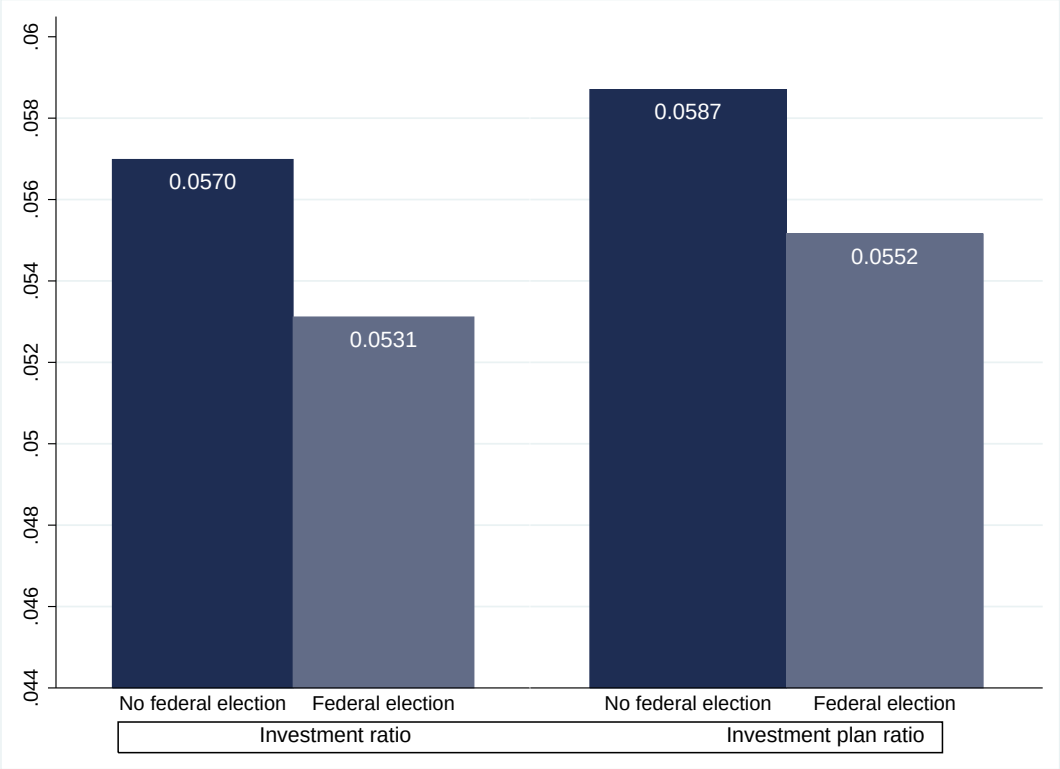


SOURCE: Own illustration.

I also use federal elections to measure political uncertainty. A change in government can influence industry regulation, trade policy, and taxation and may potentially affect the cost structure of firms. Figure 3.2 shows realized and planned investment in federal election versus no federal election years. During the sample period four federal elections took place. Both realized and planned investment was on average lower in federal election years than in no federal election years. In Table 3.4 part B, I compare realized and planned investment in years of federal elections and years where no federal election occurred. The mean and median investment and investment plans ratios are lower in federal election years. The

tests of difference in means do (marginally) not turn out to be statistically significant. The tests of difference in medians are statistically significant.

Fig. 3.2: Investment in federal election and no federal election years



Source: Own illustration.

3.4 Empirical Analysis

3.4.1 Empirical Strategy

I model investment as a function of firm-specific investment opportunities, available resources, and electoral uncertainty:

$$\frac{\mathrm{I}_{i,t}}{\mathrm{K}_{i,t-1}} = \alpha_1 \mathrm{PU}_{i,t} + \beta_1 \Delta\log\ \mathrm{UCC}_{i,t} + \gamma_1 \Delta\log\ \mathrm{S}_{i,t} + \delta_1 \mathrm{SE}_{i,t} + \mu_{1,i} + \vartheta_{1,t} + \epsilon_{1,i,t} \tag{3.1}$$

$$\frac{\mathrm{I}^P_{i,t}}{\mathrm{K}_{i,t-1}} = \alpha_2 \mathrm{PU}_{i,t} + \beta_2 \Delta\log\ \mathrm{UCC}_{i,t} + \gamma_2 \Delta\log\ \mathrm{S}_{i,t-1} + \delta_2 \mathrm{SE}_{i,t} + \mu_{2,i} + \vartheta_{2,t} + \epsilon_{2,i,t} \tag{3.2}$$

where the dependent variable is realized investment I of firm i in year t over the previous year capital stock K or investment plans I^P of firm i in year t over the previous year capital stock K. $PU_{i,t}$ describes the measure of political uncertainty. As a first measure of political uncertainty I use the variable *State election*$_{s,t}$. The variable *State election*$_{s,t}$assumes the value 1 if a state election takes place in state s a firm is headquartered in in year t and 0 otherwise. As a second measure of political uncertainty $PU_{i,t}$ I investigate federal elections. The variable *Federal election*$_t$ assumes the value 1 if a federal election takes place in year t and 0 otherwise. Note that *Federal election*$_t$varies only over time and not across firms. I therefore cannot include fixed time effects in the regression when *Federal election*$_t$is included. I control for macroeconomic fluctuations directly and include lagged GDP growth. I also include a linear and quadratic time trend. The degree of electoral uncertainty may well depend on the political orientation of the newly elected government. As a robustness check, I also control for government ideology.[15]

The key explanatory variable in the neoclassical investment model is the UCC. $\Delta logUCC_{i,t}$ denotes the growth rate of the UCC of firm i in year t. The definition of the UCC in this study follows the approach of Büttner and Hönig (2015) which is based on the work by Jorgenson (1963), Hall and Jorgenson (1967), and King and Fullerton (1984). The UCC is defined as the minimal rate of return a firm must earn on investments before taxes. When a firm evaluates investment projects, the UCC is used as a discount rate.

The $UCC_{i,t}$ of firm i at time t is given by

$$\begin{aligned} UCC_{i,t} = \left[\frac{(1-A)}{(1-\tau)*(1+\pi)} * (\rho + \delta(1+\pi_I) - \pi_I) - \delta\right] + \\ \lambda * \frac{(1-\tau*\psi)*((1-\tau)*i-\rho)}{(1-\tau)*(1+\pi)} \end{aligned} \tag{3.3}$$

[15] The dummy variable capturing political orientation assumes the value 1 when a leftwing government, 0.5 when a mixed coalition government and 0 when a rightwing government was in office (Potrafke et al. 2016). As a leftwing government I consider SPD, SPD/Greens, SPD/Greens/SSW or SPD/Die Linke. A mixed coalition government is between SPD and CDU/CSU, CDU and Greens or CDU/FDP/Greens. A rightwing government is CDU/CSU or CDU/CSU/FDP.

where the first term in squared brackets reflects the UCC when the source of finance is retained earnings and the second term reflects the difference between the UCC using retained earnings and when the investment is entirely financed with debt. τ is the effective corporate profit tax rate which can vary not only over time, but also by firm location. The municipality of a firm's headquarter determines the local business tax rate. I include the corporate tax, the solidarity surcharge and the local business tax and their interactions in the calculation of the firm-specific statutory tax rate.[16] I exploit the firm-specific information contained in the financial statement data to account for a firm's capital and asset structures. I account for a firm's capital structure by computing firm-specific, time-varying weights using the respective firm-specific share of debt to total capital λ. I calculate shares of buildings and plant/machinery as a part of a firm's tangible assets in order to obtain firm-specific depreciation rates δ, rates of capital allowances ψ and net present values of depreciation allowances A. The present value of allowances A depends on the type of asset, the respective depreciation rate and the allowance scheme. I take two types of assets into account: buildings and plant/machinery. I follow the German tax law and use straight-line depreciation for buildings and the declining-balance method for machinery.[17] Following Devereux et al. (2002) and Yoo (2003), I assume a rate of economic depreciation for machinery of $\delta^M = 12.25\%$ and $\delta^B = 3.61\%$ for buildings. I include annual data on nominal interest i and inflation rates for consumer goods π and investment goods π_I.[18] The tax-adjusted nominal discount rate is denoted by ρ. The firm-specific variance of the UCC comes from location-specific taxation and differences in the firms' financial structure and asset mix.

The second key explanatory variable in the neoclassical investment model is firms' revenue growth. $\Delta logS_{i,t}$ denotes the growth rate of revenues. I take revenues from the ifo investment survey.[19] When making investment plans, however, revenue growth is not yet

[16] See Section 3.8 Appendix B, for details on the German corporate tax system.

[17] In case of declining-balance depreciation I calculate A as $\frac{\tau\psi(1+\rho)}{\psi+\rho}$. In case of straight-line depreciation A is defined as $\frac{\tau\psi(1+\rho)}{\rho}(1-\frac{1}{(1+\rho)^n})$ where n is the number of years for which depreciation allowances can be claimed. According to the tax law, n is 25 years until the year 2000 and 33.3 years since 2001.

[18] Nominal interest rates are taken from the OECD. Inflation rates for consumer and investment goods are provided by the Federal Statistical Office. The base year is 2010.

[19] The correlation of revenues from the ifo investment survey and balance sheet data is high. I use the variable from the ifo investment survey because data availability is better.

observed by the firm and firms only know revenue growth of the year *t-1*. Firms must forecast sales growth. Firms' expectations about future sales growth are denoted by $SE_{i,t}$. I measure firms' expectations about future sales growth directly from the ifo investment survey. Corporations are asked how their investment activities will be influenced by their sales expectation. The variable $SE_{i,t}$ assumes the value 2 if investments are strongly positively influenced, 1 if investments are slightly positively influenced, 0 if investments are not influenced, -1 if investments are slightly negatively influenced or -2 if investments are strongly negatively influenced by sales expectations.

μ_i and ϑ_t describe fixed firm and fixed time effects. Fixed time effects capture macroeconomic fluctuations. Fixed firm effects capture time-invariant differences across firms. $\varepsilon_{i,t}$ denotes the error term.

An additional explanatory variable that is often included in the neoclassical investment model is cash flow. I also test specifications of the investment model including cash flow. I scale cash flow by the beginning-of-period total assets. In the empirical literature alternative explanations for the possible interpretation of significant cash flow effects exists. Cash flow can reflect the presence of financing constraints. Cash flow, however, could also be a proxy for (omitted) future profitability variables (Kaplan and Zingales 1997, 2000).

I estimate the baseline model by using panel OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors; see Huber 1967, White 1980, 1982, Stock and Watson 2008).

3.4.2 Regression Results

Table 3.1 shows the regression results for the baseline panel data model including state elections. In Columns (1) to (3) I estimate the model for realized investment. In Column (1) I include only state elections as an explanatory variable. In Column (2) I estimate the neoclassical investment model. In addition to the state elections variable I include revenue growth, the firm-specific UCC growth and sales expectation variables. In Column (3) I add the cashflow ratio. I repeat the estimations for investment plans in Columns (4) to (6) and for investment revisions in Columns (7) to (9).

State elections are negatively associated with the investment ratio. The coefficient of state election is negative and statistically significant at the 1% level in Columns (1) to (3). The numerical meaning of the coefficient of state election in Column (2) is that

in state elections years the investment ratio decreases on average by 0.006. In terms of magnitudes, the coefficient translates into a 10.5% reduction in investment ratios relative to the average investment ratio in no state election years (0.057). The coefficient of the variable revenue growth has a positive sign and is statistically significant in Columns (2) to (3). The coefficient of the variable sales expectation has a positive sign and is statistically significant at the 1% level in Columns (2) to (3).The coefficient of the variable UCC growth has a negative sign and is also statistically significant at the 1% level in Columns (2) to (3). The numerical meaning of the coefficient of UCC growth is that when UCC growth increases by one standard deviation (0.252) the investment ratio decreases by 0.013. I include the cashflow ratio in Column (3). The coefficient of the cashflow ratio is positive and is statistically significant at the 1% level. The magnitude of the coefficients is similar for investment plans. The coefficient of state elections is negative but marginally does not turn out to be statistically significant in Columns (5) and (6). The coefficient of lagged revenue growth and sales expectation are positive and statistically significant. The coefficient of UCC growth is negative and statistically significant. The coefficient of the lagged cashflow ratio is positive and is statistically significant.

My findings indicate that electoral uncertainty reduces both realized and planned investment, but the reduction in investment is only statistically significant for realized investment. I regress investment revisions, defined as the planned investment ratio minus the realized investment ratio, on the same explanatory variables to test for the hypothesis of equal coefficients in the realized and planned investment estimations. If the hypothesis cannot be rejected, all coefficients should not be statistically different from zero. None of the coefficients turn out to be statistically significant in Columns (8) and (9), except revenue growth. I can therefore not reject the hypothesis that the other coefficients on realized and planned investments are equal. Electoral uncertainty seems to have the same impact on realized investment and on investment plans. If corporate investment decisions are fully determined at the time of planning, i.e. investment plans are simply carried out, then investment revisions should be zero. In my sample investment revisions are on average small. The mean of investment revisions is 0.002. Investment revisions however vary across firms as the standard deviation of investment revisions is 0.025. For some firms and years investment revisions may well be substantial. Firms however seem to revise their investments because of updated information about realized revenue growth. Firms seem to be aware of the risks of investing in an election year and anticipate electoral uncertainty

already when making investment plans. It may well be that firms do not make explicit calculations, but rather employ a rule of thumb to hold off on marginal investments that are difficult to reverse. It is conceivable that firms simply game out the worst-case political scenario and ensure that the plan is robust to its occurrence without estimating the probabilities.

TABLE 3.1: Investment around state elections

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Investment ratio			Investment plans ratio			Investment revisions		
State election	-0.005***	-0.006***	-0.006***	-0.003*	-0.003	-0.003	0.002*	0.002	0.002
	(0.005)	(0.000)	(0.001)	(0.078)	(0.135)	(0.163)	(0.080)	(0.144)	(0.205)
Revenue growth		0.010**	0.007*					-0.008***	-0.008***
		(0.012)	(0.062)					(0.003)	(0.006)
Lagged revenue growth					0.011**	0.009*		0.002	0.004
					(0.015)	(0.056)		(0.413)	(0.239)
Sales expectation		0.006***	0.005***		0.006***	0.006***		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.802)	(0.473)
UCC growth		-0.051***	-0.056***		-0.052***	-0.043**		0.003	0.007
		(0.000)	(0.000)		(0.008)	(0.023)		(0.768)	(0.573)
Cashflow ratio			0.085***						-0.003
			(0.000)						(0.805)
Lagged cashflow ratio						0.056***			0.008
						(0.003)			(0.469)
Fixed time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2833	2492	2420	2669	1931	1880	2669	1931	1842
Firms	531	506	501	522	436	430	522	436	425
R^2 (overall)	0.024	0.071	0.132	0.027	0.075	0.117	0.008	0.016	0.013
R^2 (within)	0.068	0.121	0.130	0.062	0.117	0.114	0.011	0.025	0.025

NOTE: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.2 shows the regression results for the baseline panel data model including both federal and state elections. As before, in Columns (1) to (3) the model is estimated for realized investment. In Column (1) I include only federal and state elections as explanatory variables and time trends. In Column (2) I estimate the neoclassical investment model including federal and state elections. In Column (3) I include lagged GDP growth. I repeat the estimations for investment plans in Columns (4) to (6) and for investment revisions in Columns (7) to (9).

In Column (1) the coefficients of the federal election and state election variables have a negative sign and turn out to be statistically significant. When I add the variables of the neoclassical investment model in Column (2), the coefficient of the variable state election has a negative sign and is statistically significant at the 1% level. The coefficient of the variable federal election does not turn out to be statistically significant. The coefficient of the variable revenue growth has a positive sign and is statistically significant at the 5% level in Columns (2) to (3). The coefficient of the variable sales expectation has a positive sign and is statistically significant at the 1% level in Columns (2) to (3). The coefficient of the variable UCC growth has a negative sign and is also statistically significant. In the next specification in Column (3), the coefficients of lagged GDP growth has the expected positive sign and is statistically significant at the 5% level. The magnitude of the coefficients is similar for investment plans. The coefficient of state elections is negative in Columns (4) to (6) but does not turn out to be statistically significant for investment plans. The coefficient of federal elections is negative and statistically significant in Columns (4) and (6). The other explanatory variables have the expected signs. I test whether the coefficients in the realized and planned investment estimations are equal by regressing the same explanatory variables on investment revisions. None of the coefficients turns out to be statistically significant, except the coefficients of revenue growth and lagged GDP growth in Columns (8) and (9). Firms did not observe revenue growth and lagged GDP growth when making their plans. It is conceivable that investment revisions are explained by the updated information on revenue and GDP growth. Firms however seem to take electoral uncertainty already into account when making investment plans.

TABLE 3.2: Investment around federal and state elections

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Investment ratio			Investment plans ratio			Investment revisions		
State election	-0.003*	-0.005***	-0.005***	-0.001	-0.002	-0.002	0.002	0.002	0.002
	(0.076)	(0.004)	(0.003)	(0.354)	(0.392)	(0.190)	(0.124)	(0.175)	(0.154)
Federal election	-0.004**	-0.002	-0.002	-0.003**	-0.003*	-0.004**	0.001	-0.001	-0.002
	(0.019)	(0.197)	(0.235)	(0.046)	(0.088)	(0.013)	(0.639)	(0.285)	(0.199)
Revenue growth		0.008**	0.009**					-0.008***	-0.008***
		(0.022)	(0.013)					(0.004)	(0.003)
Lagged revenue growth					0.008*	0.008**		-0.000	0.002
					(0.054)	(0.037)		(0.942)	(0.444)
Sales expectation		0.006***	0.006***		0.005***	0.006***		0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)		(0.967)	(0.829)
UCC growth		-0.012***	-0.009**		-0.011***	-0.020***		0.001	-0.003
		(0.002)	(0.042)		(0.004)	(0.000)		(0.719)	(0.415)
Lagged GDP growth			0.001**						-0.001***
			(0.042)						(0.003)
Second lag of GDP growth						0.002***			0.000
						(0.001)			(0.656)
Linear time trend	-0.001	0.000	0.000	-0.000	-0.000	-0.000	0.001	0.001	0.001**
	(0.515)	(0.885)	(0.992)	(0.948)	(0.815)	(0.726)	(0.282)	(0.124)	(0.046)
Quadratic time trend	-0.000	-0.000**	-0.000*	-0.000*	-0.000	-0.000	-0.000	-0.000	-0.000**
	(0.158)	(0.044)	(0.078)	(0.079)	(0.114)	(0.189)	(0.414)	(0.131)	(0.035)
Fixed time effects	No	No	No	No	No	No	No	No	No
Fixed firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2833	2492	2492	2669	1931	1931	2669	1931	1931
Firms	531	506	506	522	436	436	522	436	436
R^2 (overall)	0.014	0.057	0.058	0.016	0.058	0.065	0.000	0.007	0.010
R^2 (within)	0.049	0.098	0.099	0.042	0.091	0.099	0.002	0.009	0.014

NOTE: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.4.3 Robustness Tests

I submitted my results to rigorous robustness tests using different samples and specifications of my regressions. None of these robustness tests indicate any severe fragility of my results.

It is conceivable that the results are driven by individual states. Inferences do not change when I re-estimate equations (1) and (2) and exclude an individual state, one at a time (Jackknife test).

I estimate a dynamic version of my baseline specification to deal with potential endogeneity. I employ the system GMM methodology as in Arellano and Bover (1995) and Blundell and Bond (1998). Differences of the explanatory variables serve as instruments for the equation in levels, and lagged levels are used as instruments for the equation in first differences. I assume electoral uncertainty to be exogenous. The other explanatory variables are considered as predetermined. I reduce the number of instruments and thereby avoid potential over-fitting problems by limiting the lags to 1 and 2. I correct t-statistics for small sample bias, using Windmeijer's correction (2005). Table 3.5 shows the results. The results do not change qualitatively and are robust to the alternative specification.

Elections may not be exogenous to fiscal policy because (unobserved) variables, such as crises or social unrest, can influence the timing of elections and fiscal policy (Shi and Svensson 2006). The timing of regular elections is predetermined by the constitution and should be independent of fiscal policy. Therefore I re-estimate the regressions for state elections and distinguish between regular and early state elections.[20] Table 3.6 shows the regression results. The coefficient of regular state elections is negative and statistically significant at the 1% level in the estimation for realized investment. The coefficient of early state elections does not turn out to be statistically significant. In the estimation for planned investment regular and early state elections do not turn out to be statistically significant. In the estimation for investment revisions the coefficient of regular state elections is positive and statistically significant at the 5% level.

The magnitude of the decline in investment around an election should be related to the uncertainty created by an election. I examine to what extent the degree of electoral uncertainty has an effect on firms' investment behavior. The degree of electoral uncertainty

[20] For empirical evidence on political business cycles that distinguish between regular and early elections, see e.g. Potrafke (2010), Julio and Yook (2012), Mechtel and Potrafke (2013), Reischmann (2016).

may well depend on the political orientation of the newly elected government. If the incumbent government is market-friendly, then firms might view the election outcome as either neutral when the incumbent remains in power or negative when the incumbent loses (Julio and Yook 2012). Using wordscore analysis of election manifestos and coalition agreements, Bräuninger and Debus (2012) measure how market-friendly a government's economic policy position is. I include the market-friendliness of economic policy of the incumbent government as an additional explanatory variable in my model. The coefficient (not shown) does however not turn out to be statistically significant. I also include an interaction of the state election variable with the market-friendliness of economic policy of the incumbent government in the empirical model. The coefficient of the interaction term is negative which is in line with the prediction that investment cycles are likely to be deeper when a market-friendly government is in power in the state election year, but the coefficient does not turn out to be statistically significant. When I use a dummy variable capturing the political orientation of the government (leftwing government, mixed coalition, rightwing government) instead of the market-friendliness of economic policy measure as an additional explanatory variable or in the interaction term the coefficients do not turn out to be statistically significant either.

The degree of political uncertainty also depends on the ex ante predictability of the election outcome. Pre-electoral polling data directly focus on election outcome expectations (Berlemann and Markwardt 2001, 2006). In Germany polling before elections includes the so-called Sunday question: "For which party would you vote if there was a general election next Sunday?" I calculate a measure that captures the distance of the market-friendliness of economic policy between the actual and the predicted parliament from the polling data.[21] The coefficient of distance of market-friendliness of economic policy of the predicted and the actual parliament is negative but does not turn out to be statistically significant when included in the regression model. I also calculate the distance of market-friendliness of economic policy of the newly elected and the incumbent and the newly elected and predicted

[21] In particular, I first calculate the market-friendliness of economic policy of the predicted parliament by weighting the market-friendliness of economic policy measure of each party with the predicted vote shares from the polls. I then calculate the market-friendliness of economic policy of the actual parliament by weighting the market-friendliness of economic policy measure of each party with the actual vote shares. Lastly, I calculate the difference of the market-friendliness of economic policy of the predicted and the actual parliament.

parliament. Including those measures in the model does not yield significant results. The results corroborate that firms use a rule of thumb to be cautious in electoral years.
I examine whether investments consist of different capital goods that vary in their degree of irreversibility and are thus differently influenced by uncertainty. I therefore categorize investments according to their purpose. Investments are divided into add-on, rationalization and replacement investments. Add-on investments are capacity expanding and often include the set-up of a new production site. Add-on investments thus face a high degree of irreversibility because of high sunk costs and should be more sensitive to uncertainty. Rationalization and replacement investments on the other hand entail a low degree of irreversibility as firms' capacities are not expanded and planning costs are lower. I run separate regressions for realized and planned add-on, rationalization and replacement investments. Table 3.7 shows the regression results. The coefficient of state elections is indeed negative and statistically significant only for realized add-on investments.

3.5 Conclusion

The relationship between politics and economic outcomes is a topical issue in the public debate. In particular, the incentives and uncertainties associated with possible changes in policy after a new government has been elected have implications for the behavior of both corporations and politicians. I examined the effects of political uncertainty on the investment behavior of firms in the context of elections. Elections can influence industry regulation, monetary and trade policy, and taxation and may potentially affect the cost structure of firms. Firms may delay investment until uncertainties resulting from elections resolve. I employed survey data of investment realizations, plans and revisions from German manufacturing firms and estimated a neoclassical investment model. I employed detailed information on firms' asset and debt structure, and tax burden and allowance scheme following the German tax system to construct firm-specific user cost of capital. The UCC captures the current institutional framework, but does not reflect the uncertainty about changes in government policies firms are faced with. Therefore I augmented the neoclassical investment model with political uncertainty resulting from elections. I focused on state elections because the timing is exogenously determined and varies by states. The results showed that electoral uncertainty at the state level decreases realized investment. Investment ratios decreased by 10.5% in years when state elections occurred

relative to the average investment ratio in years with no state elections. Firms however seemed to anticipate electoral uncertainty already when making investment plans. Firms hardly revised their investment plans. It is conceivable that firms were aware of the risks of investing in an election year but did not make explicit calculations. Rather, firms employed a rule of thumb to hold off on marginal investments that are difficult to reverse. Investment revisions occurred because of updated information about realized sales growth and not because of resolved electoral uncertainty. The political orientation of the newly elected government and the predictability of the election outcome did not influence corporate investment decisions. I also found that electoral uncertainty negatively influenced add-on investments which face a high degree of irreversibility, while non-capacity expanding investments were not influenced by electoral uncertainty.

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3.7 Appendix A: Additional Tables

Table 3.3: Descriptive Statistics

	Obs.	Mean	Std. Dev.	Min.	Max.
Investment ratio	2833	0.056	0.053	0.000	0.377
Investment plans ratio	2669	0.058	0.053	0.000	0.386
Investment revisions	2669	0.002	0.025	-0.270	0.222
State election	2833	0.222	0.416	0.000	1.000
Regular state election	2833	0.209	0.407	0.000	1.000
Early state election	2833	0.013	0.114	0.000	1.000
Federal election	2833	0.231	0.422	0.000	1.000
Revenue growth	2833	0.011	0.239	-2.499	2.599
Sales expectation	2492	0.295	1.225	-2.000	2.000
UCC growth	2833	-0.105	0.252	-1.661	0.500
Cashflow ratio	2749	0.081	0.077	-0.221	0.357
GDP growth	2833	1.456	2.321	-5.100	4.200
Investment ratio: Add-on	1003	0.075	0.061	0.001	0.370
Investment ratio: Rationalization	691	0.047	0.043	0.001	0.377
Investment ratio: Replacement	1039	0.043	0.042	0.000	0.351
Investment plans ratio: Add-on	936	0.076	0.063	0.001	0.386
Investment plans ratio: Rationalization	656	0.049	0.042	0.001	0.370
Investment plans ratio: Replacement	1006	0.046	0.044	0.000	0.354
Investment revisions: Add-on	936	0.002	0.029	-0.126	0.222
Investment revisions: Rationalization	656	0.002	0.022	-0.270	0.109
Investment revisions: Replacement	1006	0.003	0.023	-0.201	0.196

Note: The variable "Investment ratio" is defined as realized investment over total assets in the previous year. The variable "Investment plans ratio" is defined as planned investment over total assets in the previous year. "Investment revisions" are defined as the planned investment ratio minus the realized investment ratio. The variable "State election" assumes the value 1 if a state election takes place in state s a firm is headquartered in in year t and 0 otherwise. "Regular state election" is a dummy variable that takes the value 1 if a regular state election took place and 0 otherwise. "Early state election" is a dummy variable that takes the value 1 if an early state election took place and 0 otherwise. The variable "Federal election" assumes the value 1 if a federal election takes place in year t and 0 otherwise. "Revenue growth" denotes the growth rate of firm revenues. The variable "Sales expectation" assumes the value 2 if investments are strongly positively influenced, 1 if investments are slightly positively influenced, 0 if investments are not influenced, -1 if investments are slightly negatively influenced or -2 if investments are strongly negatively influenced by sales expectations. "UCC growth" denotes the growth rate of the firm-specific UCC. For details on the calculation of the UCC, see Section 3.4.1 and Section 3.8 Appendix B. The variable "Cashflow ratio" is defined as cashflow over total assets in the previous year. "GDP growth" denotes the growth rate of GDP. Investment ratios, investment plans ratios and investment revisions are categorized according to their purpose. Investments are divided into "add-on", "rationalization" and "replacement" investments.

