Incumbency and Expectations of Fiscal Rule Compliance: Evidence from Surveys of German Policy Makers

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Abstract:

We analyze politicians' expectations about future compliance with a fiscal rule, and in particular the dependence of the expectations on their role in parliament (opposition vs. incumbent government coalition). We study this in the context of the German debt brake, which became a constitutional provision in 2009 but is binding for the sub-national states from 2020 onwards only. Via a unique survey, we analyze compliance expectations of parliamentarians of all 16 German state parliaments. A strong incumbency effect is identified from parliamentarians who move in and out of government, showing that politicians from the governing coalition are more optimistic than those from the opposition. A negative fiscal shock has little effects on the former, but a strongly negative one on the latter. We offer a theoretical model that is consistent with an increasing incumbency effect over time, as the result of wishful thinking by politicians concerning their reelection chances and a dynamic reputation effect for policymakers when compliance with the fiscal rule is achieved.

JEL Classification: H63, H74

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1 Introduction

Over the past two decades, governments have increasingly used numerical fiscal rules to constrain public debt and support the sustainability of public budgets (Lledo et al. 2017; Yared 2019). The wave of new rules has peaked in the years following the economic and financial crisis of 2008-9 (Schaechter et al. 2012) and has inspired a large and growing literature assessing the effectiveness of fiscal rules. A common approach of this literature is to estimate in cross-section or panel models the *ex post* effect of fiscal rules on fiscal outcomes in jurisdictions.[1]

Our analysis contributes to the literature on fiscal rule effectiveness but takes a novel avenue. An effective numerical rule should be reflected in positive compliance expectations of those players who are to be constrained by the rule. Therefore, we analyze a fiscal rule's effectiveness *ex ante* and look at the rule's effects on compliance expectations. We study the German constitutional fiscal rule based on a unique survey among individual members of all 16 state parliaments in Germany with two survey waves covering two legislative terms before the fiscal rule became binding in 2020. In each wave we had a response rate of more than one third with a non-response analysis indicating no serious selection bias. This provides us with a total of 1,302 responses and a considerable overlap of respondents in both waves that we exploit in our identification strategy.

The institutional features of the German fiscal rule (the so-called Schuldenbremse, "debt brake") allow us to study expectation effects over time before the rule became legally binding. Germany implemented the debt brake in its constitution in the year 2009 in the middle of the deep recession caused by the financial crisis. Given the difficult financial conditions in that year and due to political resistance, Germany opted for a model of 'lagged implementation' (Buchanan 1994): The debt brake was phased in over more than a decade with the rule for the sub-national states (Länder) becoming effective in the year 2020. Starting with the budget 2020, German state parliaments are obliged to adopt at minimum a structurally balanced budget with narrowly defined exceptions and escape clauses.

In the years before 2020, we asked the parliamentarians at two different times, how likely it is that their state will comply with the requirements of the constitutional debt brake (i.e. have a cyclically adjusted balanced budget from 2020 onwards). In the analysis of responses, we pay particular attention to the role of political competition for the heterogeneity of expectations within one parliament. It has been frequently shown in other contexts that a blame game has the consequence of strongly contradicting signals on a country's performance (Hansson 2018; Weaver 1986): Opposition representatives typically perceive the incumbents' performance in darker colors, whereas incumbent politicians put current data and trends into a much brighter light.

[1] See for OECD countries Dahan and Strawczynski (2013); for European countries Debrun et al. (2008) and Reuter (2019); for the Swiss cantons Krogstrup and Wälti (2008); for the U.S. states Poterba (1996). A meta-regression analysis is provided by Heinemann et al. (2018).