TABLE 3.4: Investment under political uncertainty

A: State election & no state election years				
Investment ratio	Obs.	Mean	Median	Std. Dev.
No state election	2204	0.057	0.040	0.054
State election	629	0.053	0.038	0.049
Difference		0.004	0.002	
Difference Test (t-stat/z-score)		1.693	1.239	
Difference Test (p-value)		0.091	0.215	
Investment plans ratio	Obs.	Mean	Median	Std. Dev.
No state election	2068	0.058	0.043	0.054
State election	600	0.056	0.043	0.048
Difference		0.002	0.000	
Difference Test (t-stat/z-score)		0.751	-0.109	
Difference Test (p-value)		0.453	0.913	
B: Federal election & no federal election years				
Investment ratio	Obs.	Mean	Median	Std. Dev.
No federal election	2178	0.057	0.040	0.054
Federal election	655	0.053	0.038	0.051
Difference		0.004	0.002	
Difference Test (t-stat/z-score)		1.640	1.940	
Difference Test (p-value)		0.101	0.052	
Investment plans ratio	Obs.	Mean	Median	Std. Dev.
No federal election	2045	0.059	0.043	0.053
Federal election	623	0.055	0.042	0.052
Difference		0.003	0.001	
Difference Test (t-stat/z-score)		1.425	1.887	
Difference Test (p-value)		0.154	0.059	

NOTE: The z-score for difference in medians is calculated using the Wilcoxon-Mann-Whitney test.

TABLE 3.5: System GMM estimations for investment around state elections

	(1) Investment ratio	(2) Investment plans ratio	(3) Investment revisions
State election	-0.004*	-0.001	0.002*
	(0.058)	(0.682)	(0.054)
Lagged investment ratio	0.284***		
	(0.000)		
Lagged investment plans ratio		0.273***	
		(0.000)	
Lagged investment revisions			-0.043
			(0.375)
Revenue growth	0.013*		-0.015**
	(0.071)		(0.042)
Lagged revenue growth		0.008	-0.000
		(0.105)	(0.932)
Sales expectation	0.010***	0.008***	-0.002
	(0.000)	(0.001)	(0.210)
UCC growth	-0.088***	-0.090***	0.011
	(0.000)	(0.000)	(0.556)
Fixed time effects	Yes	Yes	Yes
Observations	1919	1845	1840
Firms	433	417	415
Instruments	199	199	199
AR(1) p-value	0.000	0.000	0.000
AR(2) p-value	0.914	0.229	0.564
Hansen J p-value	0.621	0.556	0.439

NOTE: System GMM as in Arellano and Bover (1995) and Blundell and Bond (1998). Differences of the explanatory variables serve as instruments for the equation in levels, and lagged levels are used as instruments for the equation in first differences. I assume electoral uncertainty to be exogenous. The other explanatory variables are considered as predetermined. I reduce the number of instruments and thereby avoid potential over-fitting problems by limiting the lags to 1 and 2. I correct t-statistics for small sample bias, using Windmeijer's correction (2005).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3.6: Investment around regular and early state elections

	(1) Investment ratio	(2) Investment plans ratio	(3) Investment revisions
Regular state election	-0.007***	-0.003	0.003**
	(0.000)	(0.181)	(0.020)
Early state election	0.001	-0.005	-0.015
	(0.928)	(0.435)	(0.104)
Revenue growth	0.010**		-0.008***
	(0.014)		(0.003)
Lagged revenue growth		0.011**	0.002
		(0.014)	(0.387)
Sales expectation	0.006***	0.006***	-0.000
	(0.000)	(0.000)	(0.720)
UCC growth	-0.051***	-0.052***	0.003
	(0.000)	(0.007)	(0.781)
Fixed time effects	Yes	Yes	Yes
Fixed firm effects	Yes	Yes	Yes
Observations	2492	1931	1931
Firms	506	436	436
R^2 (overall)	0.071	0.075	0.018
R^2 (within)	0.121	0.117	0.032

Note: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 3.7: Investment around state elections by investment types

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Investment ratio			Investment plans ratio			Investment revisions		
	Add-on	Rationa-lization	Replace-ment	Add-on	Rationa-lization	Replace-ment	Add-on	Rationa-lization	Replace-ment
State election	-0.014***	-0.005	-0.001	-0.006	-0.002	0.001	0.004	-0.001	-0.000
	(0.001)	(0.210)	(0.567)	(0.158)	(0.637)	(0.795)	(0.302)	(0.587)	(0.966)
Revenue growth	0.012	0.003	0.006				-0.008	-0.001	-0.012***
	(0.334)	(0.624)	(0.165)				(0.468)	(0.851)	(0.001)
Lagged revenue growth				0.030***	-0.001	0.000	0.013	0.002	0.001
				(0.008)	(0.903)	(0.922)	(0.123)	(0.573)	(0.685)
Sales expectation	0.006***	0.004**	0.003***	0.006**	0.003*	0.004***	0.001	-0.000	0.001
	(0.001)	(0.024)	(0.002)	(0.011)	(0.060)	(0.001)	(0.512)	(0.685)	(0.236)
UCC growth	-0.085***	-0.057*	-0.001	-0.040	-0.042	-0.029	0.026	0.001	-0.022
	(0.002)	(0.063)	(0.942)	(0.181)	(0.109)	(0.344)	(0.273)	(0.931)	(0.177)
Fixed time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	855	621	957	676	466	747	676	466	747
Firms	285	237	325	240	180	263	240	180	263
R^2 (overall)	0.118	0.032	0.058	0.107	0.028	0.059	0.023	0.053	0.032
R^2 (within)	0.164	0.141	0.131	0.145	0.124	0.117	0.066	0.107	0.056

NOTE: OLS with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.8 Appendix B: Calculation of the UCC and the German Corporate Tax System

The UCC depends on taxation as earnings from investments are taxed and the tax system provides certain allowances for investment projects. Firms in Germany are subject to various income taxes. The corporate income tax and the solidarity surcharge are federal taxes and are thus the same for all firms and vary only over time. The local business tax is set at the municipality level. I include all three taxes and their interactions in the calculation of the firm-specific statutory tax rate. Table 3.8 shows the tax parameters employed in the calculation.

Corporate income tax rates declined over the observation period. Fundamental changes in the tax system occurred: Until 2000 the tax-credit method applied to corporate income, but in 2001 the system was replaced by the half-income method (Tax Relief Act 2001). The reform implied the replacement of the two separate tax rates on retained earnings (which varied between 45% and 40%) and distributed profits (30%) by a lower uniform tax rate of 25%.[22] In the corporate tax reform of 2008, the tax rate was further reduced from 25% to 15%. The solidarity surcharge for Eastern Germany was introduced in 1991 and has varied since then between 0% and 7.5%.

The effective local business tax rate at time t is given by

$$\tau_{LB} = b \, \frac{c_z}{100}$$

where c_z is the collection rate in percent set in each municipality z.[23] I take information on collection rates by municipalities from the German Federal Statistical Office. The basic federal rate b is set at 5% until 2007 and at 3.5% from 2008 on. Until 2007, the local business tax is self-deductible as a business expense. Therefore I divide τ_{LB} by $1 + b \, \frac{c_z}{100}$ for the period 1994-2007. The local business tax payment is deductible from the corporate tax base until 2007. Since 2008 the deductibility of the local business tax was abolished for corporations.

[22] The corporate income tax rate was temporarily increased to 26.5% in 2003.

[23] Collection rates range between 200% and 500%. Some small municipalities even choose values of up to 900%. Since 2004 the statutory minimum level of the collection rate is 200%.

To account for deterioration, the tax system provides depreciation allowances.[24] In Germany depreciation allowance schemes differ by asset types. While property with buildings is depreciated on a straight-line basis, fixed tangible assets could be depreciated according to the declining-balance method until 2007. Firms were allowed to change from the declining-balance to the straight-line method if firms benefited from the second method. The rates of depreciation are set in the German income tax law.

I account for the fact that firms use internal and external funds for investment. Firms' financial costs differ, depending on the source of finance used for an investment project. As preferential tax treatment of debt exists, firms face a cost advantage of using debt. I assume that revenues increase during the time of investment and decline in the next period when debt is repaid (Devereux 2004). I calculate the increase in revenues by $(1-\tau\psi)$. When debt obligations are repaid, profits reduce by $\frac{((1-\tau)*i-\rho)}{(1-\tau)*(1+\pi)}$. The two terms together capture the reduction in the UCC which arises from the deductibility of interest payments. I weigh the whole term with a firm's debt-to-capital ratio λ. The overall UCC is weighted by the cost of retained earnings and the cost of debt.[25]

[24] There is no investment tax credit in Western Germany.

[25] I only distinguish between two sources of finance: retained earnings and debt. I do not account for new equity as a third source of finance as suggested by King and Fullerton (1984). New equity as a source of finance plays a negligible role for the firms in the sample.

TABLE 3.8: Corporate tax parameters

Year	Corporate income tax rate on retained (distributed) profits in %	Solidarity surcharge in %	Avg. collection rate for local business tax in %	Avg. local business tax rate in %
1994	45 (30)	0	372	18.60
1995	45 (30)	7.5	376	18.80
1996	45 (30)	7.5	383	19.15
1997	45 (30)	7.5	387	19.35
1998	45 (30)	5.5	390	19.50
1999	40 (30)	5.5	389	19.45
2000	40 (30)	5.5	389	19.45
2001	25	5.5	385	19.25
2002	25	5.5	386	19.30
2003	26.5	5.5	387	19.35
2004	25	5.5	388	19.40
2005	25	5.5	389	19.45
2006	25	5.5	391	19.55
2007	25	5.5	389	19.45
2008	15	5.5	388	13.58
2009	15	5.5	387	13.55
2010	15	5.5	390	13.65
2011	15	5.5	392	13.72
2012	15	5.5	393	13.76

NOTE: Separate corporate income tax rates for retained earnings and distributed profits (in brackets) existed until 2000. Since 2001, both rates are replaced by a uniform corporate income tax rate. In 1994 no solidarity surcharge existed. The average municipal collection rates are taken from the Federal Statistical Office. The average local business tax rate is given by $\tau_{LB} = b \frac{c}{100}$ where b is 5% until 2007 and 3.5% from 2008 on and c is the unweighted average collection rate of all municipalities in a given year.
SOURCE: Corporate Income Tax Act, Solidarity Surcharge Act, Trade Tax Act, Federal Statistical Office: Fachserie 14 Reihe 10.1, own calculations.

Chapter 4

Does Political Uncertainty Influence Firm Owners' Business Perceptions?*

4.1 Introduction

Politics are a main source of uncertainty because politicians design the institutional environment of firms by, for example, setting taxes and labor market and infrastructure regulations. Uncertainties associated with possible changes in government policy influence the behavior of firms. Scholars have shown that political uncertainty influences real economic outcomes.[1] Cycles in corporate investment are correlated with election timing. Firms "wait and see" and rationally delay investment until the policy uncertainty is resolved before they decide on new costly investments (McDonald and Siegel 1986, Abel and Eberly 1994, Dixit and Pindyck 1994). Before national elections, firms reduced their investment by an average of 4.8% in election years (Julio and Yook 2012). Political uncertainty of gubernatorial elections in the U.S. gave rise to a 4.9% decline in the third quarter in the investment of firms headquartered in states with a gubernatorial election in the following quarter, relative to the investment of firms without an upcoming gubernatorial election (Jens 2013). Before German state elections, realized corporate investment

* I thank Björn Kauder, Niklas Potrafke and Christoph Schinke for their helpful comments. Lena Müller provided excellent research assistance.

[1] For example, Osterloh (2012) and Potrafke (2012) investigate how elections influence economic performance.

also decreased compared to other years (Riem 2016). Firms however seem to anticipate electoral uncertainty already when making investment plans and hardly revise their plans.

Expectations of firm managers and market participants also take changes in government policy into account. Managers' expectations relate policies and changes in government to real managerial decision-making. Through the channel of expectations of business development, political uncertainty may also affect stock markets. Country specific stock market volatility increases by 23.42% in the 51 days surrounding an election, whereas most of the stock market movement occurs around the election day (Bialkowski et al. 2008). Durnev (2010) shows in a cross-country study that electoral uncertainty influences how corporate investment is geared to stock market prices. Around elections managers' decisions include stock market prices – as the market is distorted – to a lesser degree. Following Pastor and Veronesi (2012), policy changes influence stock market prices. In times of high political uncertainty stock market prices fall on average. When the probability of a rightwing coalition winning the 2002 German federal election increased, overall stock market volatility increased and stock performance of small firms was better (Füss and Bechtel 2008).

Stock prices reflect the market value of a firm. The market value of a firm incorporates the market participants' perceptions of the current state of business and their expectations about the future development of the firm. Firm owners can best assess the business situation of their corporation. Firm owners' business perceptions and expectations take many factors into account: for example, internal and prior economic conditions (e.g. demand, costs, and competitors), and external factors which include mainly political influences. Especially political elections cause uncertainty for corporations because a change in government can give rise to economic policy reforms. Similarly to the impact of elections to stock market prices, electoral uncertainty may hence influence firm owners' corporate assessment. Firm owners' business perceptions in turn influence their investment behavior.

There are several possible explanations for the change of firm owners' business perceptions around elections. Uncertainty increases because elections might go along with possible changes of government ideology and therefore in government policy. Further uncertainty arises because the value of personnel connections to decision-makers in politics is not clear after elections. Bertrand et al. (2006) describe that investment of firms with politically connected CEOs increases before municipal elections in France. Firms are willing to ma-

nipulate investment to influence re-election of their political connections.[2] Firm owners' business perceptions would therefore be stronger influenced during election times, the more uncertain the election outcome is. The effect of political uncertainty on business perceptions would be stronger if the head of government changed after an election.

The political business cycle theories describe that incumbents pursue expansionary policies before elections to influence the level of economic activity prior to an election in order to maximize the probability of re-election. Election-motivated politicians may, for example, increase public spending, especially public spending that is visible for the voters, or decrease taxes (Nordhaus 1975, Rogoff and Sibert 1988). Firm owners' business perception may thus be better before elections when public spending is high and worse after elections compared to normal times.

I examine whether political uncertainty surrounding state elections influences how firm owners perceive their present state and future development of business. I employ a firm-level dataset that serves as the foundation of the ifo Business Climate Index, Germany's leading business cycle indicator. I combine survey answers on the current state of business and the expected development of business in the next six months with data on state elections. An advantage of focusing on state elections is that, in most instances, they are exogenously determined and the timing of state elections varies between states. I am thus able to disentangle the effect of elections from common trends. The results show that firm owners perceive their *current state* of business to be on average better in the year before and after state elections compared to the years further away from state elections. The findings also indicate that firms *expect* their business to develop better starting nine months prior to state elections. It is conceivable that firm owners are more optimistic because politicians promised individual policies to gratify the firms' needs during election times. After state elections firms change their expectations and are less optimistic as they expect the business to develop worse after state elections. Firms might be disappointed after elections as the promises made during election campaigns by politicians reveal to be empty words.

[2] On the value of political connections for firms, see Faccio (2006).

4.2 Institutional Backdrop

Elections in the German states take place every five years. The only exceptions are Hamburg and Bremen, where elections take place every four years. In the past, even more states held elections every four years. Parliaments may also call early elections. As election years are not synchronized across states, I can disentangle the effect of elections from common trends. In most states, voters cast two votes in a personalized proportional representation system. The first vote determines which candidate is to obtain the direct mandate in one of the electoral districts with a relative majority. With the second vote, voters select an individual party. The parties obtain a number of the seats in parliament that corresponds to the party's second vote share. Candidates voted into the parliament with the first vote (direct mandate) obtain their seats first. Candidates from party lists obtain the remaining seats. Two major political parties characterize the political spectrum in Germany: the Social Democratic Party (SPD) and the Christian Democratic Union (CDU; in Bavaria: CSU). The much smaller Free Democratic Party (FDP), the Greens (Bündnis 90/Die Grünen) and the Left Party (Die Linke) have played an important role as coalition partners. Some other smaller parties, such as for example the SSW in Schleswig-Holstein, exist, but these parties usually play a minor role in government policies.

The German system of fiscal federalism can be described as co-operative and unitary federalism (Auel 2014). Little institutional competition exists between states. State governments have little discretionary power regarding their tax revenues. The financially most important taxes are shared by the federal, states and local level. States have no possibility unilaterally to alter taxes, so that no tax competition between states exists. The fiscal equalization scheme weakens incentives for state governments to generate additional revenue. The competencies of state governments in legislation and finances rather declined in the last decades. The federal government and the European Union nowadays have a say in many areas. Around 10-20% of state expenditures are predetermined by federal legislation (Seitz 2008). Especially educational and cultural policies are in the competence of state governments. State governments decide on state and municipal administration and the police. State governments often set the course in structural policy and infrastructure. In the state of Baden-Württemberg, for example, the newly elected coalition of the SPD and the Greens that followed the rightwing CDU government declared the phase out of nuclear energy. The change in energy policy resulted in uncertainty about energy costs for firms.

State governments can influence economic policy by initiating state support programs. A state government can, for example, apply for money from the federal government or the EU to promote regional business development. State governments send their representatives to the second chamber of legislative power (*Bundesrat*). Representatives of the states can start legislative initiatives in any policy area. If the representatives win the majority of other states, such initiatives can become federal law. The states thus jointly can influence the legislative process through the *Bundesrat*. Even though state governments have relatively little room to influence policy making, the public debate pays attention to state elections. How political parties perform in state elections and which party coalitions are formed, has a signaling effect for the upcoming federal election.

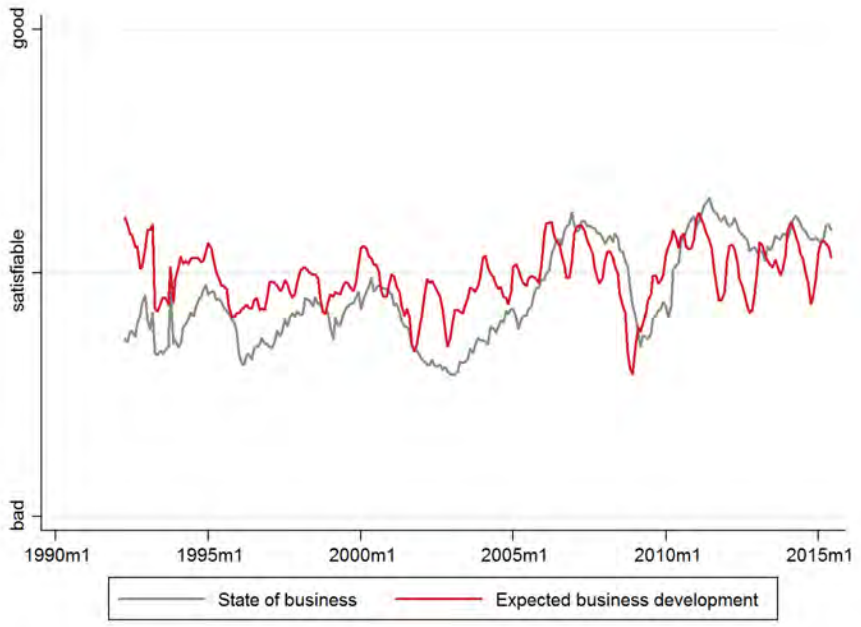
4.3 Data and Descriptive Statistics

I use Germany's most important business cycle and firm survey data that serves as the foundation of the ifo Business Climate Index, Germany's leading business cycle indicator.[3] The ifo business survey is conducted every month among 7,000 German firms of the construction, retail, manufacturing, and services industry sector. The business climate is the mean of the balances of the business situation and expectations of survey respondents and serves as an early indicator for economic development in Germany. Firm owners are asked to assess the current state of business and their expectations of business development for the next six months. Firms can characterize their business situation as "bad", "satisfiable" or "good" and their expectations of business development for the next six months as "more unfavorable", "not changing" or "more favorable". Both variables are measured on a scale from one to three, where higher values indicate more optimistic business perceptions. During the sample period the current state of business has a mean of 1.97 and a standard deviation of 0.68. The expected development of business has a mean of 1.99 and a standard deviation of 0.61. On average I observe answers from a firm owner for 132 months. Out of those 132 months, firms switch their perceived state of business from one month to the other 33.42 times and their expectations of business development change from one month to the other 40.07 times. Figure 4.1 shows how the average state of business and expected business development evolved over the time period 1992 to 2015.

[3] Business survey data are provided by the Economics & Business Data Center at the University of Munich and the Ifo Institute, Munich. For more information on the data, see Seiler (2012).

Business perceptions were most pessimistic during the financial crisis in 2008/2009. I use the survey answers of the current state of business and expected business development to measure firm owners' business perceptions.

FIG. 4.1: State of business and expected business development over time



SOURCE: ifo Business Survey, own illustration.

I investigate the impact of political uncertainty arising from the electoral process. I use state election months as indicators of times of high political uncertainty. The timing of state elections is predetermined by the constitution and should be independent of fiscal policy. The dates of state elections vary between the German states. My sample includes 84 state elections across 16 German states over the 1992 to 2015 period, i.e. between four and seven elections occurred in each state. I first examine the unconditional correlation between firm owners' perception of their state of business and electoral uncertainty. Figure 4.2 shows the average current state of business in the months surrounding state elections. Firm owners seem to perceive their state of business to be better starting three months prior

to the election month. The difference in means of state of business between three months prior to state elections and state election months turns out to be statistically significant at the 5% level (see Table 4.4 column (5)).The average state of business remains to be more optimistic until three months after state elections. The difference in means of state of business between three months prior and three months after state elections turns out to be statistically significant at the 1% level (see Table 4.4 column (7)). Figure 4.3 shows the average expected development of business in the months surrounding state elections. Expectations seem to be high already eight months before state elections take place. In the three months after state elections expectations of business development however drop. The differences in means of expected business development between three months after state elections and state election months and three months prior and three months after state elections turn out to be statistically significant (see Table 4.4 columns (6) and (7)). The analysis of variance in Table 4.4 column (4) shows that the means of the current state of business and the expected development of business in the three months prior to, in state election months, and in the three months after state elections significantly differ at the 1% level.

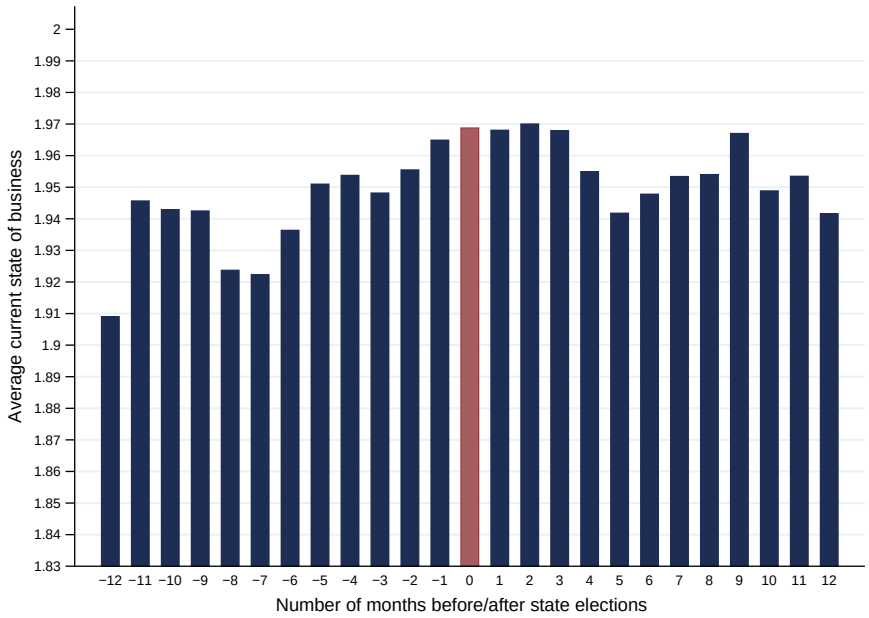
4.4 Empirical Analysis

4.4.1 Empirical Strategy

The basic empirical model has the following form:

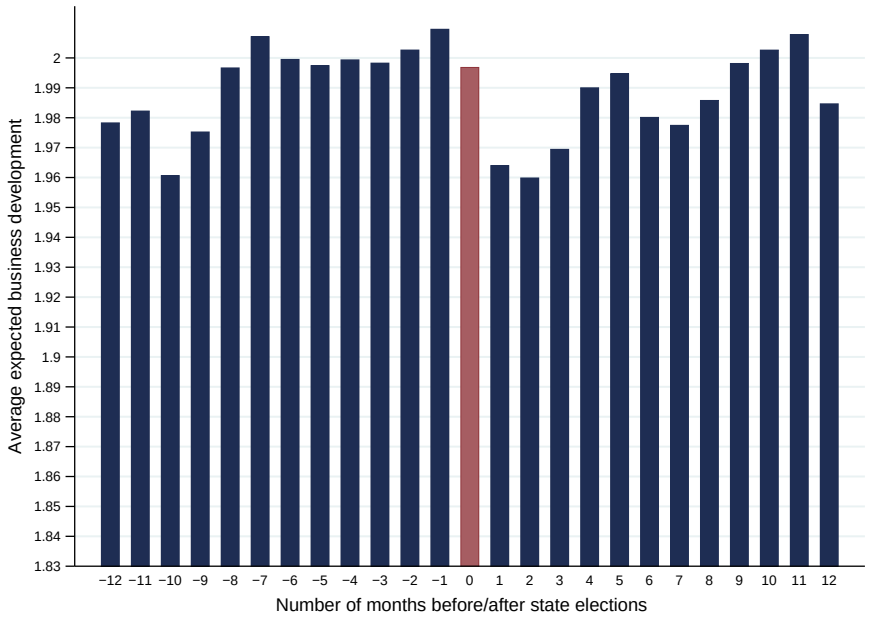
$$\begin{gathered} \textit{Business perception}_{it} = \alpha \textit{State election}_{st} + \beta \textit{Pre state election months}_{st} + \\ \gamma \textit{Post state election months}_{st} + \delta \textit{Orders}_{it} + \sum_{j} \epsilon \textit{Industry}_{ij} + \\ \sum_{k} \eta \textit{Employees}_{ikt} + \lambda \textit{Public spending}_{sm} + \kappa \textit{State government ideology}_{st} + \\ \sum_{l} \rho \textit{State}_{il} + \sum_{m} \tau \textit{Year}_{m} + \upsilon_i + u_{it} \\ \text{with i=1,...,20138; s=1,...,16; j=1,...4; k=1,...,6; l=1,...16; m=1,...,23;} \\ \text{t=1992m1,...,2015m12} \end{gathered} \tag{4.1}$$

FIG. 4.2: State of business surrounding state elections



SOURCE: ifo Business Survey, own collection.

FIG. 4.3: Expected business development surrounding state elections



SOURCE: ifo Business Survey, own collection.

where *Business perception*$_{it}$ describes either (1) firm i's perception of the current state of business in month t or (2) firm i's perception of the expected business development in the next six months in month t. The current state of business is measured on a scale between one (bad) and three (good). The expected business development in the next six months is measured on a scale between one (more unfavorable) and three (more favorable). The variable *State election*$_{st}$ assumes the value 1 if a state election takes place in state s a firm is headquartered in in month t and 0 otherwise. The variables *Pre state election months*$_{st}$ and *Post state election months*$_{st}$ assume the value 1 in the months before/after state elections occurred and 0 otherwise. I test different time frames surrounding state elections: I include *Pre state election months*$_{st}$ and *Post state election months*$_{st}$ variables for three, six, nine and twelve months before and after state elections.

I control for how firm owners of firm i appraise their order status in month t. The appraisal of the status of *Orders*$_{it}$ is measured on a scale between one (too small) and three (relatively high). Control variables also include dummy variables for firm size measured by the number of employees (*Employees*$_{ikt}$), and *Industry*$_{ij}$ indicating the industry a firm operates in (construction, retail, manufacturing, and services industry). According to the political business cycle theory, public spending increases before elections. When government spending is high, firm owners might perceive their business to run better (in the short-run).[4] I therefore control for the level of public spending of state governments. The variable *Public spending*$_{sm}$ measures the log of government spending of state s in year m. The degree of electoral uncertainty may well depend on the ideology of the current and newly elected government.[5] I include the ideology of the respective government as an additional control variable. The variable *State government ideology*$_{st}$ capturing political orientation assumes the value 1 when a left-wing government, 0.5 when a mixed coalition government, and 0 when a right-wing government was in office (Potrafke et al. 2016).[6] ρ

[4] According to the Ricardian equivalence proposition firm owners are forward looking and internalize the government's budget constraint. Firm owners know that higher government spending must be financed by raising taxes at some point in the future.

[5] On ideology-induced policy-making in the German states, see, for example, Oberndorfer and Steiner (2007), Tepe and Vanhuysse (2009, 2013), Potrafke (2011, 2013), Kauder and Potrafke (2013) and Mechtel and Potrafke (2013).

[6] As a leftwing government I consider SPD, SPD/Greens, SPD/Greens/SSW or SPD/Die Linke. A mixed coalition government is between SPD and CDU/CSU, CDU and Greens or CDU/FDP/Greens. A rightwing government is CDU/CSU or CDU/CSU/FDP.

describes fixed state effects, τ is a fixed year effect, and υ is a fixed firm effect. u_{it} denotes the error term.
I estimate linear fixed-effects models with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors see Huber 1967 and White 1980).[7] Table 4.3 shows summary statistics of the main variables.

4.4.2 Results

Table 4.1 shows the regression results for the baseline panel data model where *state of business* is the dependent variable. Column (1) shows the coefficient estimates for regressions including the variables *Pre state election* and *Post state election* for three months before and after state elections. Column (2) shows estimates for six months before and after state elections, column (3) for nine months before and after state elections, and column (4) for twelve months before and after state elections.
The coefficient of the variable *State election* is positive and statistically significant at the 1% level in columns (1) to (4). The numerical meaning of the coefficient in column (1) is that in the month of state elections, the perceived state of business is 0.011 points higher on the one-to-three scale than in months without state elections. The average perceived current state of business in the whole sample is 1.97 and increases to 1.98 in months of state elections. Compared to a standard deviation of 0.68, the effect of state elections is thus quite small in magnitude. The coefficient of the variable *Pre state election* is also positive and statistically significant at the 1% level for all time frames, i.e. three, six, nine, and twelve months before state elections (columns (1)-(4)). The coefficient of the variable *Post state election* is also positive and statistically significant for all time frames. The results

[7] Since the dependent variables are categorical, the estimation of non-linear models would be appropriate. Generally there is unobserved time-invariant heterogeneity among firms so rejecting fixed effects is unlikely as otherwise I do not obtain consistent estimates. Fixed effects estimation of nonlinear panel data is possible for the logit model, but not for the probit model. Given the properties of the data, a fixed effects ordered logit estimator would be appropriate. Available options are the so called "Blow-Up and Cluster" (BUC) estimator developed in Baetschmann et al. (2015) or the FCF estimator by Ferrer-i-Carbonell and Frijters (2004). The other choice is to use a binary recoding scheme and employ a fixed effects logit estimator. Unfortunately, all fixed effects logit estimations proved to be computationally too extensive and did not converge for my sample. I therefore believe that linear fixed effects are the best choice. (See Riedl and Geishecker (2014) for a discussion under which conditions it is better to choose linear fixed effects, binary recoding schemes, the estimator by Baetschmann et al. (2015) or the estimator by Ferrer-i-Carbonell and Frijters (2004) and which of those alternatives have good properties in small and large samples.)

indicate that firm owners perceive their state of business to be on average somewhat better in the year before and after state elections compared to the years further away from state elections.

The coefficient of the variable *Orders* is positive and statistically significant at the 1% level in all specifications. When firms appraise their orders to be higher, the current state of business is perceived to be better. Larger firms and firms in the retail sector perceive their state of business to be lower. The coefficient of the control variable *Public spending* does not turn out to be statistically significant.[8] The coefficient of *State government ideology* has a negative sign but does not turn out to be statistically significant.

Table 4.2 shows the regression results where *expected business development* is the dependent variable. Column (1) shows coefficient estimates for three months before and after state elections, column (2) shows coefficient estimates for six months before and after state elections, column (3) for nine months before and after state elections, and column (4) for twelve months before and after state elections.

The coefficient of the variable *State election* is positive and statistically significant at the 5% level in columns (1) to (4). The numerical meaning of the coefficient is that in the month of state elections, the expected business development is 0.008 points higher on the one-to-three scale than in months without state elections. The average expected business development in the whole sample is 1.99 and increases to 2.00 in months of state elections. Compared to a standard deviation of 0.61, the effect of state elections is thus quite small in magnitude. The coefficient of the variable *Pre state election* is positive and statistically significant for three months before state elections (column (1)), for six months before state elections (column (2)), and for nine months before state elections (column (3)). The coefficient however does not turn out to be statistically significant for twelve months prior to state elections (column (4)). The result indicates that firms expect their business to develop better starting nine months prior to state elections. It is conceivable that firm owners are more optimistic prior to state elections because politicians promised individual policies to gratify the firms' needs during election times. The coefficient of the variable *Post state election* is negative and statistically significant at the 1% level until nine months after state elections (columns (1)-(3)). The results indicate that after state elections firms

[8] When I include *Public spending* in percent of GDP instead of the log of *Public spending*, the coefficient of *Public spending* in percent of GDP has a positive sign and is statistically significant at the 10% percent level. Inferences regarding the other variables do not change.

TABLE 4.1: State of business: Baseline regressions

Dependent variable: State of business

	(1)	(2)	(3)	(4)
State election	0.011***	0.012***	0.012***	0.012***
	(0.001)	(0.000)	(0.000)	(0.001)
Pre state election: 3 months	0.007***			
	(0.005)			
Pre state election: 6 months		0.010***		
		(0.000)		
Pre state election: 9 months			0.008***	
			(0.000)	
Pre state election: 12 months				0.006***
				(0.003)
Post state election: 3 months	0.016***			
	(0.000)			
Post state election: 6 months		0.007***		
		(0.002)		
Post state election: 9 months			0.006**	
			(0.013)	
Post state election: 12 months				0.004**
				(0.042)
Orders	0.539***	0.539***	0.539***	0.539***
	(0.000)	(0.000)	(0.000)	(0.000)
Retail	-0.795***	-0.799***	-0.798***	-0.797***
	(0.010)	(0.009)	(0.009)	(0.009)
Employees: 20-49	0.005	0.005	0.005	0.005
	(0.661)	(0.660)	(0.659)	(0.658)
Employees: 50-249	0.003	0.003	0.003	0.003
	(0.793)	(0.794)	(0.794)	(0.791)
Employees: 250-999	-0.016	-0.016	-0.016	-0.016
	(0.288)	(0.285)	(0.285)	(0.288)
Employees: 1000-4999	-0.042**	-0.042**	-0.042**	-0.042**
	(0.025)	(0.025)	(0.025)	(0.025)
Employees: >5000	-0.130***	-0.130***	-0.130***	-0.130***
	(0.000)	(0.000)	(0.000)	(0.000)
Public spending	0.003	0.002	0.002	0.002
	(0.797)	(0.874)	(0.888)	(0.859)
State government ideology (left)	-0.008	-0.007	-0.007	-0.008
	(0.135)	(0.165)	(0.163)	(0.163)
Constant	1.237***	1.250***	1.252***	1.247***
	(0.000)	(0.000)	(0.000)	(0.000)
Time effects	Yes	Yes	Yes	Yes
State effects	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes
Observations	1074070	1074070	1074070	1074070
Firms	20138	20138	20138	20138
R^2 overall	0.251	0.250	0.250	0.251
R^2 within	0.310	0.310	0.309	0.309

NOTE: Fixed-effects panel OLS regressions with robust standard errors. Reference category for industry is construction, for employment size is 0-19 employees and for state is Berlin. Manufacturing and services industry omitted due to collinearity.
p-values in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

change their expectations and are less optimistic as they expect the business to develop worse after state elections. Firms might be disappointed after elections as the promises made during election campaigns by politicians turn out to be empty words.
The coefficient of the variable *Orders* is positive and statistically significant at the 1% level in all specifications. When the order status is higher, firms also expect their business to develop better. Larger firms perceive their business development to be lower. The coefficient of the variable *Public spending* has a positive sign and is statistically significant at the 1% level.[9] Firms expect their business to develop better when state governments spending is high. The coefficient of the variable *State government ideology* is negative and statistically significant at the 1% level. The result indicates that when a left-wing state government is in office, firm owners expect their business to develop less good. The finding is in line with Budge et al. (2001) who find that right-wing governments tend to implement economic policies that are more favorable to firm profits than left-wing governments.[10]

4.4.3 Robustness Tests

I submitted all of my results to rigorous robustness tests. None of these robustness tests indicates any severe fragility of my results.
I include a lagged dependent variable in the estimations to control for autocorrelation. The lagged state of business and the lagged expected business development both have a positive sign and turn out to be statistically significant. The results of the pre- and post- election months do not change qualitatively, but the coefficient of state election lacks statistical significance when I use the *state of business* and the *expected business development* as dependent variables.
I include dummy variables for the *Pre state election months* and *Post state election months* for three, six, nine and twelve months all in one regression. I include in total eight dummy variables: four dummies for the months one to three, four to six, seven to nine and ten

[9] When I include *Public spending* in percent of GDP instead of the log of *Public spending*, inferences do not change.

[10] Various studies have however cast doubt on the common notion that firms typically benefit more from and hence are more supportive of right-wing governments compared to left-wing governments, due to the former's supposedly more business-friendly policies. Camyar and Ulupinar (2013), for example, find that left-wing governments have a positive impact on firm valuation. Firms do not uniformly benefit from economic policies, but political parties even target favorable policies to different industries (Bechtel and Füss 2010).

TABLE 4.2: Expected business development: Baseline regressions

Dependent variable: Expected business development

	(1)	(2)	(3)	(4)
State election	0.008**	0.008*	0.008**	0.008**
	(0.041)	(0.051)	(0.047)	(0.047)
Pre state election: 3 months	0.014***			
	(0.000)			
Pre state election: 6 months		0.007***		
		(0.008)		
Pre state election: 9 months			0.006**	
			(0.015)	
Pre state election: 12 months				0.002
				(0.360)
Post state election: 3 months	-0.019***			
	(0.000)			
Post state election: 6 months		-0.012***		
		(0.000)		
Post state election: 9 months			-0.009***	
			(0.000)	
Post state election: 12 months				-0.003
				(0.140)
Orders	0.184***	0.184***	0.184***	0.184***
	(0.000)	(0.000)	(0.000)	(0.000)
Retail	-0.206	-0.209	-0.209	-0.207
	(0.531)	(0.527)	(0.528)	(0.530)
Employees: 20-49	-0.018*	-0.018*	-0.018*	-0.018*
	(0.055)	(0.055)	(0.055)	(0.054)
Employees: 50-249	-0.045***	-0.045***	-0.045***	-0.045***
	(0.000)	(0.000)	(0.000)	(0.000)
Employees: 250-999	-0.060***	-0.060***	-0.060***	-0.060***
	(0.000)	(0.000)	(0.000)	(0.000)
Employees: 1000-4999	-0.081***	-0.081***	-0.081***	-0.081***
	(0.000)	(0.000)	(0.000)	(0.000)
Employees: >5000	-0.078***	-0.078***	-0.078***	-0.078***
	(0.004)	(0.004)	(0.004)	(0.004)
Public spending	0.051***	0.052***	0.052***	0.051***
	(0.000)	(0.000)	(0.000)	(0.000)
State government ideology (left)	-0.026***	-0.026***	-0.026***	-0.027***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.187***	1.177***	1.177***	1.183***
	(0.000)	(0.000)	(0.000)	(0.000)
Time effects	Yes	Yes	Yes	Yes
State effects	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes
Observations	1071533	1071533	1071533	1071533
Firms	20123	20123	20123	20123
R^2 overall	0.048	0.048	0.048	0.048
R^2 within	0.055	0.055	0.055	0.055

NOTE: Fixed-effects panel OLS regressions with robust standard errors. Reference category for industry is construction, for employment size is 0-19 employees and for state is Berlin. Manufacturing and services industry omitted due to collinearity.
p-values in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

to twelve months before state elections and also four dummies for the same time frames after state elections. The results corroborate that the current state of business is better around state elections. The variable *State election* is positive and statistically significant. The dummy variables for the one to three and four to six months prior to state elections and the dummy variable for the one to three months after state elections are positive and statistically significant. The results also corroborate that the expected business development is better in the one to three months prior to state elections, but lower in the one to three months after state elections.

Elections may not be exogenous to fiscal policy because events such as crises can influence the timing of elections (Shi and Svensson 2006). The timing of regular elections is predetermined by the constitution and should be independent of fiscal policy. Therefore it is reasonable to distinguish between regular and early state elections.[11] Out of 84 state elections in my sample, 12 state elections were early elections. I replace the variable *State election* and re-estimate the regressions including separate variables for regular and early state elections. When I use the *state of business* and the *expected business development* as dependent variable the coefficient of regular state election has a positive sign and is statistically significant and the coefficient of early state elections does not turn out to be statistically significant.

The impact on business perceptions surrounding an election should be related to the uncertainty created by an election. Not after all state elections the composition of the government changes. I examine only those state elections where the government changed. Therefore I replace the variable *State election* with a variable including only those state elections where a change in government occurred. I consider only state elections that included switches between left-wing, center, and right-wing governments, i.e. changes of the variable *State government ideology*.[12] Out of the 84 state elections in my sample, there were 36 state elections that were followed by a change in *State government ideology*. When

[11] For studies on election cycles that distinguish between regular and early elections, see e.g. Potrafke (2010), Julio and Yook (2012), Mechtel and Potrafke (2013), Kauder et al. (2016), Reischmann (2016), Riem (2016).

[12] I also tested a different specification of state elections where a change in government occurred: I only include state elections where the composition of parties in the government changed. For example, before the state election the SPD governed alone, but after the state election the SPD formed a coalition with the Greens. Out of the 84 state elections in my sample, there were 52 state elections that were followed by a change of government parties. The regression results corroborate the findings including only state elections with changes of state government ideology.

I exclude state elections without government changes in the estimations, standard errors of coefficients increase. I re-estimated the models for my measure of state elections with government changes. The coefficients of state elections with government changes do not turn out to be statistically significant when I use the *state of business* as the dependent variable. The coefficients of the months prior to state elections with government changes have a negative sign, but lack statistical significance. The coefficients of the months after state elections with government changes are positive and statistically significant. The coefficients of state elections with government changes have a positive sign and are statistically significant when I use the *expected business development* as the dependent variable. The coefficients of the months prior to state elections with government changes have a positive sign, but lack statistical significance. The coefficients of three and six months after state elections with government changes do not turn out to be statistically significant. The coefficients of nine and twelve months after state elections with government changes are positive and statistically significant. The findings corroborate the hypothesis that firm owners react to the promises made during election times.

As a placebo test I re-estimated my baseline regressions with random state election months. I moved the state election months forward and backward in three months intervals. I generated placebo state elections that took place between three and 24 months earlier and later than the true state election date. I re-estimated my baseline regressions for the *state of business* and *expected business development* including the placebo state election months and the placebo pre and post state election months dummies. Out of 64 regressions with placebo state elections for the dependent variable *state of business*, none of the regressions shows a similar pattern as I found in my results: in none of the regressions the coefficients of the placebo state election, pre and post placebo state election months are all positive and statistically significant. In only one out of 64 regressions with placebo state election for the dependent variable *expected business development* I found a similar pattern as in my baseline results: in only one of the regressions the coefficients of the placebo state election, and pre placebo state election months are positive and statistically significant and the coefficient of post placebo state election months is negative and statistically significant.

There may well be seasonal effects in firm owners' business perceptions. I include season dummy variables (winter, spring, fall, summer) as further controls in the regressions.[13]

[13] Instead of season dummy variables, I include month dummy variables. The results do not change qualitatively when I use the *state of business* as dependent variable. When I use the *expected business*

The results do not change qualitatively when I use the *state of business* as dependent variable. When I use the *expected business development* as dependent variable, the results corroborate that expectations are better in state election months and worse after state elections. The coefficients of the pre state election months however do not turn out to be statistically significant.

It is conceivable that the effect of public spending takes time to influence the behavior of firms. I therefore include a one year lag of public spending instead of the current level of government spending. Controlling for *public spending* in the previous year, the regression coefficient still does not turn out to be statistically significant for the models where the dependent variable is the current *state of business*. The coefficient estimate of the variable *public spending* in the previous year is positive and statistically significant when I use the *expected business development* as dependent variable. An optimal level of public spending might exist. Governments might raise taxes to a high degree, if public spending is very high. I therefore control for squared public spending. When I use the *state of business* as dependent variable, public spending and public spending squared do not turn out to be statistically significant. When I use the *expected business development* as dependent variable, public spending and public spending squared turn out to be statistically significant.

State governments have little discretionary power regarding their spending as many spending categories are predetermined by federal laws. Competencies of state governments include education and culture.[14] Education spending is available for the years 1995 until 2015 (2013-2015 are estimates). Therefore I include education spending (in logs or in percent of GDP) instead of total public spending as a control variable. The results do not change qualitatively.

I control for federal elections. Six federal elections occurred during the sample period. The results do not change qualitatively when I use the *state of business* and the *expected business development* as dependent variables. The coefficient of federal election has a positive sign and turns out to be statistically significant when I use the *state of business*

development as dependent variable, the results are weaker but corroborate that the *expected business development* is less optimistic after state elections.

[14] I do not estimate regressions with spending on culture as a control variable because data is not available for the same sample. Data on culture spending is only available for the years 1995, 2000, and 2005-2012 (2012 is an estimate).

as dependent variable, but lacks statistical significance when I use the *expected business development* as dependent variable.

I control for the macroeconomic environment by including either state GDP growth or net lending in percent of GDP in the regressions. The results do not change qualitatively when I use the *state of business* and the *expected business development* as dependent variables. The coefficient of state GDP growth has a positive sign and turns out to be statistically significant. The coefficient of net lending in percent of GDP has a negative sign and turns out to be statistically significant.

Scholars describe differences between East and West Germans regarding individual preferences for social policies and redistribution (Corneo 2004, Alesina and Fuchs-Schündeln 2007). Previous studies have shown that ideology-induced policies differed in East and West German states (Kauder and Potrafke 2013, Potrafke 2013, Tepe and Vanhuysse 2014). I test whether firm owners in East and West Germany adopt their business perceptions differently to state elections. When I split the sample for East and West Germany, the results do not change qualitatively for West Germany. The results are somewhat weaker for East Germany. When I use the *state of business* as dependent variable, the results corroborate that the current state of business is better in and after state election months. When I use the *expected business development* as dependent variable, the results corroborate that firms expect their business to develop better prior to state elections. I observe fewer firms in East than in West Germany.

Jackknife tests in which I exclude an individual state, one at a time, corroborate that the main findings generalize to most states. The results hold for all states when I use the *state of business* as dependent variable. When I use the *expected business development* as dependent variable and exclude the states North Rhine-Westphalia, Rhineland-Palatinate, Baden-Wuerttemberg, Bavaria, or Saxony-Anhalt, the coefficients of state election and/or pre state election months lack statistical significance in some specifications.

It may well be that firm owners perceive their business differently during crisis times. I therefore split the sample in before the financial crisis (1992-2007), the crisis period (2007-2010), and after the financial crisis (2010-2015). I estimate my baseline regressions separately for each sample. When I use the *state of business* as dependent variable, results do not change qualitatively for the period before the financial crisis. During and after the financial crisis the results are somewhat weaker. When I use the *expected business development* as dependent variable, the results corroborate that expectations are better in

state election months and worse after state elections before and during the financial crisis. After the financial crisis the results are somewhat weaker.

4.5 Conclusion

I use encompassing firm data on business perceptions and expectations to examine whether firms hold different views on business perceptions before and after state elections. Firm owners' business perceptions and expectations take many factors into account: for example, internal and prior economic conditions (e.g. demand, costs, and competitors), and external factors which include mainly political influences. Especially political elections cause uncertainty for corporations because a change in government can give rise to economic policy reforms. Changes in economic policies influence managerial decision making and thus influence how firm owners assess their business development. I examine whether political uncertainty surrounding state elections in Germany influences how firm owners perceive their present state and future development of business. I use state election months as indicators of times of high political uncertainty. The results show that firm owners perceive their *current state* of business to be on average somewhat better in the year before and after state elections compared to the years further away from state elections. The results also indicate that firms *expect* their business to develop better starting nine months prior to state elections. It is conceivable that firm owners are more optimistic prior to state elections because politicians promised individual policies to gratify the firms' needs during election times. After state elections firms change their expectations and are less optimistic as they expect the business to develop worse after state elections. Firms might be disappointed after elections as the promises made during election campaigns by politicians turn out to be empty words. Firm owners learn about which policies are likely to be implemented during coalition negotiations. It took between 17 and 118 days, on average 47.7 days, until a coalition government was formed after state elections. It is conceivable that it takes some time until information on economic policies is processed and until the media evaluates the plans of the new government.

The magnitude of the effects of state elections on the current state of business and the expected development of business are however small. The German fiscal federalism leaves the state governments little leeway in decision-making. Firm owners can thus not expect large changes in economic policy following a state election. Nevertheless firm owners pay

attention to state elections and adopt their business perceptions accordingly. Municipalities have discretionary power over the local business tax. Future research may well examine whether firm owners business perceptions are influenced by municipal elections.

4.6 References

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4.7 Appendix: Additional Tables

TABLE 4.3: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
State of business	1074070	1.97	0.68	1	3
Expected business development	1070982	1.99	0.61	1	3
Orders	1074070	1.75	0.63	1	3
State election	1074070	0.02	0.13	0	1
Number of months before/after state election	1074070	-0.56	17.85	-32	35
State government ideology (left)	1074070	0.41	0.46	0	1
Construction	1074070	0.05	0.22	0	1
Retail	1074070	0.16	0.37	0	1
Manufacturing	1074070	0.73	0.44	0	1
Services	1074070	0.06	0.23	0	1
Berlin	1074070	0.01	0.11	0	1
Schleswig-Holstein	1074070	0.02	0.13	0	1
Hamburg	1074070	0.02	0.13	0	1
Bremen	1074070	0.01	0.08	0	1
Lower Saxony	1074070	0.08	0.26	0	1
North Rhine-Westphalia	1074070	0.21	0.40	0	1
Rhineland-Palatinate	1074070	0.03	0.18	0	1
Hesse	1074070	0.06	0.24	0	1
Baden-Wuerttemberg	1074070	0.16	0.36	0	1
Bavaria	1074070	0.21	0.41	0	1
Saarland	1074070	0.01	0.07	0	1
Mecklenburg-Western Pomerania	1074070	0.01	0.11	0	1
Brandenburg	1074070	0.03	0.16	0	1
Saxony-Anhalt	1074070	0.03	0.17	0	1
Saxony	1074070	0.08	0.27	0	1
Thuringia	1074070	0.05	0.22	0	1
Employees: 0-19	1074070	0.16	0.37	0	1
Employees: 20-49	1074070	0.18	0.38	0	1
Employees: 50-249	1074070	0.37	0.48	0	1
Employees: 250-999	1074070	0.20	0.40	0	1
Employees: 1000-4999	1074070	0.08	0.27	0	1
Employees: >5000	1074070	0.02	0.12	0	1
Public spending	1074070	10.16	0.64	8	11

NOTE: The variable *state of business* is measured on a scale between one (bad) and three (good). The *expected business development* in the next six months is also measured on a scale between one (more unfavorable) and three (more favorable). *Orders* is measured on a scale between one (too small) and three (relatively high). The variable *state election* assumes the value 1 if a state election takes place in state s a firm is headquartered in in month t and 0 otherwise. The variable *state government ideology* capturing political orientation assumes the value 1 when a leftwing government, 0.5 when a mixed coalition government and 0 when a rightwing government was in office. The variable *public spending* measures the log of government spending of state s in year m.

TABLE 4.4: Analysis of variance

	Mean			Analysis of variance	Multiple comparison tests		
	Pre state election: 3 months	State election	Post state election: 3 months	F-Test	Pre state election: 3 months - State election	Post state election: 3 months - State election	Pre state election: 3 months - Post state election: 3 months
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
State of business	1.956	1.969	1.969	8.91***	-0.013**	-0.001	0.125***
				(0.000)	(0.019)	(1.000)	(0.000)
Expected business development	2.003	1.997	1.964	98.34***	0.007	-0.032***	-0.040***
				(0.000)	(0.258)	(0.000)	(0.000)

NOTE: Column (4) shows F statistics and p-values in parentheses. Columns (5) to (7) show differences in means and p-values in parentheses. The p-values in columns (5) to (7) refer to multiple comparison tests of Scheffé (1953).
p-values in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Chapter 5

Debt Brakes in the German States: Governments' Rhetoric and Actions*

5.1 Introduction

Since the financial crisis 2008/2009, experts have stepped up efforts in discussing whether governments pursue sustainable fiscal policies (e.g. Alesina et al. 2015). In the course of demographic change, sustainable fiscal policies are an important case in point for industrialized societies. An issue is whether constitutional restrictions are needed to constrain excessive debt. Balanced-budget rules have been used by most US states, Spanish regions, and Swiss Cantons. In Germany, a balanced-budget rule, the 'debt brake', was included in the federal constitution in 2009. The new rules restrict the structural deficit of the federal government to a maximum of 0.35% of GDP from 2016 on. The German states are not allowed to run any structural deficit from 2020 onwards. The states, however, decide on the fiscal adjustment path until 2020. After 2019 the financial ties between the federal government and the states have to be reorganized. The debt brake is also an important issue in the negotiations between states regarding the fiscal equalization system after 2019.[1] Both

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[1] On fiscal transfers and fiscal sustainability in the German states see Potrafke and Reischmann (2015).

the debt brake and the fiscal equalization system influence state budgets. In 2014, there were almost 9 billion Euros horizontal transfers between the states. The fiscal equalization system provides incentives for states to incur debt instead of generating revenues which would get redistributed. When the debt brake is in full force and forbids deficit financed spending, highly indebted states may demand higher fiscal transfers to comply with the debt brake.

Many studies investigate how government ideology influences public expenditures and borrowing. The partisan theories predict that leftwing governments increase size and scope of government more than rightwing governments. Only few studies examine whether leftwing and rightwing governments pursue different strategies to consolidate budgets.