Our panel data allow us to precisely test for this government-opposition effect using "within person" variation: we exploit cases of individual parliamentarians who change the roles between government and opposition between the two survey waves. We make use of eight changes in the composition of state governments that switched the role of some parliamentarians from opposition to being part of the governing coalition, and for others in the opposite direction. The debt brake was not a key item in any election campaign and the change in political majorities is therefore likely to be exogenous with respect to the expectations of policymakers. With this design, we are able to distinguish between two fundamentally different reasons why parliamentarians can have a pessimistic compliance expectations for the debt brake even in an environment of improving fiscal fundamentals. First, this pessimism could directly reflect the weakness of a rule that inherently lacks credibility, e.g. due missing sanctions or other deficiencies. Second, and very differently, it may reflect a regular feature of political competition in which opposition parliamentarians have a strong incentive to denounce the competence of the government. This second explanation for the observable compliance pessimism does not necessarily signal a low inherent rule credibility but rather mirrors the opposition perspective. Hence, it is important to disentangle the heterogeneity in compliance expectations that is a natural outcome of political competition from the more worrisome heterogeneity that is unrelated to the government-opposition contest. Based on this setting we make an empirical and a theoretical contribution.

Our empirical results show that fiscal fundamentals - such as budgetary balance, level and change of government debt - have little relevance on average. Somewhat surprisingly, we do not observe significantly more optimism in compliance expectations related to an improvement of these variables. If anything, such optimism based on better fiscal variables is confined to government politicians while overall expectations remain fairly pessimistic.

The results do confirm the relevance of the government-opposition effect. Looking at the full sample including both waves, members of incumbent government parties are significantly more optimistic than members from opposition parties. This effect is measured controlling for individual socio-economic characteristics and party affiliation. Surprisingly, the positive average effect is the result of an increasing incumbency effect over time: the effect in wave 2 is about three times as large as the one in wave 1. We demonstrate this finding by comparing sets of politicians who have the same role in wave 1 (being both in government or both in opposition) but different roles in wave 2. There is no comparable effect when the two sets of politicians have a common role in wave 2, and a different one in wave 1.

We also show that the government-opposition asymmetry is reflected in the response of expectations to an unexpected change in the information environment. For this test, we make use of the arrival of almost 1 million refugees in Germany in 2015. The event serves as a natural experiment to study the impact of an information shock on compliance expectations. The magnitude of

the arrival was largely unexpected and was at the time considered to initiate a significant negative fiscal shock with estimated additional government spending of 0.5% of GDP in the following year (Independent Advisory Board of the Stability Council 2015). We exploit the fact that during the second survey wave some states were randomly surveyed before and after the peak of the refugee arrival. We compare the expectations of politicians surveyed later with those earlier, and study whether differences depend on being a member of the governing coalition. We find that politicians were significantly more pessimistic when surveyed after the peak of the refugee arrival in 2015. Again, the effect appears to be mainly driven by members of opposition parties who adjusted their compliance expectations downwards, not by incumbents.

In the second part of our analysis, we provide a theoretical explanation for the novel empirical finding of a noticeable government-opposition divide in compliance expectations that is increasing over time. In our modelling assumptions on politicians' expectations we focus on election perspectives as an important driver of political motivation and take up insights from the literature on wishful thinking and overoptimism (Krizan and Windschitl 2009; Rabin 1998). Wishful thinking ('desirability bias') exists if the desire for a certain outcome inflates optimism about that outcome.[2] A particular example of wishful thinking has been documented for voters' election forecasts. Voters tend to overestimate the winning chances of preferred parties or candidates (Meffert et al. 2011). Obviously, politicians' wishful thinking on election outcomes is closer to overconfidence than in the case of voters, as candidate effort in election campaigns influences the election outcome. Reflecting these insights from behavioral research, our model rests on two key assumptions: First, policymakers suffer from an optimism bias regarding their subjective election winning probability. The second assumption is that voters attribute the benefit of compliance (or the cost of non-compliance) with the fiscal rule not only on the current incumbent government, but to some extent also to its predecessor who is partially responsible for the later (non-)compliance. Under these assumptions, our model predicts a pattern of expectations that is consistent with our key empirical findings of a positive incumbency effect that is increasing over time.