The German federal government consisting of the conservative Christian Democratic Union (CDU/CSU) and the leftwing Social Democratic Party (SPD) initiated to introduce the debt brake. When the German lower house (Bundestag) decided to introduce the debt brake in May 2009, 19 out of 220 members of Parliament (MPs) of the SPD voted against introducing the debt brake (and against the party line), compared to just one out of 216 MPs of the CDU/CSU. In six German states, rightwing governments implemented debt brakes at the state level (Bavaria, Hesse, Lower Saxony, Saxony, Schleswig-Holstein, and Thuringia), while only three leftwing governments did so (Baden-Wuerttemberg, Hamburg, and Rhineland-Palatinate).[2] Newspaper coverage also suggests that rightwing governments were more active in budget consolidation than leftwing governments. For example, the *Frankfurter Allgemeine Zeitung* wrote on June 22, 2014 that "Social Democrats do not want to save".

We describe to what extent government ideology predicts how state governments consolidate budgets in the German states. During the financial crisis 2008/2009 public debt in European countries drastically increased. In Germany, the debt-to-GDP ratio increased from 74.5% in 2009 to 82.5% in 2010 (Monthly Report of the Federal Ministry of Finance, March 2013). Against the background of high deficit levels in 2010, the federal and state governments need to consolidate their budgets. German states decide on how to comply with the debt brake requirements. We examine which states included new fiscal rules in their legislation and whether government ideology influenced deficits. We asked senior

[2] As a leftwing government, we consider SPD, SPD/Greens, SPD/Greens/SSW or SPD/Die Linke. A mixed coalition government is between SPD and CDU/CSU, CDU, and Greens or CDU/FDP/Greens. A rightwing government is CDU/CSU or CDU/CSU/FDP.

officials in the state ministries of finance which consolidation strategies state governments pursued.

Anecdotal evidence corroborates that political parties in the public debate differ considerably in their attitudes towards fiscal consolidation strategies. Descriptive statistics indicate that leftwing governments ran on average higher structural deficits than rightwing governments between 2010 and 2014. The average primary balance, however, did not differ significantly between rightwing and leftwing governments. In 2014, at the end of the observation period, all states ran primary surpluses. Revenues of federal taxes were much higher than expected. Leftwing governments did not need to run deficits to design generous budgets. Parties differed in their use of individual policy measures to consolidate budgets.

5.2 Public Debt & Government Ideology

The partisan theories describe that leftwing governments appeal more to wage earners and promote expansionary fiscal and monetary policies (Hibbs 1977, Alesina 1987).[3] With tax revenues being constant, leftwing governments are therefore expected to run deficits to finance high expenditures.[4] Rightwing governments appeal more to capital owners, are more concerned with reducing inflation and run lower deficits.[5]

Strategic borrowing may also explain why government ideology influences deficits. If governments face the threat of being replaced by the opposition after the next election they may change their borrowing behavior.[6] There are two theories. Alesina and Tabellini (1990) assume that incumbents increase deficit-financed expenditures on the preferred type of public goods before elections to reduce the room for maneuver of successors. Accordingly, rightwing and leftwing governments would both increase deficits before elections. Persson and Svensson (1989) assume that rightwing governments cut taxes before elections to force successors into low expenditure levels and hence run deficits. Leftwing governments in-

[3] See Eslava (2011) and Kirchgässner (2013) on political economic approaches describing why politicians run fiscal deficits.

[4] German state governments have little discretionary power over their revenues. State governments mainly adjust their budgets on the expenditure side.

[5] See also Heinemann and Hennighausen (2012) and Stix (2013) on what predicts public opinion towards public debt.

[6] De Haan (2013) shows that electoral cycles are more pronounced in young democracies.

crease taxes before elections to force successors into high expenditure levels and hence run surpluses. Many empirical studies do not support the theories on strategic use of deficits (Grilli et al. 1991, Crain and Tollison 1993, Franzese 2000, Lambertini 2003, Brender and Drazen 2009, Aidt and Mooney 2014). Petterson-Lidbom (2001) finds evidence in support of the Persson and Svensson theory using data from Swedish local governments.[7]

Many studies on budget consolidation investigate the determinants of a successful consolidation. Consolidations are defined as successful if the debt-to-GDP ratio or the budget deficits are permanently reduced. Alesina et al. (1998) find that coalition governments are less likely to succeed in budget consolidation than single party governments. Fiscal decentralization makes successful fiscal consolidation more likely (Schaltegger and Feld 2009). Consolidation strategies differ by government ideology: leftwing governments tend to reduce the deficit by raising tax revenues while rightwing governments rely mostly on expenditure cuts (Mulas-Granados 2003, Tavares 2004). Consolidations may even be more successful under leftwing governments if the commitment to budget consolidation is perceived as more credible (the "Nixon goes to China" argument, see Ross 2000). Leftwing governments may also abstain from expansionary fiscal policies if voters are fiscal conservatives. Empirical evidence shows that voters do not reward politicians who increase public expenditure (Peltzman 1992).

Experts examine what predicts the probability that a fiscal adjustment takes place. Mierau et al. (2007) find that upcoming elections influence the chance for a rapid fiscal adjustment to occur, whereas government ideology does not affect the probability of fiscal adjustments.

Some studies focus on governments' fiscal policies in the German states. Jochimsen and Nuscheler (2011) use a panel dataset from 1960 to 2005. The results show that coalition governments borrowed more than single party governments and that borrowing was lower in pre-election years. Coalition governments with a finance minister of the same party as the prime minister did, however, not increase debt as compared to single party governments. Government ideology has not been shown to influence borrowing. The authors

[7] Empirical studies have also shown that budget deficits are higher under fragmented governments (Volkerink and De Haan 2001, Perotti and Kontopoulos 2002). Strong budgetary institutions can, however, mitigate the effect of fragmented governments on budget deficits (De Haan et al. 2013). Strong budgetary institutions such as politically independent state supervisory authorities may also limit budget deficits that arise when local governments and state supervisory authorities belong to the same party (Rösel 2014). Fiscal policies may also depend on fiscal decentralization. Fiscal autonomy gives rise to lower local public debt (Feld et al. 2011, Foremny 2014). At the local level, municipalities increased debt when neighboring municipalities increased debt (Borck et al. 2015).

describe that electoral motives dominated the partisan effect: in a repeated game where governments offer voters' preferred platforms on election day, no government wants to deviate since it may be punished by voters at the next election.[8] Jochimsen and Thomasius (2014) find that the professional background of the finance minister had a significant effect on the budget deficit in the German states between 1960 and 2009, whereas the finance minister's party affiliation had not. Public spending and deficits were higher when prime ministers of the German states had low socioeconomic backgrounds, as measured by the Standard International Occupational Prestige Scale and International Socio-Economic Index of Occupational Status (Hayo and Neumeier 2014).
Support for the debt brake was highest among CDU voters, followed by voters of the Greens, the SPD, the FDP and Die Linke (Hayo and Neumeier 2016a). High personal incomes, knowledge about the costs of deficit spending, and low trust in politicians' fiscal competence gave rise to high support of fiscal consolidation (Hayo and Neumeier 2016b). There is no study yet that empirically investigates how government ideology is related to budget consolidation in the German states after the financial crisis and after the debt brake was introduced.

5.3 German Debt Brake

A balanced-budget rule was included in the German constitution in 2009, which requires state budgets to be balanced without borrowing (Art. 109(3) GG).[9] Exceptions can only be made for emergencies such as severe economic crises or natural disasters, or according to the development of the economic cycle on a symmetrical basis (Art. 109 (3) sentence 2 GG). It is unclear, however, whether there will be sanctions if a state fails to consolidate the budget until 2020 (Fuest and Thöne 2013). The federal government established a new Stability Council consisting of the state finance ministers and the federal ministers of finance and economic affairs. The council monitors whether the federal government and the state governments pursue sustainable fiscal policies. Five highly indebted states (Berlin, Bremen, Saarland, Saxony-Anhalt and Schleswig-Holstein, see Table 5.1) have

[8] In a similar vein, electoral motives influenced active labor market policies that promote (short term) job-creation in the German states (Mechtel and Potrafke 2013).

[9] Berlin, Mecklenburg-Western-Pomerania and Schleswig-Holstein voted against the new debt brake in the federal council in June 2009. See Table 5.1.

agreed on a consolidation path, are monitored on their compliance, and receive transfers to consolidate the budgets. The Stability Council evaluates the budgets based on four performance figures (structural deficit, credit financing ratio, debt level and interest-tax-ratio) which are compared to the state average. There is, however, no common concept on how to calculate the structural deficit at the state level. The Stability Council uses the deficit per capita instead (Brügelmann and Schaefer 2013).

The federal debt brake does not make any prescriptions for the states' fiscal policies until 2019. States are autonomous in their fiscal policy, and state governments (except for the five states with consolidation assistance) can decide on whether they want to comply with the debt brake earlier and how a balanced budget is to be reached. Since state governments have little discretionary power regarding their tax revenues, states are most likely to adjust budgets by decreasing expenditures. Expenditures that are not predetermined by the federal legislation include current employment, operating expenditures, and allowances and benefits. The states may include new laws concerning the debt brake in their constitutions. For example, the states may specify rules regarding the required approval of escape clauses in parliament, the amortization plan, the legal form of the control account, and adjustments of financial transactions.

The fiscal equalization scheme redistributes revenues across states and between the federal level and the state level. The federal government and state governments are negotiating the design of the fiscal equalization scheme after 2020. Feld (2010) and Burret and Feld (2013) describe that state governments have incentives to not balance the budgets until 2019 to negotiate higher transfers from other states or the federal level.[10]

States can include balanced-budget rules in the constitutions (as did Bavaria, Hamburg, Hesse, Mecklenburg-Western-Pomerania, Rhineland-Palatinate, Saxony and Schleswig–Holstein) or in their state budget code (as did Baden-Wuerttemberg, Saxony-Anhalt, Lower Saxony and Thuringia, see Table 5.1). The rules in the state budget code can, however, easily be circumvented (Burret and Feld 2013).[11] If state governments change the constitution to comply with the debt brake, they indicate that they seriously want to consolidate

[10] See Herwartz and Theilen (2014) on what type of state government is keen to collect taxes.

[11] Rules in the state budget code can be changed by simple majority, whereas the constitution is more difficult to change. Bohn and Inman (1996) show that stricter budget rules gave rise to lower deficits in the US states.

their budgets.[12] Constitutional debt brakes may, however, still contain loopholes, for example, by leaving out special funds and public enterprises (Ciaglia and Heinemann 2012, Heun 2014, Reischmann 2014, 2016).

[12] We tested whether the level of debt influences the likelihood to introduce a debt brake at the state level. Regression coefficients in probit regressions are statistically significant and indicate that more indebted states were less likely to introduce debt brakes.

TABLE 5.1: Debt brake law in the German states

State	Voting decision on federal debt brake in federal council (June 12, 2009)	Means of state debt brake implementation	Date of parliamentary vote	Government ideology at parliamentary vote	Date of popular vote on change of constitution	Receives consolidation assistance
Baden-Wuerttemberg	Yes	State budget code	December 2012	Leftwing	-	-
Bavaria	Yes	Constitution	June 2013	Rightwing	September 2013	-
Berlin	No	-	-	-	-	Yes
Brandenburg	Yes	-	-	-	-	-
Bremen	Yes	Constitution	January 2015	Leftwing	-	Yes
Hamburg	Yes	Constitution	June 2012	Leftwing	No	-
Hesse	Yes	Constitution	December 2010	Rightwing	March 2011	-
Mecklenburg-Western-Pomerania	No	Constitution	June 2011	Mixed Coalition	No	-
Lower Saxony	Yes	State budget code	September 2012	Rightwing	-	-
North Rhine-Westphalia	Yes	-	-	-	-	-
Rhineland-Palatinate	Yes	Constitution	December 2010	Leftwing	No	-
Saarland	Yes	-	-	-	-	Yes
Saxony	Yes	Constitution	July 2013	Rightwing	No	-
Saxony-Anhalt	Yes	State budget code	November 2010	Mixed Coalition	-	Yes
Schleswig-Holstein	No	Constitution	May 2010	Rightwing	No	Yes

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TABLE 5.1: (continued)

State	Voting decision on federal debt brake in federal council (June 12, 2009)	Means of state debt brake implementation	Date of parliamentary vote	Government ideology at parliamentary vote	Date of popular vote on change of constitution	Receives consolidation assistance
Thuringia	Yes	State budget code	July 2009	Rightwing	-	-

SOURCE: Own collection.

Experts describe how the German debt brake is designed and whether it serves its purpose. Janeba (2012) investigates a political agency problem where policy reforms such as a previously passed new budget or debt rule are implemented with a delay. The results show that a suitable debt ceiling is more effective to restrain borrowing than a budget deficit rule. Since the debt brake will only become effective in 2020, future state governments are likely to challenge the new rules before the rules become effective (Janeba 2012). Schleswig-Holstein, Saxony-Anhalt and Saarland, some of the states which receive consolidation assistance, have the strictest rules. The states lack fiscal discipline because German federalism provides bailout guarantees (Ciaglia and Heinemann 2012). Mause and Gröteke (2012) conclude that the German debt brake is not a credible commitment. Whether a debt brake is effective depends on the individual design (independent political control, sanctions, etc.) and on the institutional setting. If, for example, a government can expect a bailout or poor fiscal policy is not punished by the capital markets, a debt brake rule would not change a government's incentives. The German fiscal equalization scheme renders the debt brake less effective.

5.4 Governments' Rhetoric

Policy preferences of parties can be described by politicians' words in the public debate or in party manifestos (Osterloh 2012). Politicians reveal their attitudes towards the debt brake in the media. In Schleswig-Holstein, the leftwing government wanted to weaken the debt brake: finance minister Heinhold "budges from the debt brake" (Schleswig-Holsteinische Zeitung, June 4, 2015). In North-Rhine Westphalia, the socialdemocratic finance minister Norbert Walter Borjans maintained that the debt brake is somewhat self-incapacitating (dapd Nachrichtenagentur, October 13, 2011). In Hesse, the member of the state parliament Janine Wissler (leftwing party Die Linke) said that the debt brake is equivalent to cuts in social welfare (Gelnhäuser Tageblatt, March 9, 2011). Saarland's Prime Minister Annegret Kramp-Karrenbauer (CDU) questioned the debt brake by stating that a positive economic environment is needed to cope with the debt brake. Her own party and the market-oriented FDP strongly criticized her view (Berliner Morgenpost, September 28, 2011).

TABLE 5.2: Attitudes towards debt brake in individual party manifestos (years 2009 – 2014)

	CDU/CSU	SPD	FDP	Greens	Die Linke
Attitudes towards the debt brake					
Number of party manifestos with positive attitude	20	9	18	15	0
Number of party manifestos with negative attitude	0	0	0	2	13
Total number of party manifestos	23	23	23	23	23

NOTE: Only clear statements are recorded. Consequently the sum of negative and positive statements does not necessarily correspond to the total number of investigated party manifestos.
SOURCE: Own collection based on party manifestos.

During the plenary debate before voting on the federal debt brake in the lower house in May 2009, MPs revealed differences in attitudes towards budget consolidation across parties.[13] Volker Wissing (FDP) stressed how the interest that has to be paid on the debt burden reduces the scope of action available to politicians, and that his party strongly advocates an effective debt brake. Antje Tillmann (CDU) maintained that a debt brake implies intergenerational justice. By contrast, Bodo Ramelow (Die Linke) claimed that the debt brake will render some states incapable of action, and demands higher taxes instead, for instance on wealth and financial transactions. Fritz Kuhn (Greens) criticized that the debt brake will not be effective, because state governments are autonomous in designing their budgets until the year 2019. Peer Steinbrück (SPD), the then finance minister, claimed that a signal to the financial markets is needed, that Germany pursues sound budgetary policies.

Party manifestos in individual states since 2009 also contain the party position regarding debt brakes. There were 23 state elections between 2009 and 2014, and party manifestos were published before each election. We examined whether manifestos contained crystal-clear statements in favor or against debt brakes at the state or federal level. Table 5.2 shows the results. Parties clearly differed in their attitudes towards debt brakes. While the conservative CDU/CSU and the market-oriented FDP advocated the debt brake in 20 and 18 out of 23 party manifestos, the leftwing SPD only advocated the debt brake

[13] See plenary minutes No. 16/225.

in 9 party manifestos. The leftwing Green party advocated the debt brake in 15 party manifestos, and dismissed it in 3 party manifestos. The leftwing party Die Linke never advocated the debt brake and dismissed it in 13 party manifestos.
Anecdotal evidence corroborates that political parties in the public debate differed considerably in their attitudes towards debt brakes. We now examine whether the expressed differences in attitudes towards fiscal consolidation of the political parties were also reflected in the data.

5.5 Governments' Actions

5.5.1 Voting behavior

Political alignment mattered when the German lower house decided to introduce the debt brake at the federal level in May 2009. Political alignment also mattered for voting behavior when a bill concerning the debt brake at the state level was introduced. Table 5.3 shows the results of parties' roll call votes in the state parliaments. MPs of the CDU/CSU always voted in favor of the debt brake. MPs of the FDP always voted in favor of the debt brake, except for Saxony-Anhalt where they abstained from voting. In Saxony one MP of the SPD voted against the debt brake, in Lower-Saxony and Thuringia all MPs of the SPD voted against the debt brake. In the other states all MPs of the SPD voted in favor of the debt brake. In Bavaria and Lower Saxony all MPs of the Greens voted against the debt brake. In Saxony one MP of the Greens voted against the debt brake. MPs of Die Linke never supported the debt brake, except in Saxony where 11 MPs voted in favor of the debt brake.

TABLE 5.3: Voting behavior of individual parties

Parliament (Federal/State Level)	Draft proposed by	CDU	SPD	FDP	The Greens	Die Linke
Germany (Bundestag)	CDU/CSU, SPD	1 no / rest yes	19 no / rest yes	1 yes / 3 no / rest abstained	1 abstained / rest no	no
Bavaria	various MPs from CSU, SPD, FDP and FW	yes	yes	yes / 1 abstained	no / 1 abstained	-
Bremen	CDU SPD, Greens	yes	yes	yes	yes	no
Hesse	CDU, FDP	yes	yes	yes	yes	no
Mecklenburg-Western-Pomerania	CDU, SPD	yes	yes	yes	-	no
Lower Saxony	CDU, FDP (Draft law to change state budget code)	yes	no	yes	no	no
Rhineland-Palatinate	CDU, SPD, FDP	yes	yes	yes	-	-
Saxony	CDU, SPD, FDP, Greens	yes	1 no / rest yes	yes	1 no / rest yes	11 yes / 11 no / 5 abstained
Saxony-Anhalt	state government (Draft law to change state budget code)	yes	yes	abstained	-	no
Schleswig-Holstein	CDU, SPD, FDP, Greens, SSW	yes	yes	yes	yes	no
Thuringia	state government (Draft law to change state budget code)	yes	no	-	-	no

NOTE: Exact voting behavior in Baden-Wuerttemberg and Hamburg is unknown (no recorded roll call vote).
SOURCE: Minutes of parliamentary meetings.

5.5.2 Policy measures

State governments have little discretionary power designing taxes. One of the few taxes that federal states decide on and collect is the land transfer tax. Expenditures that are not predetermined by the federal legislation include current employment, operating expenditures, and allowances and benefits. The highest share of expenditures is personnel expenditures. Aggregate data on expenditure types do not capture all facets of consolidation strategies. For example, personnel expenditures can be reduced by hiring fewer teachers or fewer administrative senior government officials. It is worthwhile to examine whether government ideology influences consolidation strategies. In July 2014 we asked experts in the Ministries of Finance of all German states which consolidation strategies state governments pursued after the federal debt brake had been introduced. The experts work in the units dealing with issues such as the budget, federal relationships, tax revenue forecasting or fiscal planning. Table 5.4 portrays the results. We describe three states with particularly interesting anecdotal evidence in some more detail.

Schleswig-Holstein was the first state to include a debt brake in the state constitution in May 2010. Including a debt brake in the constitution was among the first decisions of the new rightwing government. The debt brake had been a major issue in the election campaign. In 2009, Schleswig-Holstein, still governed by a mixed coalition government, had been among the three states that voted against the debt brake at the federal level in the Federal Council. When the state parliament decided to file a suit against the debt brake, the rightwing CDU was the only party that did not support the lawsuit. Attitudes concerning the debt brake clearly differed between leftwing and rightwing governments/parties, and so do the attitudes regarding consolidation strategies. The rightwing government decided to reduce public employment between 2010 and 2020. The leftwing government which came into office in June 2012 approved the agreed deficit targets, but had different priorities on how to consolidate the budget. For example, the government wanted to cut fewer teacher positions than planned.[14] Instead, more jobs in the public administration would be cut.

Saxony has the lowest debt per capita level of all states. The rightwing CDU has been in power since 1990 (over the period 2004-2009 in a coalition with the leftwing SPD). The state government ran budget surpluses since 2006. The debt brake, included in the state

[14] The leftwing government wants to cut only half of the originally planned teacher positions and provide the third year of nursery school free of charge. See Frankfurter Rundschau, May 9, 2012.

constitution in July 2013, forbids public borrowing starting in 2014. The debt brake also includes provisions to cover implicit debt arising from pension liabilities. Public employment was forecast to be cut by 18%.
North Rhine-Westphalia did not include a debt brake in its constitution or state budget code. Public employment needs, however, to be reduced to comply with the debt brake in 2020. The leftwing government froze wages of civil servants in higher service instead of cutting positions in the inner administration. The wage freeze of civil servants only in higher service was declared to be not in line with the constitution. The government of North Rhine-Westphalia will thus have to pay back a high amount of foregone payment to the civil servants. Instead of cutting expenditures, the leftwing government increased investive expenditures for schooling, child care and universities hoping for lower expenditures in the future. As a consequence, expenditures for allowances and benefits have increased strongly in North Rhine-Westphalia since 2012. It is not yet clear how North Rhine-Westphalia will finance the increasing expenditures without increasing debt. Since 2012 North Rhine-Westphalia has no concrete plans for retrenchment of personnel. Some departments are required to cut back their expenditures by 1.5% until 2016, but the most personnel intense departments are excluded from the requirement. Some journalists conjectured that the land transfer tax would increase further or a municipality solidarity surcharge would be introduced.[15]

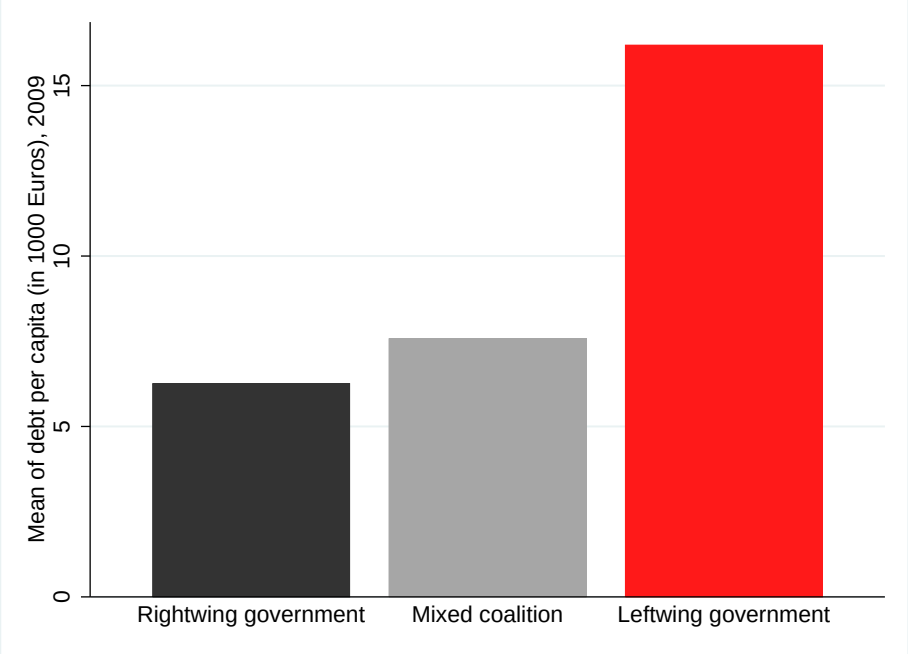
5.5.3 Aggregate outcomes

When the new debt brake law was passed in 2009 public debt differed considerably between the states. States such as Bremen, Berlin, Hamburg and Saarland had high debt per capita levels between € 10,000 and € 24,000 in 2009, whereas states such as Saxony, Bavaria and Baden-Wuerttemberg had debt per capita levels between € 1,000 and € 5,000 in 2009. Figure 5.1 shows the average level of debt per capita for the year 2009 by the type of government. Leftwing governments had higher debt per capita in 2009 than rightwing and mixed coalition governments. Voters in states with poor economic performance and high debt are more prone to vote for leftwing parties because they favor a large size and scope of government and high social spending. The consolidation path needed to achieve zero structural deficits by 2020 hence differs considerably between states. Simulations

[15] See e.g. Rheinische Post, Juli 3, 2014 and Aachener Nachrichten, September 26, 2013.

by Detemple et al. (2013) foreshadow, for example, that Saarland, Saxony-Anhalt and Bremen would only achieve zero structural deficits by 2020 if their spending after provisions and interest payments nominally shrank relative to the 2012 level. Mecklenburg-Western-Pomerania, Thuringia, Hesse, Brandenburg, Rhineland-Palatinate, Saxony, and North Rhine-Westphalia have to cut their budgets in real terms. Berlin, Schleswig-Holstein, Hamburg and Lower Saxony can moderately increase yearly budgets in real terms. Bavaria and Baden-Wuerttemberg would even be allowed to increase their spending and could still have balanced budgets in 2020. Against the background that the population is shrinking especially in East German states, in per capita terms the budgets of Bremen and Saarland have to decrease in nominal terms. Deubel et al. (2015) describe that the Saarland, Saxony-Anhalt, Thuringia, Bremen, and Mecklenburg-Western-Pomerania still need to reduce real spending (excluding interest and state pensions) by 2020, relative to their 2014 level.

FIG. 5.1: Debt per capita level in 2009



SOURCE: Federal Statistical office, own calculations.

We use data on the structural budget deficit per capita as computed by the Stability Council. The data is available for the years 2010-2014. The structural deficit is obtained by netting out financial transactions from the deficit. Business-cycle fluctuations are not eliminated in the data, because members of the Stability Council had not yet agreed on the methodology. We also use data on the deficit per capita and the primary deficit per capita for the years 2009-2014 from the monthly reports of the Federal Ministry of Finance. The primary deficit excludes interest expenditures.[16] We use debt per capita variables from the Federal Statistical Office.

Figure 5.2 shows three deficit measures for the German states over the time period 2009-2014. The solid line describes the structural deficit per capita, the dashed line the deficit per capita and the dotted line the primary deficit per capita. The shaded areas show the type of government in power: red describes a leftwing government; black describes a rightwing government and gray describes a mixed coalition government. There were six changes of state government ideology in the years 2010-2014, four changes occurred from a rightwing to a more leftwing government (Baden-Wuerttemberg, Lower Saxony, North Rhine-Westphalia and Schleswig-Holstein). In Hamburg, a leftwing government took over from a mixed coalition government in 2011, and in Berlin, a mixed coalition government took over from a leftwing government in 2011.[17] We expect that deficits increased after a leftwing government took over from a rightwing government. In all states deficits declined over time. Negative deficits correspond to budget surpluses.

[16] The federal states faced low interest expenditure over the period 2010-2014. Under leftwing governments, the lagged debt per capita was on average € 12,677 compared to € 5,082 under rightwing governments. The highly indebted leftwing states hence benefit most from the low interest rates.

[17] In the fall 2014, elections took place in Saxony, Thuringia and Brandenburg. The new governments did not change the budgets for 2014.

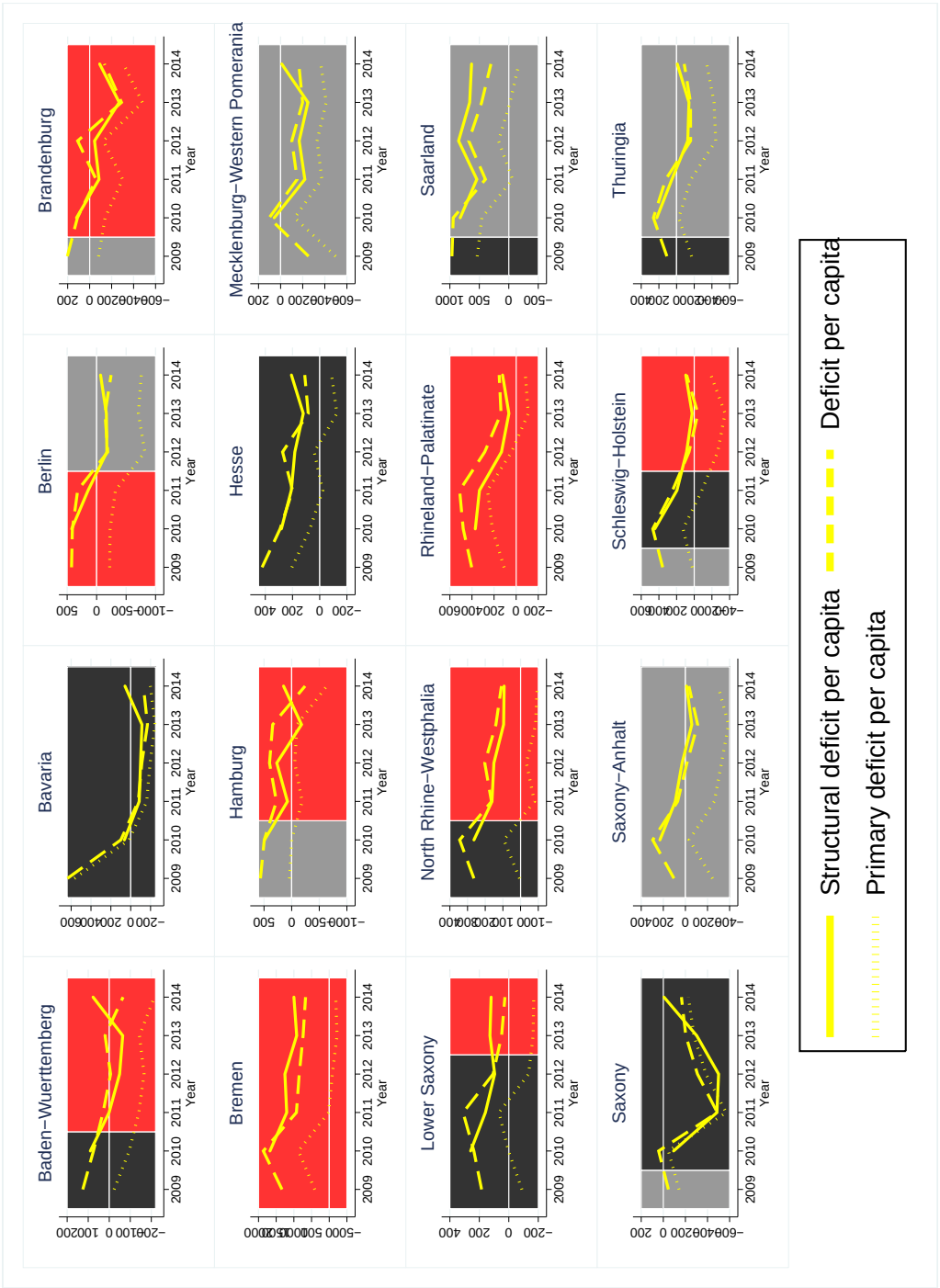


FIG. 5.2: Fiscal deficits per capita (structural, primary, and overall, in €) by states 2009-2014

SOURCE: Stability Council and Monthly Reports of the Federal Ministry of Finance, own calculations.

In 2014, at the end of the observation period, all states ran primary surpluses. Five states with leftwing governments (Bremen, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, Schleswig-Holstein), one state with a rightwing government (Hesse), and one state with a mixed coalition government (Saarland) still ran overall deficits.

Figure 5.3 shows the average deficit per capita for different types of governments. The average structural deficit per capita between 2010 and 2014 was € 43 under rightwing governments and € 250 under leftwing governments. A t-test indicates that structural deficits per capita were significantly higher under leftwing governments than under rightwing governments (significant at the 5% level). The average deficit per capita between 2009 and 2014 was € 136 under rightwing governments and € 292 under leftwing governments. The difference between average deficit per capita run by rightwing and leftwing governments was statistically significant at the 10% level. The relation between government ideology and primary deficits was different. The average primary deficit per capita between 2009 and 2014 was € -48 (i.e., a surplus) under rightwing governments, € -107 under leftwing governments and € -237 under mixed coalition governments. The average primary balance did not differ significantly between rightwing and leftwing governments. Mixed coalition governments, however, run significantly lower primary deficits than governments of one party or of parties sharing similar ideologies.

FIG. 5.3: Average deficit per capita and government ideology (2009/10-2014), in €

SOURCE: Stability Council and Monthly Reports of the Federal Ministry of Finance, own calculations.

So why did especially leftwing politicians dismiss budget consolidation in the public debate, while in fact implementing budget consolidation when they were in office?

The economic conditions were quite favorable and have helped the states to consolidate their budgets since 2010. Tax income was high and interest expenses low. Figure 5.4 shows the average difference between the actual tax revenues and the projected tax revenues in the last fiscal plan for a given year over the period 2009-2014.[18] During the financial crisis in 2009 tax revenues were lower than expected. In the years 2010 and 2011, the states received on average large unexpected additional tax revenues. Between 2012 and 2014, expectations of the amount of tax revenues were gradually adjusted upwards, but the states still received more tax revenues than expected.[19] With the additional tax income and low interest expenses, the states had an opportunity to finance their expenses without issuing too much new debt. The favorable economic conditions explain the low level of primary deficits per capita in the last years. The economic environment spared state governments – the political alignment notwithstanding – to implement rigorous consolidation programs. A reduction in deficits was possible without having to cut back benefits.

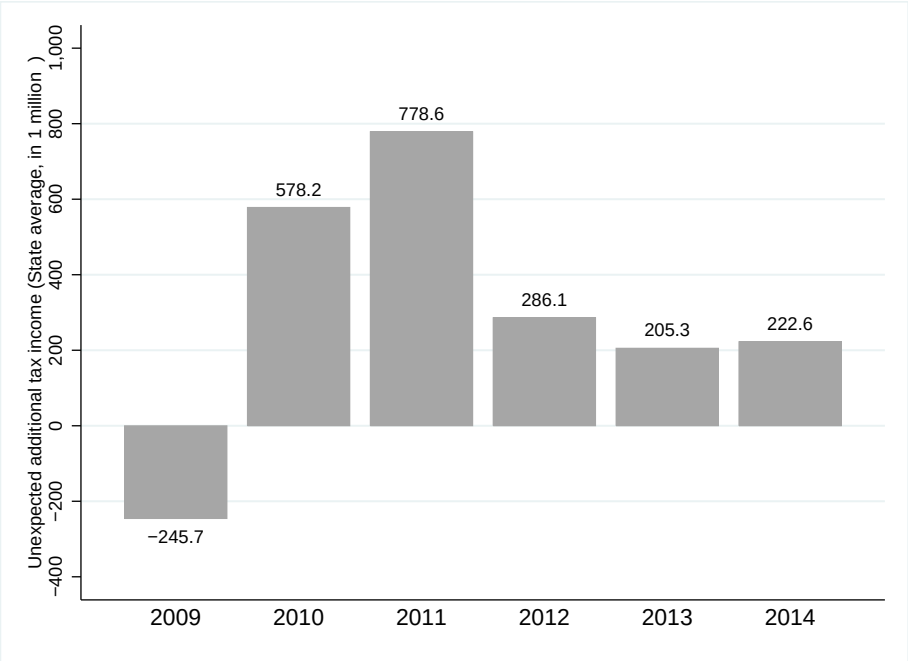
We do not estimate an econometric model because we cannot identify a causal effect of government ideology on consolidation strategies. The number of observations is not sufficient to use, for example, a regression discontinuity approach. We cannot solve the reverse causality problem by using an instrumental variable for government ideology either. Such an instrumental variable for government ideology in macro panel data models does not yet exist. Future research needs to examine whether government ideology influenced fiscal deficits. An identification strategy for a causal effect should also consider the initial debt-to-GDP ratio.[20] New research for the German states may, of course, include data for the years that are yet to come.

[18] There were no projected tax revenues published for the same year in Rhineland-Palatinate (2009, 2012, 2014), Schleswig Holstein (2009), Mecklenburg-Western-Pomerania (2010, 2012, 2014), Bavaria (2011), and Bremen (2011, 2014). We instead used projections that were made the previous year in those cases.

[19] On political manipulation of tax revenue forecasts see, for example, Büttner and Kauder (2015) and Kauder et al. (2015).

[20] See, for example, Bohn's (1998) fiscal reaction function that describes how the debt-to-GDP-ratio predicts the primary surplus.

FIG. 5.4: Unexpected additional tax income (State average, in 1 million €)



NOTE: The graph describes the average difference between the actual tax revenues and the projected tax revenues in the last fiscal plan for a given year.
SOURCE: "Mittelfristige Finanzplanung der Länder", Monthly Report of the Federal Ministry of Finance, February 2015.

5.6 Conclusion

Against the background of the new German debt brake we described to what extent government ideology influences how state governments consolidate budgets. Anecdotal evidence corroborates that political parties in the public debate differed in their attitudes towards fiscal consolidation strategies. Descriptive statistics indicate that leftwing governments ran on average higher structural deficits than rightwing governments between 2010 and 2014. The findings also suggest that government ideology influenced fiscal policies, especially consolidation strategies. Anecdotal evidence based on expert interviews affirms that parties differed in using individual policy measures to consolidate budgets.

Using data over the period 1960-2009, previous studies did not show that government ideology influenced deficits in the German states (Jochimsen and Nuscheler 2011, Jochimsen and Thomasius 2014). Other studies have shown evidence for ideology-induced policies in the German states since the 1990s: rightwing governments hired more policemen than leftwing governments; rightwing governments were active in introducing tuition fees while leftwing governments abolished tuition fees; rightwing governments spent more on universities; rightwing governments promoted economic freedom (Oberndorfer and Steiner 2007, Potrafke 2011, 2013, Kauder and Potrafke 2013, Tepe and Vanhuysse 2013).We conjecture that also budget consolidation was somewhat ideology-induced in the German states over the period 2010-2014 because government ideology retired to the background at the federal level and parties now employ ideology-induced policies at the state level (Potrafke 2012). Since 2010, however, revenues of federal taxes were much higher than expected. Leftwing governments hence did not need to run deficits to design generous budgets.

Why is it that many socialdemocratic politicians dismissed the debt brake in the public discourse but did not run deficits when in office? It is conceivable that political parties used expressive rhetoric to confirm their ideological identities (Hillman 2010). Our results are in line with Debus (2008) who describes that the SPD adopted leftist positions on economic policy issues to gratify its core voter clientele. However, when participating in government, the SPD implemented more market-oriented economic policies than originally promised before elections. In the course of the financial crisis, the SPD might have responded to shifts in public opinion and pursued more sustainable fiscal policies (Adams et al. 2004, Bräuninger 2009).

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5.8 Appendix: Additional Table

TABLE 5.4: Consolidation Strategies

State	Structural deficit** per capita 2014 (in €)	Government ideology	Planned achievement of (structural) zero-deficit target	Expenditure cutting measures (esp. personnel expenditure)	Revenue enhancing measures (esp. land transfer tax)
Baden-Wuerttemberg	77	2008-2010: Rightwing 2011-2014: Leftwing	2016	Reducing public employment, including teachers, but less than originally planned	Increase land transfer tax from 3.5% to 5% (5.11.2011)
Bavaria	58	2008-2014: Rightwing	2015	Reducing public employment (cutting 384 jobs between 2014 and 2016) while increasing employment in tax administration, security and education, limited wage increases	No increase
Berlin*	-66	2008-2010: Leftwing 2011-2014: Mixed coalition	2015	Reducing employment in public administration by 2.7% between 2013 and 2016	Increase land transfer tax from 4.5% to 5% (1.4.2012), from 5% to 6% (1.1.2014), additional accommodation tax since 2014
Brandenburg	-91	2008-2009: Mixed coalition 2010-2014: Leftwing	already achieved	Overall expenditures forecast to decrease by 1.8% between 2012 and 2016, cutting 20,000 jobs until 2016.	Increase land transfer tax from 3.5% to 5% (1.1.2011)

Table continues on next page

TABLE 5.4: (continued)

State	Structural deficit** per capita 2014 (in €)	Government ideology	Planned achievement of (structural) zero-deficit target	Expenditure cutting measures (esp. personnel expenditure)	Revenue enhancing measures (esp. land transfer tax)
Bremen*	999	2008-2014: Leftwing	2020	Reducing public employment, deferring expenditures on public transport, reducing grants to universities, increased pension age for civil servants, wage freeze of civil servants in higher service	Increase land transfer tax from 3.5% to 4.5% (1.1.2011), from 4.5% to 5% (1.1.2014), additional tourism tax since 2013, increased local business tax since 2014
Hamburg	147	2008-2010: Mixed coalition 2011-2014: Leftwing	2019	Planned reduction of public employment, but effectively public employment increased	Increase land transfer tax from 3.5% to 4.5% (1.1.2009)
Hesse	208	2008-2014: Rightwing	2017	Reducing public employment in administration, not teachers	Increase land transfer tax from 3.5% to 5% (1.1.2013), from 5% to 6% (1.8.2014)
Mecklenburg-Western-Pomerania	-10	2008-2014: Mixed coalition	already achieved	Reducing public employment by 20% between 2003 and 2013	Increase land transfer tax from 3.5% to 5% (1.7.2012)
Lower Saxony	120	2008-2012: Rightwing 2013-2014: Leftwing	Rightwing government: 2017 Leftwing government: 2020	Programs to cut administration substantially, more hesitant with cutting teacher positions, but reductions are planned	Increase land transfer tax from 3.5% to 4.5% (1.1.2011), from 4.5% to 5% (1.1.2014)

Table continues on next page

TABLE 5.4: (continued)

State	Structural deficit** per capita 2014 (in €)	Government ideology	Planned achievement of (structural) zero-deficit target	Expenditure cutting measures (esp. personnel expenditure)	Revenue enhancing measures (esp. land transfer tax)
North Rhine-Westphalia	93	2008-2009: Rightwing 2010-2014: Leftwing	after 2017	No clear concept of personnel expenditure cuts, some departments are required to cut back their expenditures by 1,5% until 2016, but the most personnel intense departments are excluded, unconstitutional wage freeze of civil servants in higher service	Increase land transfer tax from 3.5% to 5% (1.10.2011)
Rhineland-Palatinate	123	2008-2014: Leftwing	after 2017	Reducing public employment, being conservative with teachers until 2016	Increase land transfer tax from 3.5% to 5% (1.3.2012)
Saarland*	632	2008-2009: Rightwing 2010-2014: Mixed Coalition	after 2017	Reducing employment in public administration, education sector excluded	Increase land transfer tax from 3.5% to 4.5% (1.1.2012), from 4.5% to 5.5% (1.1.2013)
Saxony	-6	2008-2009: Mixed Coalition 2010-2013: Rightwing 2014: Mixed Coalition	already achieved	Public employment is forecast to be cut by 18%	No increase
Saxony-Anhalt*	-10	2008-2014: Mixed Coalition	already achieved	Reducing employment in public administration	Increase land transfer tax from 3.5% to 5% (1.3.2012)

Table continues on next page

TABLE 5.4: (continued)

State	Structural deficit** per capita 2014 (in €)	Government ideology	Planned achievement of (structural) zero-deficit target	Expenditure cutting measures (esp. personnel expenditure)	Revenue enhancing measures (esp. land transfer tax)
Schleswig-Holstein*	96	2008-2009: Mixed Coalition 2010-2011: Rightwing 2012-2014: Leftwing	2016	Reduce public employment by 10% until 2020, administration and teachers, leftwing government wants to cut only half of the originally planned teacher positions and provide the third nursery school year free of charge	Increase land transfer tax from 3.5% to 5% (1.1.2012), from 5% to 6.5% (1.1.2014)
Thuringia	-8	2008-2009: Rightwing 2010-2013: Mixed Coalition 2014: Leftwing	already achieved	Reducing employment in public administration	Increase land transfer tax from 3.5% to 5% (7.4.2011)

NOTE: *State receives consolidation assistance and has an austerity program which is monitored by the Stability Council until 2016. **A negative deficit describes a surplus.

SOURCE: Stability Council, Fiscal Planning Reports, own collection based on personal interviews and newspaper articles.

Chapter 6

Do Parties Punish MPs for Voting Against the Party Line?*

6.1 Introduction

Voting decisions depend on how notable a candidate is for the electorate or for the delegates that select a party's candidate for public office (the "selectorate", henceforth "the party"). A candidate can distinguish himself from co-partisans by past performance and effort in office, political experience and even physical attractiveness, but also by defecting from the party line on roll-call votes. The bailout of Greece in the aftermath of the financial crisis is an excellent case in point. German politicians' views on the issue differed within and across parties. Most party leaderships advocated the rescue packages. Some members of parliament (MPs) did however not toe the party line in roll-call votes on the rescue packages. Because German journalists lean towards a critical view on the European crisis management, and because it was a controversial issue in the public discourse, the media celebrated the MPs that made a martyr of themselves by using roll-call votes as low-cost signaling devices. Newspaper articles quoted how many MPs voted in favor or against the

* This chapter is based on joint work with Björn Kauder and Niklas Potrafke. We would like to thank Nico Pestel and Panu Poutvaara for their helpful comments. Sebastian Kropp, Simone Winterer and Myriam Piser provided excellent research assistance.

Greek bailout packages or if they abstained from voting, and hyped individual MPs who voted – against the majority of their political party – against the Greek bailout packages.[1] A first question is what determines defection from the party line on roll-call votes. MPs behave strategically when announcing a position on a roll-call vote because they have the electoral implication of their vote in mind (Mayhew 1974, Bütikofer and Hug 2015).[2] MPs that are more dependent on the party's reputation are less likely to vote against the party line (Thames 2005, Kunicova and Remington 2008, Sieberer 2010).[3] In Germany, MPs with a high expertise in European policy were more likely to vote against the European bailout packages (Wimmel 2013). Directly elected MPs in the 2005-2009 period were more likely to defect than list MPs; the likelihood of defection decreased with higher vote margins of direct MPs (Sieberer 2010, Neuhäuser et al. 2013). Becher and Sieberer (2008), however, do not find that direct MPs are more prone than list MPs to defect during the period 1983-1994; the likelihood to defect however increased if electoral competition increased, and executive offices and party affiliation explain patterns of defection in roll-call votes.[4] Another pertinent question is how voters react to MPs voting against the party line. While most roll-call votes occur outside of the electoral campaign, the electorate might not be aware of the representatives' voting behavior. The electorate indeed often lacks interest to be informed about the incumbents' voting records and relies mainly on party identity, therefore voters cannot hold their representatives accountable (Stokes and Miller 1962). In any event, Ansolabehere and Jones (2010) show for the United States that voters have preferences over important bills and use their beliefs about legislators' roll-call votes and parties' policy orientation to vote for their representatives. Citizens do not pay much attention to their representatives' parliamentary activities. Beliefs are rather formed from facts learned from the media and campaigns and are drawn from party labels. Incumbents,

[1] See, for example, "Griechenland-Abstimmung im Bundestag: So hat der Bundestag bisher in Sachen Griechenland abgestimmt" (Focus Online 2015) and "Abstimmungen im Bundestag: Rekordmehrheit für Griechenland-Hilfe" (Wirtschaftswoche 2015).

[2] A candidate may also score with his attractiveness. Studies have shown that voters favor physically attractive candidates (Klein and Rosar 2005, Lawson et al. 2010, Berggren et al. 2010, 2011).

[3] On roll-call votes in the European Parliament, see Roland (2009).

[4] Politicians who ran in highly contested electoral districts were also more likely to attend parliamentary sessions (Bernecker 2014; on attendance rates and parliamentary activity see also Gehring et al. 2015 and Geys and Mause 2016). The vote margin may also influence tax policy (Solé-Ollé 2003). Being directly elected also influenced committee membership in parliament and re-election prospects in the next election (Stratmann and Baur 2002, Stratmann 2006, Peichl et al. 2015).

however, worry about their votes and suspect that some roll calls may become visible to the electorate, i.e. when due to media coverage some roll calls are being politicized (Arnold 1990). Roll-call votes hence can be transformed into electorally important political issues and can have an impact at the polls (Fiorina 1974). Constituents punish politicians for being too partisan (Canes-Wrone et al. 2002), but not for being ideologically too extreme (Carson et al. 2010). In the United Kingdom, policy accountability of MPs is relatively weak and general rather than issue-specific (Vivyan and Wagner 2012).

Parties decide on direct candidates solely in the respective electoral district and hence only among a few fellow party members. List candidates, however, have to face elections in state party convents to be nominated and obtain one of the few promising party list positions (Schüttemeyer 2002, Oak 2006, Hennl 2014). List candidates therefore depend even more on the loyalty of their political party.[5] An intriguing issue is how parties punish MPs who voted against the party line. Empirical evidence is scarce. In Slovakia, defecting MPs received better pre-election list positions in the future (Crisp et al. 2013). Evidence from Italy suggests that parties allocate politicians who vote in line with the party to safe positions (Galasso and Nannicini 2015). In a descriptive study on European rescue packages, Wimmel (2014) portrays that some German MPs were punished for defecting from the party line.

Using German data for the legislative period 2009-2013, we empirically investigate whether German parties punished or rewarded list candidates that voted against the party line. The dataset includes the voting behavior of 257 MPs in 218 roll-call votes. As compared to previous studies we also take into account that the effect of punishment differs along the list of candidates because a candidate is punished more when he loses positions at the threshold of promising list positions. We acknowledge that parties would not react to list candidates not adhering to the party line when these list candidates have already deviated from the party line in the legislative period 2005-2009. The financial crisis, however, increased the public attention paid to roll-call votes and politicians who voted against the majority of their parties' MPs. The results do not show that parties account for the voting behavior in parliament by punishing politicians who have voted against the party line. We thus

[5] In the German mixed electoral system most direct candidates further "collateralize" their candidacy by also being on a party list. It is hardly possible to differentiate between direct and list candidates as also direct candidates depend on their parties' loyalty in order to be placed on a promising list position, especially when direct candidates compete for unsafe districts (Manow 2012).

extend the literature that has mainly focused on how *voters* react to MPs not adhering to the party line.

6.2 Institutional Backdrop

Two major political parties characterize the political spectrum in Germany: the Social Democratic Party (SPD) and the Christian Democratic Union (CDU; in Bavaria: CSU). The much smaller Free Democratic Party (FDP) and the Greens (Bündnis 90/Die Grünen) have played an important role as coalition partners. The Left Party has never been part of a federal government. In our period under investigation (2009-2013), a coalition of CDU and FDP was in office.

In federal elections, voters cast two votes in a personalized proportional representation system. The first vote determines which candidate is to obtain the direct mandate in one of the 299 electoral districts with a simple majority. The second vote determines how many seats the individual parties receive in parliament. Each party that received at least 5% of the second votes obtains a number of the 598 seats in the parliament that corresponds to the party's second vote share.[6] Candidates voted into the parliament with the first vote (direct mandate) obtain their seats first. Candidates from state-specific party lists obtain the remaining seats. Note that many candidates on party lists also run as direct candidates. The list position matters only for unsuccessful direct candidates and candidates that did not run for a direct mandate (we focus on these two groups in our analysis). When the number of direct mandates exceeds the party's vote share, the party obtains excess mandates. Because the other parties did not obtain equalizing mandates in the elections before 2013, excess mandates made it possible for an individual party to receive a larger number of seats as compared to the number of seats this party would have received based on the second vote result.

Before federal elections take place and voters decide on the direct candidates, each political party nominates candidates for their state-specific party list. The list position of each candidate is determined during state party convents. The voting procedure differs between political parties and states. Some parties suggest only one candidate for a certain list

[6] Candidates obtain a direct mandate even if their party fails to reach the 5% clause. If a party obtains less than 5% of the second votes, but at least three direct mandates, the party obtains a number of seats in the parliament according to the party's second vote share.

position and the party members cast a vote approving or disapproving the candidate for the specified list positions. In those nominations usually vote shares are very high for the candidates. For some parties several candidates run for a certain list position on the state-specific party list. The party members vote for the presented candidates until a clear winner is determined. In those nominations vote shares are usually notably lower for the candidates. The list position on the state-specific party lists and the number of seats a party obtained in federal elections determines who and how many of the list candidates become a member of parliament.[7]

6.3 Parties' Reaction to MPs Voting Against the Party Line

6.3.1 Descriptive Statistics

We use data from the website of the German federal parliament (Bundestag), from the federal election administrator, and the German newspaper "Die Zeit" for the 17^{th} legislative period, 2009-2013. We use data for the legislative period 2009-2013 only because important control variables such as earnings from side jobs, MPs' speeches and oral contributions are fully available only since the legislative period 2009-2013. Out of 651 MPs of the German federal parliament, 298 MPs were direct candidates (we excluded one MP who left his party during the legislative period) and 353 MPs were list candidates. 257 of these list candidates were elected into parliament in the 2009 election and re-ran as list candidates in the 2013 election. To measure how individual MPs deviate from the party line, we rely on the only voting procedure that reveals the voting behavior of each MP: roll-call votes. Roll calls have to be explicitly demanded by a parliamentary party group or by 5% of MPs. Recorded votes are hence relatively rare in the federal parliament and the topics of the roll-call votes must be important enough so that at least a group in the parliament requested a recorded vote. 218 roll-call votes took place between the beginning of the legislative period in 2009 and the end of the legislative period in 2013. For each vote we record if the MP voted yes or no or abstained from the vote (note that MPs can choose "abstain"

[7] To accurately measure if political parties punish or reward candidates we would preferably use vote shares from within-party elections. But as the nomination procedures differ between parties and states, vote shares are unfortunately not comparable. We thus simply use list positions.

on the ballot paper; abstention is thus different from being absent). A deviating vote is recorded when the MP voted differently than the majority of his party. In our sample of 257 list MPs, 62 MPs never deviated from the party line. The remaining MPs had between 1 and 40 deviations. We measure how often an MP deviated from the party line over the entire legislative period from 2009 to 2013 by taking the ratio of the number of deviations over votes participated. Figures 6.1 and 6.2 indicate that deviations did not matter for the list position; Figure 6.3 suggests, by contrast, that deviations may have mattered for list positions close to the threshold of promising list positions (see below): politicians may have been punished for *not* deviating from the party line. A t-test on means does, however, not indicate a significant difference in deviation ratios between politicians that have been punished and those that have not.