Our paper contributes to the literature on fiscal rule effectiveness, in particular to that strand of the literature that focusses on expectations (e.g. reputation effects of fiscal rules on risk spreads, see Feld et al. 2017; Heinemann et al. 2014; Iara and Wolff 2014). A common feature of this literature is the aggregation of expectations at the level of the jurisdiction. In such a research design, it is not feasible to uncover heterogeneity of individual compliance expectations both in the cross-section and over time. Our micro-level panel data of compliance expectations allows us

[2] This bias is not identical but related to overoptimism where a person can actually influence the outcome or at least thinks she can do so. Thaler (2016) classifies the overconfidence bias as one of the most important concepts of behavioral economics. People overestimate their performance and capabilities in a multitude of professional and private contexts.

to investigate these areas in particular detail. Our interest in the formation of compliance expectations in the presence of fiscal shocks is related to Burret and Feld (2018) who find that Swiss cantons adjust quicker to revenue shortfalls or sudden spending increases if a fiscal rule is in place.

Heinemann et al. (2016) use a different question of the first wave of our survey to examine cross-sectional variation in compliance expectations of parliamentarians with regard to their own state as well as other states (with a binary answer option only). In the present study, we significantly extend this research using two survey waves in a panel structure to identify incumbency effects of compliance expectations from within-parliamentarian variation driven by exogenous changes in the composition of government coalitions. This allows us to account for parliamentarian specific factors via fixed effects. Moreover, observing compliance expectations over time, we are able to examine the dynamics of the incumbency effect. Another advantage of the panel structure is that we can exploit variation in fiscal fundamentals across both states and time. Finally, the second wave used in the present paper comprises an exogenous information shock with respect to the fiscal environment to which some parliamentarians were randomly exposed to.

We also contribute to the literature on political overoptimism that has studied biases in government growth, deficit and tax forecasts (Bischoff and Gohout 2010; Buettner and Kauder 2015; Heinemann 2006; Lehmann and Wollmershäuser 2020; Picchio and Santolini 2020). This literature has provided evidence that governments tend to produce over-optimistic economic and fiscal projections in order to convince voters about their positive performance, whereas finance ministers may use overly pessimistic forecasts as a strategy to promote consolidation (Chatagny 2015). Our theoretical analysis highlights the effect of such an optimism bias on politicians' expectations with regard to compliance with a fiscal rule.

Furthermore, we expand the literature on partisanship. Differences between governments and oppositions have been emphasized in the literature on political competition (Alcañiz and Hellwig 2011; Heinkelmann-Wild and Zangl 2020). Opposition representatives denounce incumbents' performance in order to erode the credibility of those in power and commend oneself as the superior alternative in the next election (Hansson 2018). Government politicians defend themselves by emphasizing favorable indicators and trends and by developing strategies of blame avoidance (Weaver 1986) such as scapegoating external constraints (e.g. the European Union) for unpopular developments (Hobolt and Tilley 2014; Traber et al. 2020). The blame game is a result of voters' inability to observe the causes of disputes. By contrast, the partisan divide in expectations with regard to fiscal rules in our theoretical and empirical analysis arises from the dynamics of elections, fiscal efforts, and reputation sharing.

Our theoretical analysis also complements existing literature on dynamic decision-making and

political conflict. The temptation of a government to deviate from its previously determined optimal policy path was recognized in the seminal work by Kydland and Prescott (1977). In democracies, however, the identity of the incumbent government may change regularly and the achievement of long-term objectives such as compliance with a fiscal rule in the future thus rests on the persistence of policies across electoral cycles, complicating matters further. Nordhaus (1975) argues that election cycles may be a significant obstacle to achieving long-term policy goals. Tabellini and Alesina (1990) show theoretically that voter disagreement about the composition of government spending translates into excessive deficits when government majorities change over time.

The remainder of the paper is organized as follows. In Section 2, we provide detailed information about the survey design and look at the descriptive evidence for compliance expectations. In Section 3, we consider the changes in the economic, fiscal and political environment. The econometric approach is described in Section 4 followed by the results Section 5. In Section 6 we describe the theoretical model that offers an explanation for our key empirical results. Section 7 concludes.