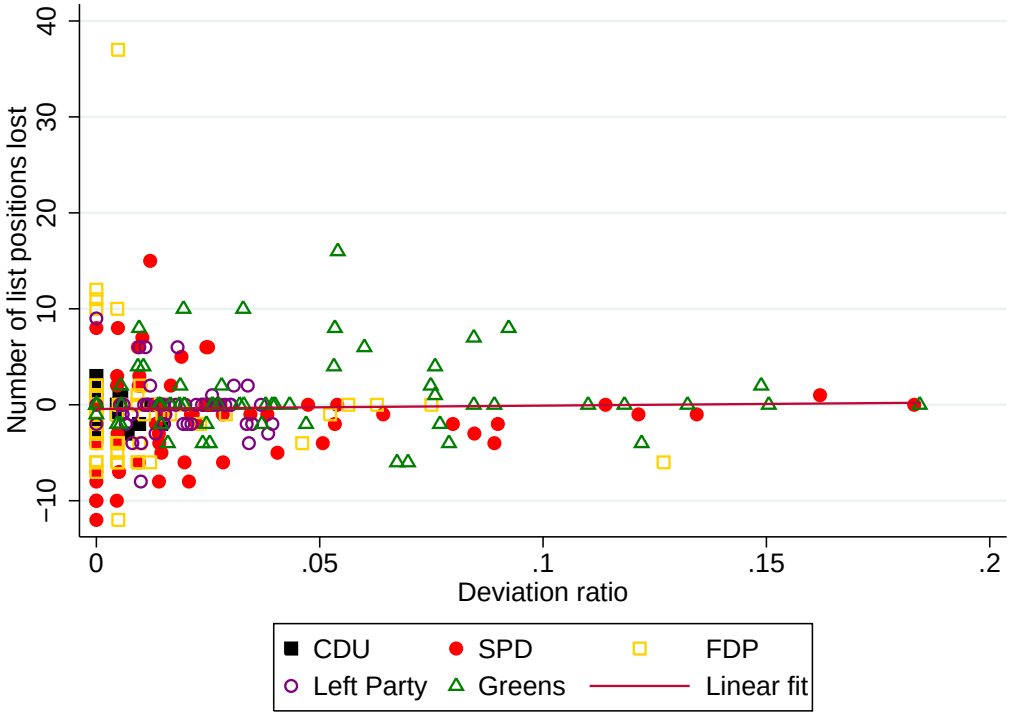
The governing parties in the period 2009-2013 were the CDU and the FDP. Out of the 257 MPs in our sample, 64 were in the SPD, 64 in the FDP, 47 in the Left Party, and 62 from the Greens. Because most CDU politicians were elected into parliament as direct candidates, our sample includes only 20 MPs from the CDU. MPs are on average 8.66 years in parliament. 11 MPs held an office in their party and 6 MPs held the position of a minister during the legislative period. Individual MPs gave up to 140 speeches and 139 oral contributions, and did not attend up to 43% of the roll-call votes. MPs had earnings from side jobs of up to 724.000 euros during the period; 196 MPs, however, did not record any earnings from side jobs (see, for example, Becker et al. 2009, Geys and Mause 2013, Arnold et al. 2014). Around 60% of MPs in the sample are male and married. MPs have 1.36 children on average. MPs are on average 46.63 years old at the beginning of the legislative period in 2009. Individual MPs gained up to 12 or lost up to 37 positions on their party lists between 2009 and 2013. Table 6.4 shows descriptive statistics.

6.3.2 Empirical Strategy

The baseline regression model takes the following form:

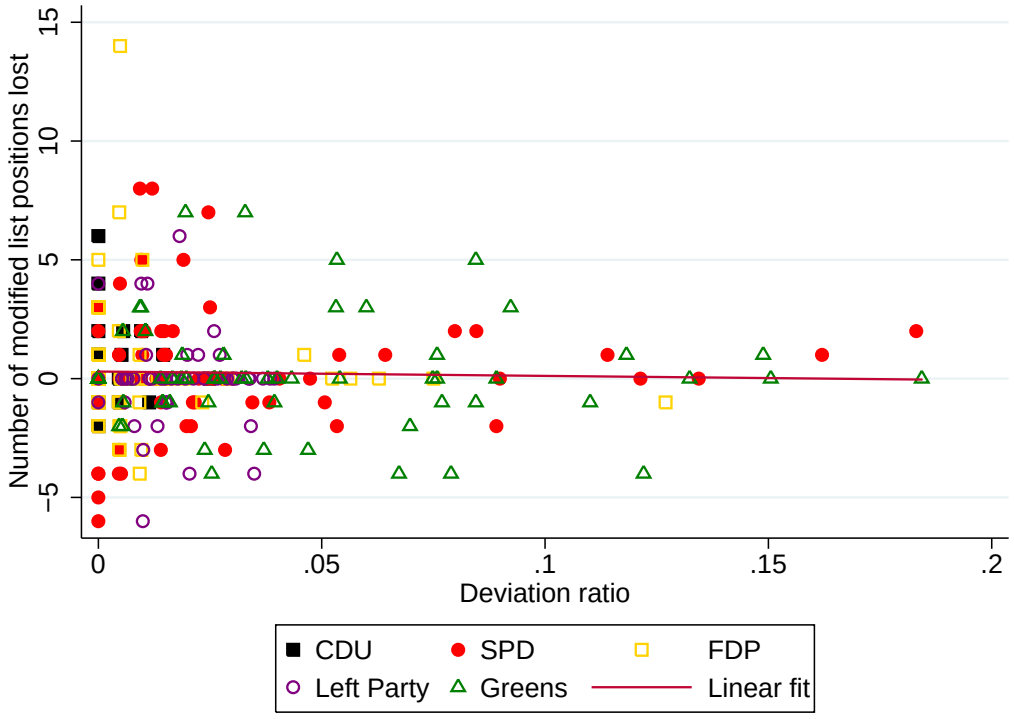
$$\begin{aligned} Party's\ reaction_i &= \alpha + \beta Deviation\ ratio_i \\ &+ \sum_k \gamma_k Party_{ik} + \sum_l \delta_l Political_{il} + \sum_m \epsilon_m Personal_{im} + u_i \\ &\text{with } i = 1, \ldots, 257; k = 1, \ldots, 4; l = 1, \ldots, 7; m = 1, \ldots, 4 \end{aligned} \tag{6.1}$$

FIG. 6.1: Voting against the party line is not correlated with a change in the list position



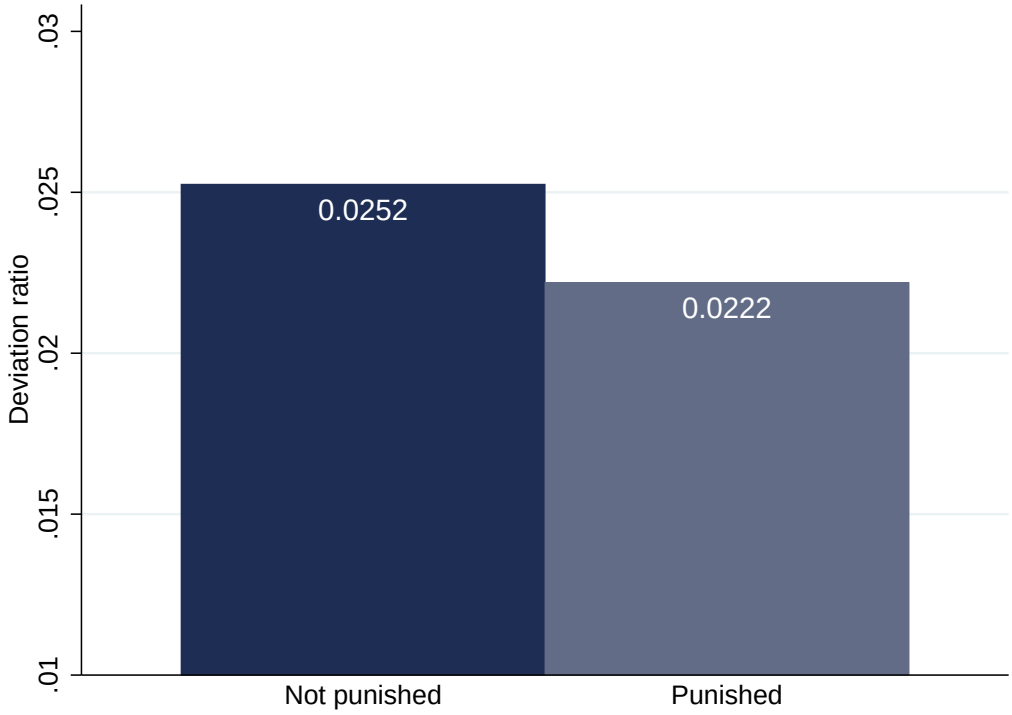
NOTE: Negative values on the vertical axis indicate gained list positions.
SOURCE: Own illustration.

FIG. 6.2: Voting against the party line is not correlated with a change in the modified list position



NOTE: Negative values on the vertical axis indicate gained modified list positions.
SOURCE: Own illustration.

FIG. 6.3: MPs who deviated less often from the party line were punished



NOTE: A t-test on means does not indicate a significant difference between "not punished" and "punished" (t-value 0.41).
SOURCE: Own illustration.

where *Party's reaction*$_i$ describes the change in party list positions of each candidate i between the elections in 2013 and 2009. We measure the change in party list positions in three different ways: In a first step, we take the difference of the party list positions of candidate i between the elections in 2013 and 2009 (*Number of list positions lost*$_i$). The pool of candidates differs, however, between both elections. We thus use as a second measure the change in party list positions when we omit those candidates from the party lists that did not participate in both elections. We then calculate new party list positions for only those candidates that ran in both elections and calculate the difference of those new list positions (*Number of modified list positions lost*$_i$). Our third measure takes into account that the effect of punishment differs along the list of candidates: A candidate is punished more when he loses positions at the threshold of promising list positions than when he drops from the first onto the second list position. We thus use a dummy variable which takes the value 1 if candidate i had a list position in 2013 (unmodified) that was worse than the last list position that got into the parliament in 2009 (*Punishment*$_i$; note that our data set only includes politicians that were successful list candidates in 2009). To be sure, this variable cannot measure whether politicians were rewarded for voting against the party line; the variable rather measures whether MPs were punished or not.[8] As main explanatory variable, we count how often MP i defected and voted in roll-call votes against the party line, i.e. against the majority of his party. *Deviation ratio*$_i$ describes the ratio of defected over total participated votes by MP i.[9] *Party*$_{ik}$ describes dummy variables for the political parties CDU, SPD, FDP, and Left Party (reference category: Greens). Seven control variables describe political characteristics (*Political*$_{il}$). We measure the political experience of MP i by the years he was in parliament or held an office in his party (party leader, faction leader or party's secretary general) or was a minister. Political characteristics also include an MP's activity in parliament as measured by speeches, oral contributions, absence rate (in roll-call votes), and earnings from side jobs. We include four

[8] Rewarding an MP would require him to jump from an unsuccessful list position to a successful list position. We can however obviously observe voting behavior only for politicians who have already been in parliament and thus have had a successful list position already in 2009.

[9] We also coded abstention as deviation when the majority of the party voted yes or no, and yes and no as deviation when the majority abstained. Inferences do not change when *Deviation ratio* is based on the value 1 for deviation, 0.5 for abstention, and 0 for no deviation in case the majority voted yes or no, and when *Deviation ratio* is based on the value 0.5 for yes and no and 0 for abstaining in case the majority abstained.

control variables $Personal_{im}$ that indicate whether an MP i is male, married, how many children he has and his age in 2009. u_i describes an error term. We estimate OLS and probit models with standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors – see Huber 1967 and White 1980).

6.3.3 Regression Results

Table 6.1 shows the results of OLS regressions with our first measure of change in party list positions. In discussing the results, we focus on our preferred specification including all control variables in column (3). The coefficient of *Deviation ratio* is negative, but does not turn out to be statistically significant. The coefficients of the political party dummies for the CDU, SPD, FDP and Left Party are all negative and statistically significant. Compared to the 2009 election, candidates from the CDU, SPD, FDP and Left Party in the 2013 election climbed up on their party lists more (or climbed down less) than candidates from the Greens did (reference category). The numerical meaning of the coefficient of *CDU*, for example, is that a candidate from the CDU won 3.8 list positions in the 2013 election compared to the 2009 election more than a candidate from the Greens. How many years an MP was in parliament or whether an MP had a function in his party or was a minister, an MP's activities in parliament as measured by speeches and oral contributions, and the absence rate lack statistical significance. When an MP, however, had high earnings from jobs other than his parliamentary duties, he benefitted in terms of list positions. The coefficient of *Earnings from side jobs* is statistically significant at the 10% level. The numerical meaning of the coefficient is that candidates gained 0.009 list positions in the 2013 election compared to the 2009 election when they earned 1000 euros more in the entire legislative period. The effect of side earnings indicates that prominence matters: MPs with substantial outside earnings are likely to be more prominent and thus obtain better list positions; the effect is however numerically small. Older MPs lost in terms of list positions. The coefficient of *Age* is positive and statistically significant at the 1% level. Other personal characteristics of an MP lack statistical significance.

In Table 6.2 we run the same OLS regressions, but use the measure of change in party list positions when we omit those candidates from the party lists that did not participate in both elections. The *Deviation ratio* coefficients do again not turn out to be statistically significant, indicating that how we calculate list positions does not matter. The coefficients

Table 6.1: Regression results (OLS model).
Dependent variable: Number of list positions lost.

	(1)	(2)	(3)
Deviation ratio	3.521	-0.690	-5.056
	(0.575)	(0.915)	(0.451)
CDU		-3.591**	-3.782**
		(0.021)	(0.018)
SPD		-3.422***	-3.577***
		(0.004)	(0.002)
FDP		-1.729*	-1.687**
		(0.055)	(0.047)
Left Party		-1.076	-1.526**
		(0.129)	(0.039)
Years in parliament		0.243*	0.173
		(0.076)	(0.175)
Function in party		-0.334	-0.405
		(0.290)	(0.288)
Minister		-0.435	-0.557
		(0.376)	(0.229)
Speeches		-0.022	-0.013
		(0.171)	(0.418)
Oral contributions		-0.023	-0.030
		(0.305)	(0.164)
Absence rate		-2.812	-1.040
		(0.504)	(0.807)
Earnings from side jobs		-0.008	-0.009*
		(0.184)	(0.068)
Male			0.381
			(0.498)
Married			-0.704
			(0.235)
Number of children			0.097
			(0.670)
Age			0.120***
			(0.000)
Observations	257	257	257
R^2	0.000681	0.118	0.173

Note: *Number of list positions lost* describes how many list positions an MP lost on the 2013 list compared to the 2009 list of his party. *Deviation ratio* describes the ratio of defected over total participated votes by an MP. Standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

of the political party dummies lack statistical significance. Inferences regarding the other control variables do not change (except the effect of *Minister*).
Our first two measures of changes in list positions still include rather irrelevant shifts in list positions throughout the entire party lists (Tables 6.1 and 6.2). Table 6.3 shows the regression results of a probit model where the dependent variable is a dummy variable indicating whether an MP – who was elected in 2009 via the party list – had a list position in 2013 which was worse than the last list position that got into the parliament in 2009. We thus focus on changes in list positions where parties do not nominate MPs on promising list positions, describing actual punishment. The coefficient of *Deviation ratio* in column (3) is negative and statistically significant at the 5% level, indicating that politicians are punished for *not* deviating from the party line when it comes to whether politicians are placed on a promising list position or not. The numerical meaning of the marginal effect of *Deviation ratio* (not shown) is that the probability of punishment decreases by 1.02 percent when the deviation ratio increases by 1 percentage point. The result is, however, not robust to excluding the five MPs with the highest deviation ratio. The coefficient of *Deviation ratio* is no longer statistically significant when we exclude the outliers in columns (4) to (6).[10] We do thus not arrive at the conclusion that MPs were punished for *not* deviating from the party line. The significant coefficient estimate of *Earnings from side jobs* shows that MPs benefit (in terms of list positions) from being prominent. The coefficients of the political party dummies for the CDU and SPD are negative and statistically significant at the 5% level. Compared to the 2009 election, candidates from the CDU and SPD in the 2013 election were less likely to be punished by their parties than candidates from the Greens (reference category). The coefficient estimates of *Married* and *Age* indicate that the probability of punishment decreases if an MP is married and increases when an MP is older.

6.3.4 Robustness Tests

We submitted all of our results to rigorous robustness tests using different specifications of our regressions and different samples. None of these robustness tests indicates any severe fragility of our results.

[10] Inferences regarding Tables 6.1 and 6.2 do not change when we exclude the five outliers with the highest deviation ratio (results not shown).

Table 6.2: Regression results (OLS model).
Dependent variable: Number of modified list positions lost.

	(1)	(2)	(3)
Deviation ratio	-1.829	-0.431	-2.462
	(0.586)	(0.901)	(0.487)
CDU		-0.177	-0.213
		(0.813)	(0.779)
SPD		-0.282	-0.403
		(0.586)	(0.430)
FDP		0.276	0.272
		(0.500)	(0.484)
Left Party		-0.069	-0.377
		(0.878)	(0.389)
Years in parliament		0.118**	0.077
		(0.023)	(0.115)
Function in party		-0.164	-0.258
		(0.204)	(0.108)
Minister		-0.394**	-0.435**
		(0.048)	(0.034)
Speeches		-0.006	-0.001
		(0.480)	(0.880)
Oral contributions		-0.002	-0.008
		(0.860)	(0.513)
Absence rate		-2.032	-1.088
		(0.376)	(0.624)
Earnings from side jobs		-0.004	-0.004*
		(0.215)	(0.086)
Male			0.195
			(0.508)
Married			-0.467
			(0.145)
Number of children			-0.090
			(0.463)
Age			0.074***
			(0.000)
Observations	257	257	257
R^2	0.000696	0.0933	0.166

Note: *Number of modified list positions lost* describes how many list positions an MP lost on the 2013 list compared to the 2009 list of his party after omitting those candidates from the party lists that did not participate in both elections. *Deviation ratio* describes the ratio of defected over total participated votes by an MP. Standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 6.3: Regression results (Probit model).
Dependent variable: Punishment.

	Full sample			Outlier excluded sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Deviation ratio	-1.487	-5.123*	-7.699**	0.015	-3.704	-6.493
	(0.615)	(0.067)	(0.018)	(0.997)	(0.299)	(0.105)
CDU		-1.153*	-1.464**		-1.114*	-1.411**
		(0.060)	(0.019)		(0.068)	(0.023)
SPD		-0.614*	-0.766**		-0.590*	-0.736**
		(0.060)	(0.027)		(0.065)	(0.032)
FDP		-0.323	-0.361		-0.289	-0.320
		(0.304)	(0.332)		(0.354)	(0.391)
Left Party		-0.268	-0.383		-0.252	-0.375
		(0.454)	(0.313)		(0.481)	(0.321)
Years in parliament		0.027	-0.000		0.028	-0.000
		(0.228)	(0.988)		(0.219)	(0.997)
Speeches		-0.014*	-0.012		-0.014*	-0.011
		(0.053)	(0.117)		(0.055)	(0.125)
Oral contributions		0.006	0.004		0.006	0.004
		(0.458)	(0.648)		(0.456)	(0.625)
Absence rate		-3.265	-3.501		-3.225	-3.375
		(0.117)	(0.154)		(0.124)	(0.167)
Earnings from side jobs		-0.009*	-0.011**		-0.010*	-0.011**
		(0.051)	(0.039)		(0.052)	(0.040)
Male			0.200			0.182
			(0.431)			(0.479)
Married			-0.479*			-0.481*
			(0.084)			(0.082)
Number of children			0.105			0.105
			(0.286)			(0.287)
Age			0.059***			0.059***
			(0.000)			(0.000)
Observations	257	257	257	252	252	252
Pseudo R^2	0.00120	0.0938	0.214	9.64e-08	0.0910	0.212
Chi-squared	0.253	20.65	38.56	0.0000173	18.14	37.14
Prob > Chi-squared	0.615	0.0237	0.000426	0.997	0.0526	0.000701
Log likelihood	-79.65	-72.27	-62.66	-79.25	-72.04	-62.48

NOTE: *Punishment* describes a dummy variable which takes the value 1 if a candidate had a list position in 2013 that was worse than the last list position that got into the parliament in 2009. *Deviation ratio* describes the ratio of defected over total participated votes by an MP. We exclude *Function in party* and *Minister*, because having a function in a party and being a minister predict failure perfectly. Standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors).
p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We separated the roll-call votes into several categories to investigate whether punishment depends on the different topics of the votes: general foreign policy, military actions, domestic policy in general, domestic policy during the financial and economic crisis, energy topics, European politics in general, European rescue packages, and in particular Greek rescue packages. Inferences regarding the coefficients of *Deviation ratio* in the OLS regressions with our first two measures of change in party list positions do not change, except for our first measure: we find a positive and significant effect of *Deviation ratio* for the topic of general foreign policy. The probit regressions for the outlier excluded sample indicate that there is only an effect of *Deviation ratio* for the topic of domestic policy during the financial and economic crisis.

In the baseline model, *Deviation ratio* describes the ratio of defected votes of an individual MP over total participated votes by this MP. We tested whether inferences change when we use the total number of deviations from the party line of an MP. For both the OLS and the probit regressions, inferences regarding deviations from the party line do not change.

MPs might show that they do not comply with their party by remaining absent during the vote. We tested whether inferences change when we count being absent as a deviation. Our new measure of *Deviation ratio* describes the ratio of defected over *total* votes. For both the OLS and the probit regressions, inferences regarding deviations from the party line do not change.

It is conceivable that punishment differs across parties. We thus estimated the regressions separately for each political party. The coefficients of *Deviation ratio* lack statistical significance in the OLS regressions with our first two measures of the change in party list positions (with the exception of the Greens with the second measure). The probit model where the dependent variable indicates if an MP had a list position in 2013 which was worse than the last list position that got into the parliament in 2009 cannot be run for the CDU because the number of observations is too small. The regressions indicate that there is an effect of *Deviation ratio* for the SPD, the Greens and the Left Party: The coefficients of *Deviation ratio* are negative and statistically significant in the regressions for the three parties.

Parties may well punish male MPs differently than female MPs. We therefore estimated our regressions separately for male and female MPs. Our sample includes 148 male and 109 female MPs. The coefficients of *Deviation ratio* in the OLS regressions with our first two measures of change in party list positions are significant for male MPs. Also the

probit model indicates that the effect of *Deviation ratio* is significant for male MPs. In the subsample of female MPs the coefficients of *Deviation ratio* lack statistical significance. It is conceivable that political parties react less to the voting behavior of female MPs because females are less active in politics, and parties often have quotas of how many females should be on their party lists.

In our baseline estimations we included MPs that entered the German parliament via a party list. In Germany, however, almost all of the candidates who run for a direct mandate are also on a party list. For politicians who run in a safe district where they are very likely to win the direct mandate the position on the party list is not relevant. We expect that there is still no effect of deviation when we include all MPs that were on a party list irrespective of whether they entered the parliament via a direct or a list mandate (or when we include only MPs who won a direct mandate). The coefficients of *Deviation ratio* in the OLS models with our first and second measure of change in list positions are however negative and (marginally) statistically significant. The results thus indicate that MPs with a direct mandate and a good list position, i.e. MPs for whom the list position is not relevant, are rewarded for deviating from the party line. These MPs even gain positions. The coefficients of *Deviation ratio* in the probit models indicate that MPs are punished for *not* deviating from the party line.

It is conceivable that parties are more attentive to the voting behavior of MPs during the time party list positions are voted on inside the parties before the upcoming election. The decisions of the parties which candidates receive which list position are usually voted on two years before the election. We included the ratio of deviating over participated votes separately for each year of the legislative period. In the OLS models, the effect of *Deviation ratio* lacks statistical significance with both measures. We find an effect of *Deviation ratio* in the probit model, which is strongest in the years 2011 and 2012 (the two years before the election year).

There may well be a selection effect. MPs who feared that they would be punished with non-viable list positions may have retired rather than fight a losing battle. Indeed, party insiders may have given them a proverbial "tap on the shoulder" and told them to step aside. In any event, the results show that retiring MPs on average deviated less than MPs who ran in the next election. We further estimated probit regressions testing whether retiring can be explained by deviating from the party line. The effect of *Deviation ratio* however does not turn out to be statistically significant.

6.4 Conclusion

Ample literature exists on the voters' reaction to political candidates' characteristics and behavior. Studies have shown that voters reward MPs voting against the party line in the next election. But little empirical evidence exists how parties themselves react to MPs voting against the party line. We examine whether German parties punished candidates for the parliament that voted against the party line. Using different measures for parties' reaction, our results do not show that politicians are punished for deviating from the party line when it comes to whether politicians are placed on a promising list position or not.
Our findings show that parties tolerate when politicians vote according to their own credo. Parties do not punish defecting MPs by giving them a worse list position in the future. Our findings are in contrast to an empirical study for Slovakia, where defecting MPs received *better* pre-election list positions in the next election (Crisp et al. 2013). In Germany, the CDU – contrary to the public conjecture – did also not sanction defecting MPs; CDU MPs did thus not face any consequences when they deviated from the party line and voted against the European rescue packages. Many MPs from the FDP, by contrast, did not obtain any list position when they voted against the European rescue packages (Wimmel 2014).
Why is it that parties do not have a negative view on MPs that defect from the party line? It is conceivable that parliamentary indiscipline benefits the party because parliamentary indiscipline may increase electoral support (more voters find their individual views being reflected in the party) and poor policy outcomes are less clearly attributed to unitary actors (Powell and Whitten 1993).[11]

[11] In majoritarian election systems, party leaders anticipate voters' punishment and ask legislators in safe districts to take risks and support the partisan cause because safe seats can afford to lose a modest amount of votes (Carson et al. 2010). An increase in party unity on voting at the aggregate level has adverse electoral costs for both parties over time (Lebo et al. 2007). Parties may however also incur costs from nominating notable individually strong candidates which are less dependent on the political party leaders and are hence more likely to break party unity (Cantor and Herrnson 1997, Heidar 2006, Kam 2009, Tavits 2009, 2010).

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6.6 Appendix: Additional Table

Table 6.4: Descriptive Statistics

	Obs.	Mean	Std. Dev.	Min.	Max.
Number of list positions lost	257	-0.35	4.65	-12.00	37.00
Number of modified list positions lost	257	0.25	2.39	-6.00	14.00
Punishment	257	0.09	0.29	0.00	1.00
Deviation ratio	257	0.02	0.03	0.00	0.18
CDU	257	0.08	0.27	0.00	1.00
SPD	257	0.25	0.43	0.00	1.00
FDP	257	0.25	0.43	0.00	1.00
Left Party	257	0.18	0.39	0.00	1.00
Greens	257	0.24	0.43	0.00	1.00
Years in parliament	257	8.66	5.79	0.69	32.98
Function in party	257	0.10	0.55	0.00	3.98
Minister	257	0.08	0.52	0.00	3.98
Speeches	257	36.21	22.67	1.00	140.00
Oral contributions	257	13.33	13.72	0.00	139.00
Absence rate	257	0.08	0.08	0.00	0.43
Earnings from side jobs	257	16.67	62.01	0.00	724.00
Male	257	0.58	0.50	0.00	1.00
Married	257	0.62	0.49	0.00	1.00
Number of children	257	1.36	1.35	0.00	7.00
Age	257	46.63	9.91	23.00	69.00

Note: *Years in parliament*, *Function in party*, and *Minister* measured in years; *Earnings from side jobs* measured in 1000 euros; *Age* measured in 2009.

Chapter 7

Ideology and Dissent among Economists: The Joint Economic Forecast of German Economic Research Institutes*

7.1 Introduction

Economists in general claim to be independent researchers who search for "the truth". The truth is, however, often difficult to establish and there is room for value judgments. Value judgments in economic policies include, for example, the trade-off between equity and efficiency (Hillman 2009, Ch. 7). Economists' opinions may depend on value judgments associated with schools of thought (Hillman 1998, Prychitko 1998, De Benedictis and Di Maio 2011, 2015, Di Maio 2013). When economists give policy advice, the advice may therefore be ideologically biased (Coughlin 1989, Frisell 2005, Austin and Wilcox 2007,

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Kirchgässner 2014).[1] Advice is likely to be more effective when economists foreshadow how political ideologies influence the political process (Slembeck 2003). Ideological positions may be attached to individual economists and have a cumulative effect when economists with similar views work at the same institution. In the United States, it is well-known that think-tanks have ideological positions (McGann 2005). A question is whether this also holds true for other countries. We investigate whether German economic research institutes differ in economic policy positions and whether the differences in positions influence policy advice.

Leading German economic research institutes that advise the German government have prepared biannual reports on the German and the world economy since 1950. The reports are published in spring and autumn each year. Having independent economic research institutes that write joint reports to give policy advice is unique in industrialized countries. The institutes do not always agree on their assessments of the current situation nor on economic policies that they recommend. An institute that disagrees with a majority position can submit a minority vote. Whether and what kind of minority votes an institute submits is an expression of identity on the ideological spectrum. An institute can express its identity through economic policy positions in public discourse. Submitting minority votes in the Joint Economic Forecast corroborates particular economic policy positions. The minority votes receive attention.[2] The media publicize minority votes and the government certainly recognizes that there is disagreement (Fritsche and Heilemann 2010). Media coverage and economists have assigned ideological labels to the economic research institutes (Langfeldt and Trapp 1988, Döpke 2000, Antholz 2005). The Kiel Institute for the World Economy (IfW), for example, has been labeled as neoclassical/supply-side, whereas the German Institute for Economic Research in Berlin (DIW) has been labeled Keynesian/demand-side. For institutes given different ideological identities, the question is whether the institutes have disagreed in the Joint Economic Forecast.

[1] Ideology may influence recommended courses of action. Perceptions of economic-policy norms and political preferences seem to be correlated (Nelson 1987, Alston et al. 1992, Fuchs et al. 1998, Mayer 2001, Klein and Stern 2006, Saint-Paul 2012, Gordon and Dahl 2013). An area of potential conflict arises when policy advisors try to take into account the beliefs of the client and therefore are cautious with suggestions that may upset the client (Kirchgässner 1996, 1999, 2005, 2011, 2013).

[2] Confirming an institute's identity may well be expressive (Brennan and Lomasky 1993, Hillman 2010).

We investigate minority votes and how macroeconomic variables influence minority voting.[3] We distinguish between the individual sections of the reports (forecasts vs. economic policy recommendations), specific fields of economic policy, whether minority votes were submitted in the main text or in footnotes, and whether votes favored demand-oriented policies. We have self-compiled a dataset on minority votes for the period 1950-2014. We also elaborate on participation in the Joint Economic Forecast since 2007, when the German government introduced procurement by tender for the Joint Economic Forecast.

7.2 Joint Economic Forecast and German Economic Research Institutes

7.2.1 Joint Economic Forecast

Leading Economic Research Institutes have prepared the Joint Economic Forecast for the Federal Ministry of Economic Affairs since 1950. Establishing the Joint Economic Forecast was among the first actions of the Working Group of German Economic Research Institutes which was founded on March 15, 1949 (Marquardt 1979). Until 2006, the same institutes prepared the reports: the German Institute for Economic Research in Berlin (DIW), the Hamburg Archive of International Economics (HWWA, since the end of 1952), the ifo Institute in Munich, the Kiel Institute for the World Economy (IfW), and the Rheinisch-Westfälisches Institut für Wirtschaftsforschung in Essen (RWI). The Institute for Agricultural Market Research (today Johann Heinrich von Thünen Institute) participated until 1970.[4] The Halle Institute for Economic Research (IWH) has participated since 1993. The HWWA closed at the end of 2006 and does not participate any longer.
The Federal Ministry of Economic Affairs has put participation in the Joint Economic Forecast out to tender since 2007 to increase competition between the institutes.[5] Appli-

[3] Potrafke (2013) investigates minority votes in the German Council of Economic Experts. The results show that council members nominated by the trade unions took different positions than their colleagues.

[4] We exclude the Institute for Agricultural Market Research from our dataset because it did not submit any minority vote while participating.

[5] Competition between economic research institutes and with other organizations (e.g. consultants, OECD, central and commercial banks) has increased in recent years (Döhrn 2005, Döhrn and Schmidt 2011).

cants do not need to be German but sound knowledge of German institutions is required and German is the working language. The Federal Ministry of Economic Affairs awards three-year contracts to four consortia. The DIW did not participate between autumn 2007 and spring 2013, and the IfW has not participated since autumn 2013. The following institutes temporarily acted as partners in consortia since 2007: the Center for European Economic Research in Mannheim (ZEW), the Institute for Advanced Studies in Vienna (IHS), the Austrian Institute of Economic Research in Vienna (WIFO), Kiel Economics, the KOF Swiss Economic Institute at ETH Zurich, and the Macroeconomic Policy Institute in Düsseldorf (IMK).

Drafting the Joint Economic Forecast lasts several weeks. Preparatory talks among business cycle department heads of each institute take place in the Federal Ministry of Finance, the Bundesbank or the European Central Bank.[6] The core meetings last about two and a half weeks nowadays.

The first part of the Joint Economic Forecast investigates international economic performance, fiscal policy, and the monetary policy framework. The second part on Germany contains forecasts of main economic aggregates such as real GDP growth. The institutes' individual growth forecasts are combined and made consistent.[7] The third part contains recommendations for economic policy.

The Joint Economic Forecast is a reference for the government's projections of economic trends. The institutes investigate and forecast the economic situation and give recommendations for economic policy.[8] The Joint Economic Forecast has a similar purpose as the yearly report of the Council of Economic Experts.[9] The federal government takes the re-

[6] Representatives of the Council of Economic Experts and the Federal Statistical Office also participate in preparatory talks in autumn.

[7] A joint model was developed in the 1970s and each institute was responsible for different parts. Institutes however soon developed their own models (Marquardt 1979). Döpke (2001) shows that the German research institutes' expectations in the Joint Economic Forecast are not rational.

[8] See press release of the Federal Ministry of Economic Affairs, June 3, 2010. Bretschneider et al. (1989) show that forecast accuracy increases when independent forecasts from competing agencies are combined.

[9] The Council of Economic Experts though focuses less on forecasting but rather on discussing basic allocative and distributive issues (Schmahl 2000).

sults of the Joint Economic Forecast into account when it publishes its growth expectations one week after the Joint Economic Forecast.[10]

The Joint Economic Forecast is helpful for policy-makers because its recommendations generally are based on a consensus among institutes with different identities.[11] But for a long time the institutes advocated different economic approaches and theories (Eichel 2000).[12] Minority votes show that the institutes did not always agree. Minority votes appear in the main text when central issues are touched upon, or in footnotes. Given high levels of uncertainty when making projections, e.g. of economic growth, it is conceivable that finding a consensus is easier regarding forecasts than regarding economic policy recommendations. Most minority votes are hence submitted in the sections on economic policy (Nierhaus 2002). When minority votes are submitted, politicians may delay economic policy reforms because experts tend to disagree on economic policy issues (Filusch 1992, Jones and Cullis 1993).[13] Investigating how institutes submitted minority votes is hence an important issue.

7.2.2 Ideological Identities of Economic Research Institutes

The leading German economic research institutes pursue scientific research and contract research and give policy advice. Contract research is applied research that aims to help contractors make decisions on economic policy.

Ideological identities are attributed to different institutes (Döpke 2000, Antholz 2005). We use three indicators to describe ideological identity: we examine news coverage to describe public opinion regarding institutes, we investigate the minority votes directly, and we describe what German economists have written about the ideological identities of individual institutes.[14] The content of minority votes often describes ideological beliefs. Ideological

[10] The Joint Economic Forecast influences economic policy. For instance, when the exchange rate of the Deutsche Mark was floated in May 1971, the Joint Economic Forecast had recommended doing so.

[11] The Federal Ministry of Economic Affairs explicitly demands results and recommendations that are supported by all participants (see notice of award 2013). Minority votes deviate from such a concept.

[12] For details on how econometric modelling differs across institutes, see the Joint Economic Forecast in spring 2008 (ifo Schnelldienst 8/2008, p. 50). Carstensen et al. (2011) show that the optimal choice of forecast indicators depends on the specific forecast situation.

[13] The news coverage of a minority vote in the Joint Economic Forecast in spring 2014 was: "The DIW did not want to join the other institutes in criticizing the government's policies and wrote a minority vote – which will most likely be heard, especially in the government" (Schrinner 2014).

[14] Yet, news coverage may well exaggerate ideological positions (Zimmermann 2008).

identities may well have changed over the years; yet the public debate still attributes ideological identities to institutes based on discussions in the last decades.[15] Ideological identities can be distinguished between Keynesian/demand-oriented and neoclassical/supply-oriented.

The DIW has a reputation as demand-oriented. The newspaper Handelsblatt wrote that "the DIW traditionally stands in the left political corner" (Marschall 2012), and the newspaper Die Zeit wrote that "traditionally the DIW is put somewhere close to the Social Democrats" (Schmid 1988). Minority votes confirm this ideological identity. In Autumn 2005 the DIW voted for more active fiscal policy "even though this may delay consolidation in the short-run" (Arbeitsgemeinschaft deutscher wirtschaftswissenschaftlicher Forschungsinstitute e.V. 2005, p. 627). In Spring 1999, the DIW disagreed with the other institutes who deemed wage agreements as too high.

Newspapers have called the IfW "liberal" (Hanke 1998) and representing "supply-side policy" (Schrinner and Müller 2013). Minority votes confirm this ideological identity. In Autumn 2001, for instance, the IfW wanted to continue fiscal consolidation, whereas the other institutes found such fiscal policy too restrictive.

The ifo Institute also has a supply-side identity: It has been called "business-friendly" (Zeit Online 1984) and sometimes proximity to the conservative CSU party is suggested (Spiegel Online 2001, Schrinner and Müller 2013). In a minority vote in Spring 1981, the ifo Institute called for more restrictive monetary policy to counteract the "danger that trade unions achieve higher wages" (Arbeitsgemeinschaft deutscher wirtschaftswissenschaftlicher Forschungsinstitute e.V. 1981, p. A15).

The RWI has also been called "close to business" (Die Welt 2008) and as representing "supply-oriented economic policy" (Herlt 1980). This ideological identity is in line with the minority votes that were submitted: In Autumn 1980, for instance, the institute advocated "limiting the increase of government spending" (Arbeitsgemeinschaft deutscher wirtschaftswissenschaftlicher Forschungsinstitute e.V. 1980, p. A18).

The IWH does not have a clear ideological identity in the media.[16] The minority votes imply a demand-side identity. The reason may be that the IWH is the only participating institute in Eastern Germany and has advocated an active role for the state to accelerate

[15] See Plickert (2012).

[16] In a press article, the institute is called "close to the CDU party" (see Hartung 1995). Contents of minority votes do not confirm a rightwing position.

economic convergence. In spring 1996, the institute favored a less restrictive fiscal policy to finance the East German catching-up process. The IWH submitted all minority votes until 2006 together with the DIW. Further demand-oriented minority votes were submitted from 2007 to 2010 while in a consortium with the (union-related) IMK. In spring 2008, spring 2009 and autumn 2009 the consortium disagreed with the other institutes, which opposed a general minimum wage.

The HWWA did not have a clear ideological identity in the media either. The minority votes imply a supply-side identity. In 1955, the HWWA demanded more investment and lower taxes in a joint minority vote with the IfW. In Autumn 2003, the HWWA, the ifo Institute, and the IfW rejected deficit-financed fiscal policy.

Some economists have also commented on differences in identities of institutes. Döpke (2000) describes, for example, the Kiel Institute for the World Economy (IfW) as having a reputation for monetarist views, whereas the German Institute for Economic Research in Berlin (DIW) has the reputation of having Keynesian/demand-side views. Langfeldt and Trapp (1988, p. 430) maintain "the DIW has a pronounced Keynesian orientation. The Ifo-Institute combines Keynesian analysis with surveys on business sentiments and on investment plans, while Essen, Hamburg, and Kiel have a neoclassical orientation in common."

Consequently, the DIW was for a long period the only demand-oriented institute that participated in the Joint Economic Forecast. Even after the IWH joined the group, the two institutes were the minority. From 2007 to 2010, the IWH/IMK consortium was the only demand-oriented participant. It is conceivable that, given their minority positions, the DIW and the IWH would have revealed their dissenting opinion in minority votes. All other institutes take a neoclassical/supply oriented approach to modeling the economy. The attitudes regarding economic policy clearly differed between DIW/IWH and the other institutes.

7.3 Data and Descriptive Analysis

To compile the data set on minority votes we examined the Joint Economic Forecasts over the period 1950-2014. Since the Joint Economic Forecast is published twice a year, our data set covers 129 reports. In 1964 only one report was issued, since in this year the publication dates changed from mid-year and end of the year to spring and autumn. For every Joint

Economic Forecast we recorded the participating economic research institutes, and since 2007 the participating consortia. We counted the minority votes that were submitted by each participating institute. When two institutes jointly submitted a minority vote, we coded a vote for each of the participating institutes. "Split votes" (one half of the institutes has a different opinion than the other half) were not interpreted as minority votes.[17]

We examined whether the minority vote is in the main text body or in the form of a footnote and thus distinguish whether the minority vote concerns a fundamental topic or a rather subordinate question (Nierhaus 2002). Footnotes referring to a minority vote in the text body of the same report were not counted as individual minority votes (this occurred several times in autumn 2011 concerning the role of the ECB and EFSF). For the reports starting in the second half of 2007, where a large and a small institute formed a consortium, minority votes were counted for the bigger partner. Such coding is consistent since none of the cooperation partners participated in the Joint Economic Forecast before 2007 and there was no cooperation between two large institutes.[18] The year 2007 is however a turning point that we account for in the econometric analysis.

Table 7.1 shows that the DIW submitted the most minority votes, 0.54 votes on average per participation. The IWH submitted 0.34 minority votes on average per participation. The other institutes (RWI, ifo, IfW and HWWA) submitted much fewer minority votes. The Keynesian/demand-oriented institutes submitted more minority votes than the supply-oriented institutes.

Figure 7.1 shows how minority voting evolved over time. For every year we show the number of minority votes that were submitted up to that point. The DIW submitted most minority votes until 2007; the other institutes submitted much fewer minority votes. Especially before 1970 and during the German unification only few or no minority votes were submitted.

[17] Split votes occurred in autumn 2003 regarding the tax reform and in 2012 regarding the role of the ECB in the economic crisis.

[18] The KOF has cooperated with the ifo Institute since autumn 2007, the ZEW cooperated from autumn 2010 until spring 2013 with the IfW, the IMK and the WIFO cooperated from autumn 2007 until spring 2010 with the IWH, Kiel Economics has cooperated since autumn 2010 with the IWH, the IHS has cooperated since autumn 2007 with the RWI and the WIFO has cooperated since autumn 2013 with the DIW.

Table 7.1: Number of minority votes of economic research institutes

Institute	Participations	Number of minority votes	Minority votes per participation
DIW	117 (1950/1 – 2007/1, 2013/1 – 2014/2)	63	0.54
HWWA	108 (1952/2 – 2006/2)	3	0.03
ifo	129 (1950/1 – 2014/2)	15	0.12
IfW	126 (1950/1 – 2013/1)	15	0.12
IWH	44 (1993/1 – 2014/2)	15	0.34
RWI	129 (1950/1 – 2014/2)	22	0.17

Source: Own compilation.

The DIW submitted many votes between 1981 and 1988 under Hans-Jürgen Krupp's presidency (1979-1988).[19] Minority votes dealt with manifold economic policy issues and show that the demand-oriented DIW and the supply-oriented IfW under Herbert Giersch had different economic-policy positions. The DIW submitted more minority votes since 2002 and promoted in many cases a more expansive fiscal policy. The IWH also submitted many votes since 2002, especially in favor of minimum wages and more expansive fiscal policies. During the short period from 1979 to 1983 the IfW submitted many minority votes concerning the then restrictive monetary policy. The voting behavior of the RWI stands out in the period between 1975 and 1978, when many votes concerned the problem of too high wage agreements.

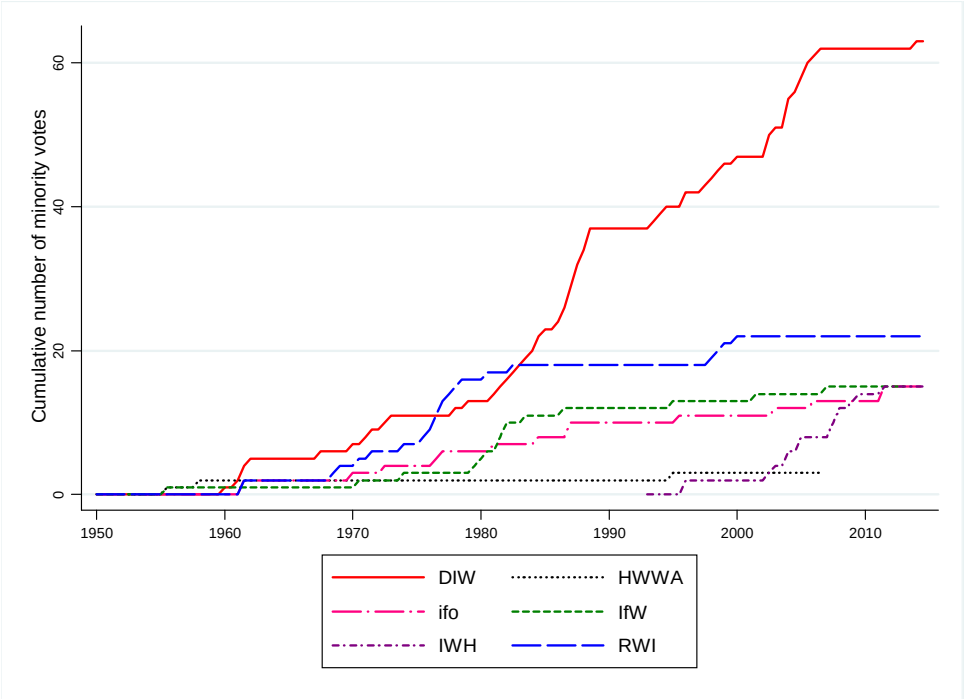
We examine whether minority votes occurred in the text body or in footnotes. Figure 7.2 shows the results. Most institutes placed minority votes rather in the text body than in footnotes. Only the IWH submitted more minority votes in the footnotes than in the text body.

We examine in which section of the Joint Economic Forecast minority votes appeared.[20] Most minority votes appeared in the economic policy section (see Figure 7.3). The fore-

[19] Hans-Jürgen Krupp, who was nominated by the trade unions to become a member in the German Council of Economic Experts, often expressed his differing opinion in the reports of the German Council of Economic Experts (Potrafke 2013).

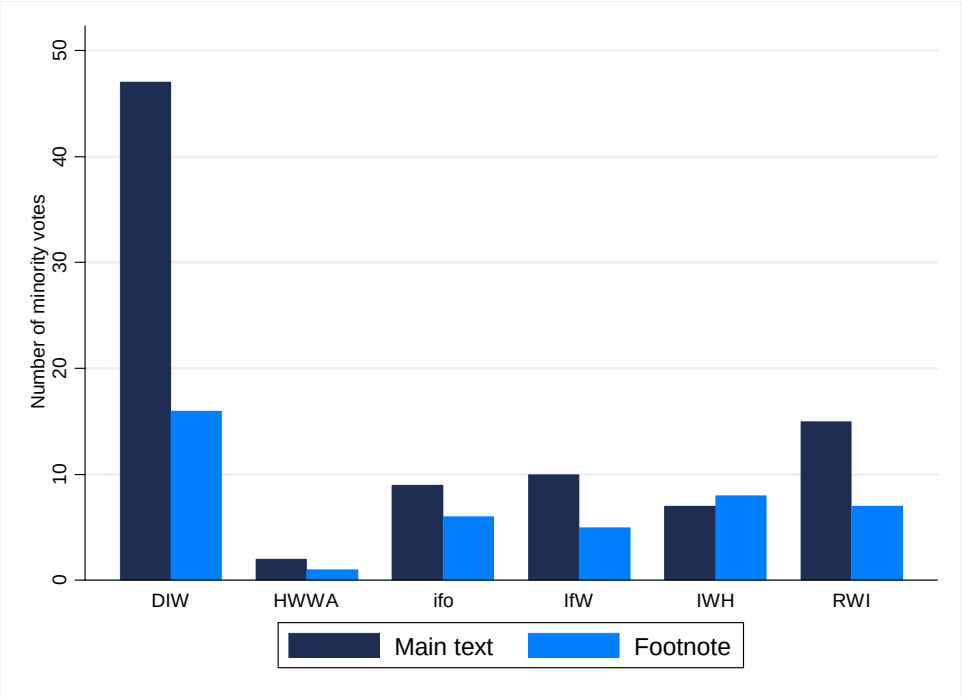
[20] In exceptional cases a minority vote refers to several sections of the report.

FIG. 7.1: Cumulative number of minority votes



SOURCE: Own compilation.

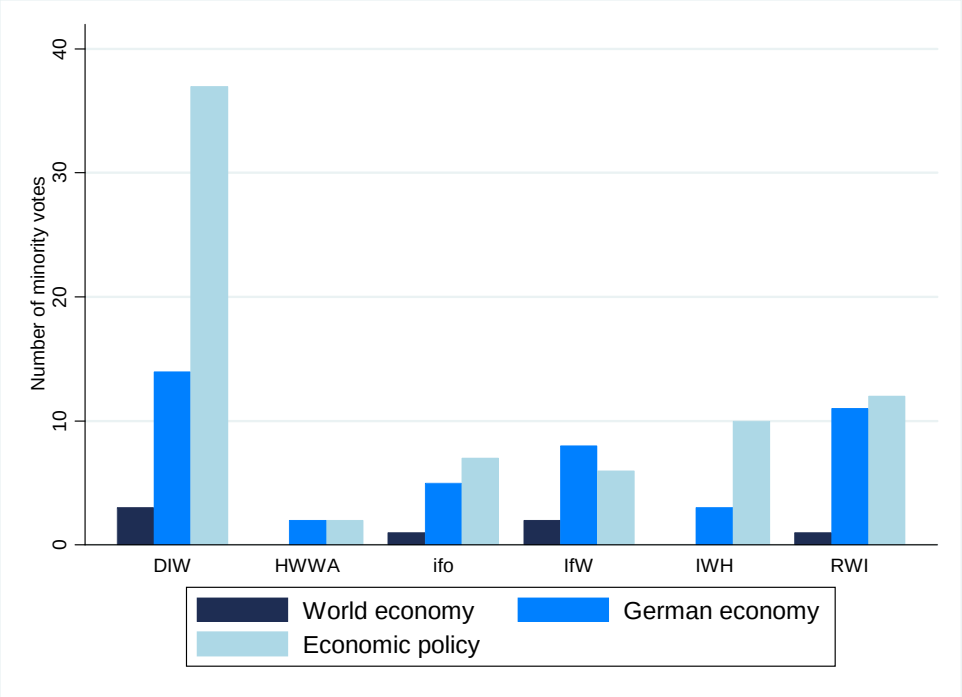
FIG. 7.2: Distribution of minority votes between text body and footnotes



SOURCE: Own compilation.

casting sections (world economy / German economy) were less controversial.[21] Only the IfW submitted more minority votes in the forecast sections than in the economic policy section.

FIG. 7.3: Distribution of minority votes between sections of the reports



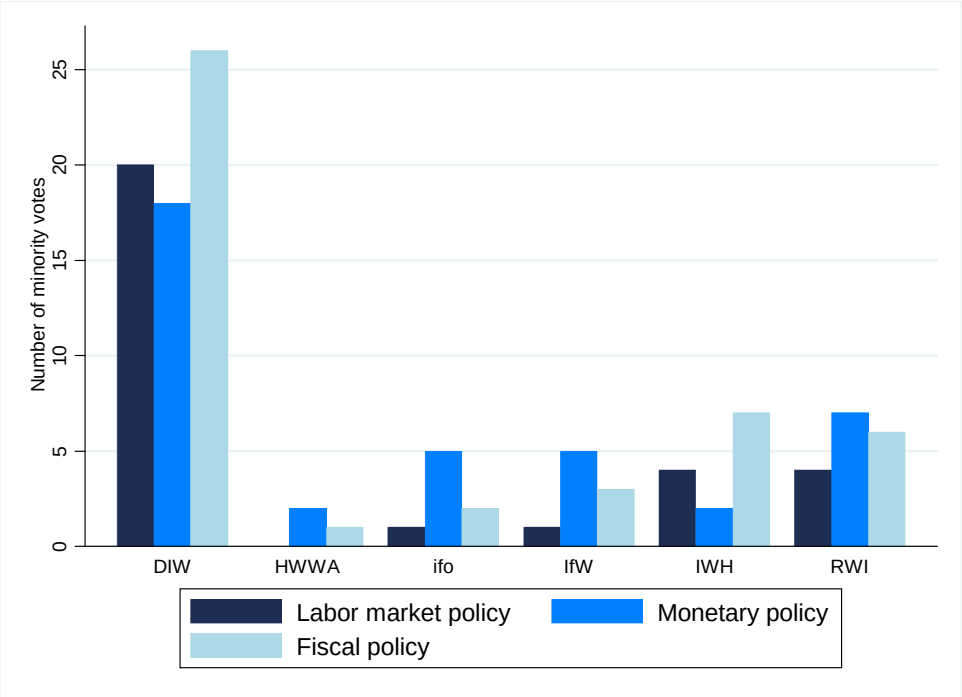
SOURCE: Own compilation.

Focusing on the economic policy section, the results show that the DIW and the IWH mostly addressed fiscal policy issues in their minority votes (see Figure 7.4).[22] The HWWA, ifo, IfW and the RWI submitted more minority votes on monetary policy issues than fiscal policy issues. The DIW, the IWH and the RWI submitted more minority votes concerning labor market policy than the other institutes.

[21] All minority votes concerning forecasts are included in the section German economy. It is unclear whether minority forecasts are better than forecasts of the majority of institutes (Antholz 2005).

[22] One minority vote can address two or three different economic policy fields.

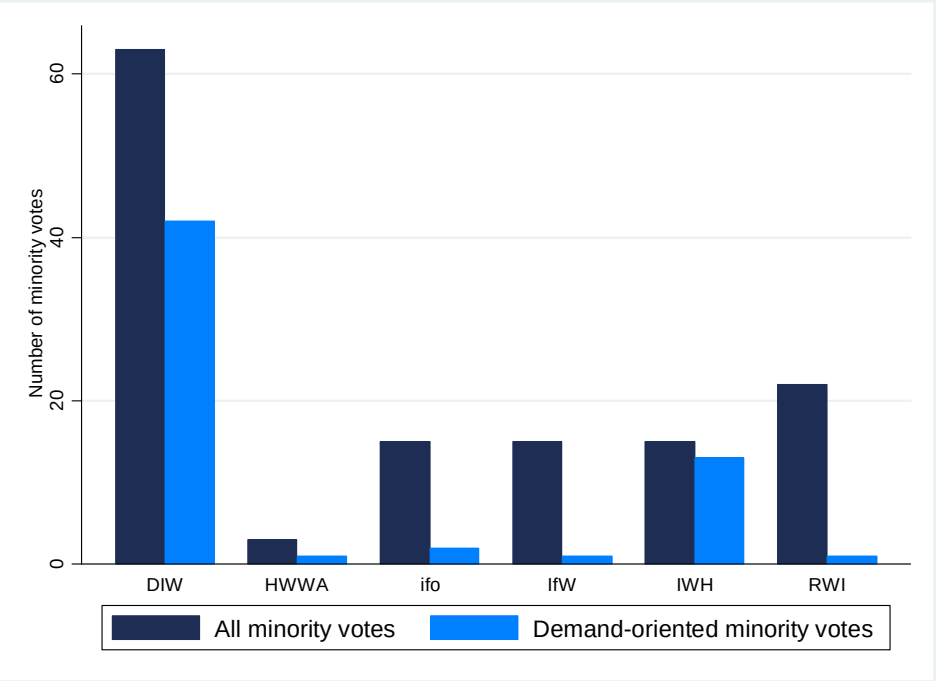
FIG. 7.4: Distribution of minority votes between economic policy fields



SOURCE: Own compilation.

We also investigate the content of the minority votes in the economic policy section. We examine whether minority votes are demand-oriented. A minority vote is demand-oriented if it favors a larger size and scope of government, higher wages, or lower interest rates, or more fiscal stimulus. Figure 7.5 shows that the DIW and the IWH submitted nearly all demand-oriented minority votes.

FIG. 7.5: Distribution or demand-oriented minority votes



SOURCE: Own compilation.

In the following section we investigate minority voting using an econometric model. Macroeconomic variables that could have influenced voting behavior are not part of our descriptive analysis.

7.4 Econometric Analysis

7.4.1 Econometric Model

Our basic count data model has the following form:

$$\begin{aligned} &\textit{Minority vote}_{it} = \alpha + \Sigma_j \delta_j \textit{Institute}_{ijt} + \Sigma_k \zeta_k \textit{macro}_{kt} + u_{it} \\ &\text{with } i = 1, \ldots, 6; j = 1, \ldots, 5; k = 1, \ldots, 10; t = 1, \ldots, 129. \end{aligned} \tag{7.1}$$

The dependent variable *Minority vote*$_{it}$ describes the number of minority votes that institute i submitted in report t. As explanatory variables we include a dummy variable for each of the participating institutes. The reference institute in the estimations is the RWI, therefore the corresponding variable is not included in the model. Which reference institute we choose does not change the inferences. As macroeconomic control variables $macro_{kt}$ we use the annual inflation rate, unemployment rate and growth rate of real GDP (Source: Federal Statistical Office).[23] We also include a dummy variable which assumes the value one in recession years (years with negative annual real GDP growth), to account for systematic errors in growth expectations over the business cycle (Dovern and Jannsen 2015). We also control for the ideology of the federal government by including a variable in our model that takes the value zero for a leftwing government (SPD/FDP or SPD/Greens), the value one for a rightwing government (CDU/CSU or CDU/CSU/FDP) and the value 0.5 for a grand coalition government (CDU/CSU/SPD). We use decade dummy variables (the reference category are the years after 2010) to control for external shocks. Table 7.5 shows descriptive statistics of all variables.

We estimate a Poisson model with robust standard errors. Our data fulfills the distribution assumptions: mean (0.204) and variance (0.279) of our dependent variable are almost equal.[24]

[23] The data for GDP growth rate in the year 1950 is taken from the Maddison Project (`http://www.ggdc.net/maddison/Historical_Statistics/horizontal-file_02-2010.xls`, last accessed July 5, 2016).

[24] Goodness of fit tests do not reject the hypothesis that the distribution assumptions are fulfilled.

7.4.2 Results

Table 7.2 shows the regression results as incidence rate ratios. In column (1) we include only the institute dummies. In columns (2) to (5) we include the recession variable, inflation rate, unemployment rate, and a variable for government ideology separately and jointly as control variables. In column (6) we also control for time-specific shocks with decade dummy variables. In column (7) we replace the recession variable by the growth rate of GDP. In column (8) we replace the decade dummy variables by a linear and quadratic time trend.

The regression results show that the DIW and the IWH (in some specifications) submitted more and the HWWA fewer minority votes than the RWI (reference institute). The incidence rate ratios of the DIW and the HWWA are always statistically significant at the 1% level. For the IWH the incidence rate ratio of the institute dummy is only significant at the 10% level in five specifications. The incidence rate ratio indicates the factor by which the rate of minority voting varies between the considered category and the reference category. The results show, for example, that the rate of minority voting of the DIW in column (6) corresponds to 306% of the rate of minority voting of the RWI. The ifo Institute submitted minority votes at a rate of 68% of the RWI's rate in each report, and the IfW 69% of the RWI's rate in each report. The IWH submitted minority votes at a rate of 206% and the HWWA at a rate of 15% of the RWI's rate in each report. The econometric results correspond with the results of the descriptive analysis.

The incidence rate ratios of the control variables show that the institutes submitted fewer minority votes when inflation was high. The incidence rate ratio of the inflation rate is statistically significant at the 10% and 5% level in columns (6) and (7). It is conceivable that the demand-oriented DIW advocated quite high inflation rates: The Phillips curve describes a tradeoff between unemployment and inflation. Blue collar workers, who are supposed to be positively disposed toward demand-oriented policies, benefit from low unemployment and care less about high inflation than, for example, wealthy entrepreneurs who are supposed to be positively disposed toward market-oriented policies. As a consequence, the DIW submitted fewer minority votes when inflation was high (see also Table 7.4). The incidence rate ratios of the recession variable, the unemployment rate, and the GDP growth rate do not turn out to be statistically significant. In columns (4), (5), and (8) the coefficient of government ideology is statistically significant at the 1% level. Under

rightwing governments fewer minority votes were submitted. The rate of submitting minority votes follows an inverted U-shaped curve over time. The linear and quadratic time trends are statistically significant in column (8) and indicate that the incidence rate was highest in spring 1987.

We investigate the reasons of dissent, i.e. the content of the minority votes. We use a new dependent variable measuring the number of demand-oriented votes in the economic policy section. Table 7.3 shows the results of estimating our baseline regressions with the new dependent variable. The incidence rate ratios of the DIW and the IWH are larger than in the baseline regressions and statistically significant at the 1% level in all specifications. The incidence rate ratio of the inflation rate is smaller than one and statistically significant in column (2). The incidence rate ratio of the unemployment rate is larger than one and statistically significant in some specifications. The incidence rate ratios of the recession variable and the government ideology variable do not turn out to be significant in any specification. The incidence rate ratio of the GDP growth rate is smaller than one and statistically significant at the 1% level in column (7). Demand-oriented minority votes were hence less likely to occur when GDP was growing rapidly. The results show that the results in Table 7.2 are mainly driven by demand-oriented minority votes that favor a larger size and scope of government.

We estimate the count data model separately for each institute and test whether the control variables such as the economic situation or government ideology influenced minority votes. We also include a dummy variable which assumes the value one for reports after autumn 2007 when the federal government put participation out to tender, introduced the possibility to form consortia and limited the number of participants to four. We cannot consider the HWWA because the HWWA submitted too few minority votes. We control for time-specific effects with linear and quadratic time trends (as in column (8) in the standard specification) instead of decade dummies because of the lower number of observations. Column (1) in Table 7.4 shows that the DIW had a low rate of submitting minority votes in times of high inflation. The incidence rate ratio of the inflation rate is statistically significant at the 1% level. The numerical meaning of the incidence rate ratio is that when the inflation rate increased by one percentage point, the DIW's rate of submitting minority votes decreased by 18%. The rate of submitting minority votes of the RWI also decreased when the inflation rate was high. The rate of submitting minority votes of the IWH increased when the unemployment rate was high. Under rightwing governments the

TABLE 7.2: Regression results. Incidence rate ratios

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DIW	3.157***	3.150***	3.175***	3.110***	3.125***	3.057***	3.086***	3.044***
	(4.34)	(4.32)	(4.34)	(4.38)	(4.37)	(4.36)	(4.37)	(4.34)
HWWA	0.163***	0.162***	0.165***	0.158***	0.160***	0.150***	0.151***	0.149***
	(-2.96)	(-2.97)	(-2.93)	(-2.99)	(-2.96)	(-3.01)	(-2.99)	(-3.06)
ifo	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682
	(-1.04)	(-1.04)	(-1.03)	(-1.05)	(-1.05)	(-1.05)	(-1.05)	(-1.06)
IfW	0.698	0.697	0.698	0.697	0.697	0.690	0.690	0.691
	(-1.01)	(-1.02)	(-1.00)	(-1.04)	(-1.03)	(-1.07)	(-1.07)	(-1.07)
IWH	1.999*	2.042*	1.775	1.935*	1.678	2.058*	2.027*	1.814
	(1.86)	(1.92)	(1.56)	(1.81)	(1.42)	(1.92)	(1.90)	(1.62)
Recession		1.013	1.017	0.860	0.827	0.807		0.849
		(0.05)	(0.06)	(-0.56)	(-0.71)	(-0.80)		(-0.61)
Inflation rate		1.027			1.011	0.904*	0.886**	0.904
		(0.65)			(0.26)	(-1.66)	(-1.97)	(-1.57)
Unemployment rate			1.036		1.043	1.046	1.033	0.995
			(1.41)		(1.64)	(0.71)	(0.52)	(-0.13)
Government ideology (rightwing)				0.500***	0.498***	0.638	0.686	0.552***
				(-3.28)	(-3.42)	(-1.56)	(-1.34)	(-2.84)
GDP growth rate							0.965	
							(-0.94)	
1950s						0.348	0.448	
						(-1.23)	(-0.87)	
1960s						2.194	2.191	
						(1.00)	(1.00)	
1970s						3.625*	3.975*	
						(1.80)	(1.88)	
1980s						4.774**	4.846**	
						(2.40)	(2.41)	
1990s						1.485	1.545	
						(0.58)	(0.64)	
2000s						2.051	2.114	
						(1.04)	(1.11)	
Linear time trend								1.062***
								(3.70)
Quadratic time trend								1.000***
								(-3.38)
Observations	653	653	653	653	653	653	653	653
Pseudo R^2	0.116	0.116	0.119	0.134	0.138	0.189	0.189	0.162

NOTE: Poisson model with robust standard errors (Huber/White/sandwich standard errors). Dependent variable: Number of minority votes per institute and report. Reference institute: RWI. z-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 7.3: Regression results. Incidence rate ratios

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DIW	46.31***	46.84***	46.89***	46.09***	46.49***	46.35***	48.27***	46.39***
	(3.80)	(3.81)	(3.83)	(3.80)	(3.83)	(3.84)	(3.84)	(3.83)
HWWA	1.194	1.225	1.249	1.178	1.222	1.137	1.183	1.141
	(0.13)	(0.14)	(0.16)	(0.12)	(0.14)	(0.09)	(0.12)	(0.09)
ifo	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)	(0.57)
IfW	1.024	1.025	1.020	1.022	1.019	1.014	1.015	1.016
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
IWH	38.11***	35.28***	22.29***	36.93***	21.71***	24.61***	23.54***	21.07***
	(3.50)	(3.42)	(2.97)	(3.48)	(2.95)	(3.04)	(3.00)	(2.94)
Recession		1.555	1.404	1.303	1.240	1.226		1.268
		(1.52)	(1.10)	(0.87)	(0.65)	(0.62)		(0.68)
Inflation rate		0.914*			1.034	0.933	0.930	0.896
		(-1.83)			(0.59)	(-0.80)	(-0.92)	(-1.07)
Unemployment rate			1.239***		1.244***	1.221*	1.228**	1.089
			(5.59)		(5.62)	(1.84)	(2.04)	(1.17)
Government ideology (rightwing)				0.690	0.716	0.924	1.085	0.758
				(-1.27)	(-1.30)	(-0.22)	(0.24)	(-1.07)
GDP growth rate							0.850***	
							(-3.05)	
1950s						0.000***	0.000***	
						(-22.14)	(-18.19)	
1960s						0.854	1.314	
						(-0.11)	(0.19)	
1970s						1.790	2.539	
						(0.63)	(1.00)	
1980s						3.791*	3.989**	
						(1.89)	(1.98)	
1990s						1.042	1.029	
						(0.05)	(0.04)	
2000s						1.750	1.786	
						(0.63)	(0.68)	
Linear time trend								1.103***
								(4.30)
Quadratic time trend								0.999***
								(-3.75)
Observations	653	653	653	653	653	653	653	653
Pseudo R^2	0.292	0.299	0.359	0.298	0.363	0.427	0.436	0.395

NOTE: Poisson model with robust standard errors (Huber/White/sandwich standard errors). Dependent variable: Number of demand-oriented minority votes per institute and report. Reference institute: RWI. z-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE 7.4: Regression results, separate regressions by institute. Incidence rate ratios

	DIW	ifo	IfW	IWH	RWI
Inflation rate	0.823**	0.883	1.259	1.286	0.752***
	(-2.37)	(-0.60)	(1.33)	(0.86)	(-2.58)
Unemployment rate	1.019	0.848	1.185	1.906**	1.011
	(0.25)	(-1.29)	(0.94)	(1.98)	(0.09)
Government ideology	0.744	0.952	0.331*	0.423	0.110***
(rightwing)	(-0.94)	(-0.08)	(-1.77)	(-0.97)	(-2.78)
Recession	0.863	0.688	0.667	1.601	0.713
	(-0.39)	(-0.35)	(-0.48)	(0.90)	(-0.58)
Linear time trend	1.081***	1.072	1.072	2.160	1.109***
	(3.31)	(1.21)	(1.19)	(1.02)	(2.71)
Quadratic time trend	1.000**	1.000	0.999	0.996	0.999***
	(-2.38)	(-0.72)	(-1.05)	(-1.07)	(-2.58)
Procurement by tender	0.898	0.985	0.000***	34.64***	0.000***
	(-0.08)	(-0.01)	(-5.63)	(3.44)	(-7.75)
Observations	117	129	126	44	129
Pseudo R^2	0.131	0.0366	0.156	0.206	0.235

NOTE: Poisson model with robust standard errors (Huber/White/sandwich standard errors). Dependent variable: Number of minority votes per institute and report. z-statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

IfW and the RWI submitted fewer minority votes. The incidence rate ratio is statistically significant at the 10% level for the IfW and at the 1% level for the RWI. The IfW and the RWI did not submit any minority votes in the procurement by tender period (the incidence rate decreased by 100%). The incident rate ratios are statistically significant at the 1% level. The IWH's rate of submitting minority votes increased by a factor of 35 in the procurement by tender period. The incidence rate ratio is statistically significant at the 1% level. It is conceivable that minority votes submitted from autumn 2007 until spring 2010 were attributed to the IMK which cooperated with the IWH in this time period. The result (Table 7.2) that the IWH submitted significantly more minority votes than the RWI may hence have been influenced by the participation of the Union related IMK. The effects of the inflation rate, GDP growth rate and government ideology are similar to the results in the baseline specification.

7.4.3 Robustness Checks

We test the robustness of our results in several ways. Since the Poisson model exhibits quite strict distribution assumptions, we also estimate a negative binomial model, a zero-inflated Poisson model, and a zero-inflated negative binomial model. Inferences regarding the institute variables do not change.

We test whether the results differ when we use real time data of macroeconomic variables, to account for the information set that was available to the participants at the time of writing the reports. We use inflation and real GDP growth data from the reports, referring to the year when the report was published. The sample starts in 1962, because no data on inflation and real GDP growth were included in the first reports.[25] Inferences regarding the voting behavior of the DIW do not change. The coefficient of the IWH loses statistical significance in some specifications. Inferences regarding other variables do not change.

Several minority votes by an institute in one report may be closely related and may well be treated as one vote. We replace the count variable with a binary variable, which assumes the value one if an institute submitted a minority vote in a report and zero otherwise. We estimate a Probit model with robust standard errors. Except for the coefficient of the IWH which loses statistical significance, inferences do not change.

We test whether the results depend on whether minority votes occurred in the text body or in footnotes. The findings do not qualitatively change when we consider both types of minority votes separately. The voting behavior of the IWH did not differ from the voting behavior of the RWI when we only take into account minority votes in the text body.

We also test whether the voting behavior of the institutes changes when we examine the individual policy fields. We use Probit models to test whether institutes differed in submitting minority votes. The DIW submitted significantly more minority votes than the RWI, also when separately considering the section economic policy as a whole, as well as its subsections labor market, fiscal and monetary policy. The voting behavior of the IWH did not differ from the voting behavior of the RWI in the monetary policy subsection. The institutes do not differ significantly in the section world economy, which is probably because of the small number of minority votes in the section. In the German economy section only the voting behavior of the HWWA is significantly different from the RWI.

[25] Data for the unemployment rate is only included in the reports since 1984.

The voting behavior of the institutes may depend on the persons participating, even though no names are included in the reports. The ideological identity of participating persons could be expected to be highly correlated with their institutes' ideological identity, although this need not always be the case.[26] We therefore test whether the regression results of Table 7.4 vary, when we also include dummy variables for (i) the acting president of the individual institute or (ii) the head of the business cycle analysis department of the individual institutes. To compile the names of the persons involved we asked the institutes directly and used the annual reports of the institutes. Inferences do not change when we include dummies for the presidents or department heads.

We include other control variables: neither gross wage growth, nor the length of the reports (measured by page numbers) is statistically significant. The budget balance is statistically significant at the 5% level when included separately, but lacks statistical significance when we include the variable jointly with other explanatory variables. Inferences regarding the other explanatory variables do not change. It is conceivable that the difference between the actual GDP growth rate and the forecasted GDP growth rate from the report, a measure of uncertainty, explains minority votes. We used the forecasts of the GDP growth rate from the respective reports. The observation period, however, shortens as in the 1950s no or only very rough growth forecasts were made. The forecasted GDP growth variable does not turn out to be significant and including it does not change the inferences of the other explanatory variables.

Econometric models can have the problem of reverse causality. In our model, however, reverse causality is unlikely. We rule out the number of minority votes of an institute influencing macroeconomic conditions in the same observation period. The composition of the participating institutes does not depend on the submitted minority votes, at least not until the year 2006, when the participating institutes did not change. But we cannot rule out that minority voting since 2007 played a role for the assignment of the forecasting task by the Federal Ministry of Economic Affairs. Minority votes are thus exogenous in the

[26] For example, Ulrich Blum, the president of the IWH over the period 2004-2011, is a member of the CDU party, whereas Udo Ludwig, the institute's head of the business cycle department over the period 1992-2009, received his education in the USSR.

subsample until 2007. The fact that minority votes may affect future participation should be considered when assigning the forecasting task to the consortia.[27]

7.5 Conclusion

We have investigated minority voting in the Joint Economic Forecast of German economic research institutes. Our results show that the German Institute for Economic Research (DIW Berlin) submitted by far the most minority votes. In particular, the DIW expressed its distinct opinions in the economic policy part of the report, with the intent of seeking a more influential role of the state in the economy. This finding is in line with the popular belief that the DIW has expressed demand-oriented positions in economic policy-making for a long time and has differed from the other economic research institutes in this respect. The IWH also submitted many minority votes when the institute participated in the Joint Economic Forecast. The minority votes of the IWH mostly concerned demand-oriented positions in economic policy-making and reflect to a great extent the cooperation between the IWH and the Union related IMK from 2007 to 2010. In contrast, the economic policy positions of the HWWA, ifo, IfW and the RWI are similar.

The German economic research institutes have had different ideological identities over the last decades. The minority votes in the Joint Economic Forecast portrayed indicate the extent to which positions of institutes were polarized. The peak of the disagreement between the demand- and supply-oriented institutes occurred in the 1980s. Since then the ideological identities of the institutes seem to have been established in the public debate and have been taken as given from that time on. Minority votes declined over the last years. Polarization of the institutes has become less pronounced. The institutes themselves claim that they do not represent specific economic-policy positions.

Decision-makers realize when policy advice is driven by a perceived motivation underlying recommendations and the perceived motivation of the adviser determines how decision makers react (Kuang et al. 2007). The declining polarization of the institutes notwithstanding, when economic research institutes are known to be associated with particular ideological identities, politicians, clients and voters well understand how to assess the policy advice given by the different institutes.

[27] Laux and Probst (2004) show that analysts may design forecasts strategically to increase the demand for future contracts.

7.6 References

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7.7 Appendix: Additional Table

TABLE 7.5: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max	Source
Minority votes (number per institute and report)	653	0.204	0.528	0	4	Joint Economic Forecasts/ own compilation
Minority votes in main text (number per institute and report)	653	0.138	0.425	0	3	Joint Economic Forecasts/ own compilation
Minority votes in footnote (number per institute and report)	653	0.066	0.288	0	2	Joint Economic Forecasts/ own compilation
Minority vote on world economy (=1 if minority vote on world economy was submitted)	653	0.011	0.103	0	1	Joint Economic Forecasts/ own compilation
Minority vote on German economy (=1 if minority vote on German economy was submitted)	653	0.066	0.248	0	1	Joint Economic Forecasts/ own compilation
Minority vote on economic policy (=1 if minority vote on economic policy was submitted)	653	0.115	0.319	0	1	Joint Economic Forecasts/ own compilation
Minority vote on fiscal policy (=1 if minority vote on fiscal policy was submitted)	653	0.070	0.256	0	1	Joint Economic Forecasts/ own compilation
Minority vote on monetary policy (=1 if minority vote on monetary policy was submitted)	653	0.060	0.237	0	1	Joint Economic Forecasts/ own compilation
Minority vote on labor market policy (=1 if minority vote on wage policy or labor market policy was submitted)	653	0.046	0.210	0	1	Joint Economic Forecasts/ own compilation

Table continues on next page

TABLE 7.5: (continued)

Variable	Observations	Mean	Std. Dev.	Min	Max	Source
Demand-oriented minority vote (number per institute and report)	653	0.092	0.343	0	2	Joint Economic Forecasts/ own compilation
Recession	653	0.095	0.293	0	1	Federal Statistical Office
Inflation rate	653	2.463	2.057	-6.19	7.75	Federal Statistical Office
Unemployment rate	653	6.862	3.941	0.7	13	Federal Statistical Office
Real GDP growth rate	653	3.463	3.408	-5.1	18.9	Federal Statistical Office
Government ideology (rightwing)	653	0.615	0.457	0	1	Own compilation
Inflation rate (real time)	538	2.917	1.843	-0.5	8	Joint Economic Forecasts/ own compilation
GDP growth rate (real time)	538	2.275	2.213	-6	9.5	Joint Economic Forecasts/ own compilation
Budget balance	653	-1.889	1.526	-6.17	1.41	Federal Statistical Office
Gross wage growth	637	5.829	4.599	-0.3	19.6	Federal Statistical Office
Number of pages	645	27.358	19.245	6	79	Joint Economic Forecasts/ own compilation
Forecast GDP growth rate	538	2.228	2.124	-6	7.9	Joint Economic Forecasts/ own compilation

Chapter 8

Concluding Remarks

In six chapters I have investigated various motives that shape the behavior of firms and politicians. As described in Chapter 1, firms generally do not directly participate in the public policy process, but rather have to adapt their behavior to the institutional and political framework they operate in. Especially for family firms one important aspect of the legal framework is transfer taxation. In Chapter 2 we examined how transfer taxation affected family firms in Germany. We showed theoretically that when firm owners have inside information on their business conditions, they may have incentives to make early inter vivos transfers to save transfer taxes. We provided empirical evidence that inter vivos transfers of business assets occurred at a higher rate when current business conditions were strong. Our findings show that transfer taxation particularly jeopardizes underperforming firms. In the next two chapters I discussed that changes in government policies create uncertainty for firms. I examined how political uncertainty stemming from state elections affects firms' real economic activity and business perceptions. Using data on firms' self-reported investment realizations, plans and revisions, I showed in Chapter 3 that, even when controlling for the current institutional framework via the firm-specific user cost of capital, the realized investment ratio was lower in years when state elections occurred relative to years with no state election. Firms however hardly revised their plans because of political uncertainty. Investment revisions occurred because of updated information about realized sales growth and not because of resolved electoral uncertainty. The finding corroborates that firms factor in changes in government policy into their planning process. In Chapter 4 I described that political uncertainty influences how firm owners perceive their present state and future development of business. I showed that firm owners

are optimistic regarding their expected business development before state elections, but change their expectations and expect their business to develop worse after elections. The finding is in line with the notion that politicians are trying to maximize their election probability: During election times politicians might promise individual policies to gratify the firms' needs, but after the election those promises turn out to be empty words.
I turned to the behavior of politicians in Chapter 5. We described how partisanship shapes the attitudes and actions of politicians in Germany. We showed that parties' attitudes toward budget consolidation differed and parties confirmed their ideological identity by using expressive rhetoric. The parties' actions however diverged from their words, as they pursued more sustainable fiscal policies when in office. The finding corroborates that partisanship can explain political attitudes and that politicians use ideological identities to gratify their core voter clientele. In Chapter 6 we investigated how political parties cope with self-serving party members that vote against the party line in roll-call votes. Our results did not show that parties accounted for the voting behavior by punishing politicians who have voted against the party line. The results suggest that political parties may attract different groups of voters by tolerating politicians who vote according to their own credo. Regarding policy advice, we suggested in Chapter 7 that politicians, clients, voters and the public should be aware of the ideological leaning of a consultant or his institution when assessing pieces of advice.

In the first part of this dissertation I showed how the political environment influences firm behavior. The relationship between private actors and public actors in Chapters 2-4 builds mainly on the assumption of a coherent regulatory environment where political institutions regulate firms and their behavior in a one-dimensional manner, i.e. political actors have legitimate power to affect firms, but firms have no such power. But – as I described in Chapters 5-7 – politicians are rent-seeking and self-interested individuals which opens the door for firms to engage in political behavior to influence public policy. Scholars provide empirical evidence that politicians subsidize the private sector to obtain re-election. Further research can focus on the reverse direction, i.e. favors granted by firm managers to politicians. Empirical evidence on corporate political behavior in Germany is scarce. Research in this area has to overcome two challenges: accurately measuring political connections, and finding an econometric setting in which the endogeneity of corporate political behavior and corporate outcomes can be disentangled. It is difficult to uncover the

networks of firms and politicians as various ways for firms to influence the political environment exist. Corporate political behavior includes lobbying, special interest groups and personnel connections to decision makers. Especially on "revolving door politics", which describes the movement of personnel between roles as legislators and regulators and the industries affected by legislation and regulation, only case study evidence exists. Future research should shed more light on the relationship of firms and politicians.

In the second part of this dissertation I emphasized how the behavior of politicians is motivated by partisan differences and re-election concerns. Scholars investigating partisan differences summarize policy preferences of political parties in a single policy position. The standard measure to compare political parties is a one-dimensional left-right scale. Policy preferences however may well be readjusted over time and might depend on the policy field. Experts therefore examined policy positions with the help of party manifestos. Indicators based purely on party manifestos should be judged with caution: Politicians may well design manifestos to become re-elected. Party manifestos thus do not describe pure ideology. Further research needs to focus on building more-dimensional ideology measures that capture positions in individual policy fields over time to evaluate differences between political parties more accurately.
Since the beginning of the 2000s the party system has changed. Policies of the established political parties have converged and new political parties entered the political arena which gave rise to increasing political polarization. In many countries coalition governments with many parties or minority governments are in office. New measures of government ideology need to capture changes in the party systems. It is a worthwhile endeavor to investigate policies of these new types of governments.
We examine partisan differences and policy outcomes in a purely descriptive manner in Chapter 5 because we cannot identify a causal effect. When scholars investigate the effects of government ideology on fiscal policy, reverse causality concerns arise. It is conceivable that policies implemented today influence which party voters elect tomorrow. One way to overcome the reverse causality problem and to identify causal effects is to use an instrumental variable approach. So far, experts did not find a convincing instrumental variable for government ideology in macro panel data models. Another way to identify causal effects is to use randomized experiments. Panel studies, however, are often not suitable to employ a regression discontinuity approach because datasets lack sufficient observations.

Identifying causal relationships between government ideology and fiscal policy remains one of the major challenges in empirical research on partisan effects.

Curriculum vitae

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