2 Survey details and compliance expectations

Our survey examines compliance expectations with the German debt brake (*Schuldenbremse*), which was written into the constitution in 2009. The debt brake mandates a structurally balanced budget by 2016 for the federal government (with a maximum deficit of 0.35% of GDP) and by 2020 for each of the sixteen states (Länder). Unlike for the federal level, there was no adjustment path set for the states for reaching a balanced budget in 2020. As a constitutional change, the debt brake was approved by a two-thirds majority in both chambers. In the upper chamber, representing the states (Länder), support came from 13 out of 16 states (states opposing were Berlin, Mecklenburg-Western Pomerania, and Schleswig-Holstein).

Fiscally weaker states at the time of institutionalizing the debt brake (Berlin, Schleswig-Holstein, Sachsen-Anhalt, Saarland and Bremen) were provided with annual financial support until 2019 in order to help them to reach the fiscal target.[3] The long gap between the entry of the constitutional provision in 2009 and the effectiveness of the provision in 2020 was part of a political compromise to obtain consent from the state governments. The gap makes our analysis interesting because budgetary efforts in the time before 2020 do not serve concurrent compliance but are in part steps towards compliance in 2020.

[3] German states lack any significant revenue autonomy and receive the bulk of their tax revenues from taxes that are shared with the federal and municipal level. For the sub-national level in Europe, Foremny (2014) has shown that a low degree of revenue autonomy increases deficits. Hence, this financial support can be seen as a strategy to smoothen the transition path given that states have no important tax instruments under their control in order to comply with the debt brake.

The debt brake has experienced strong support among citizens and politicians over time and across the country. In our surveys of policymakers, we found that the debt brake was considered desirable or highly desirable by more than ¾ of members of state parliaments (Blesse et al. 2016). Using the German Internet Panel, a representative household survey of the German population, we find that in 2014 almost 70% of households regarded the debt brake as either good or very good, and in all states the median response was good (Berger et al. 2017). For these reasons, compliance with the debt brake can be considered as a valuable objective for most policymakers. Despite this support for the debt brake, states' compliance was highly uncertain at the time of passing the legislation in 2009 because several states were running large financial deficits at that time. A possible reorganization of vertical tax sharing that could have alleviated some states' financial troubles was not due until 2019 and its outcome was hard to predict, an uncertainty of the transition phase that we take up in our theoretical modelling.

2.1 Survey description

We sent out questionnaires to all members of the 16 German state parliaments in both survey waves of 2011/12 and 2014/16. The parliament-specific timing was chosen to contact each parliamentarian approximately at mid-term of his or her state-specific election cycle (election dates vary across German states) in order to avoid possible low turn-out in times of election campaigns or the start of a newly elected parliament when parliamentary newcomers may not be familiar with the issue. As a result, parliamentarians were surveyed between March 2011 and May 2012 in the first wave and between December 2014 and April 2016 in the second wave. The first contact was by regular post, followed by electronic mail reminders and phone calls. Through this procedure, we received 1,302 responses (635 and 667 in wave 1 and 2, respectively). Response rates differ across states (see Table 1) but remain stable over time with similar overall response rates in both waves (34.1% in the first and 36.8% in the second), which are in the upper range of parliamentary survey studies (for regional parliaments see André et al. 2015).

All surveys were strictly confidential but non-anonymous in order to match the survey responses with state characteristics on the one hand and with personal characteristics of parliamentarians such as age and committee membership on the other hand, which are available from public sources. In principle, non-anonymity of responses could lead to biased answers as parliamentarians might be concerned about the perceived loyalty to their state or party. However, our survey design and the empirical methodology substantially reduce the potential biases. In particular, we guarantee confidential treatment of individual responses to parliamentarians. This provides assurance to survey participants that their individual answers do not become public. In this regard, our confidential survey approach is superior to studies that exploit public parliamentary roll-call votes and thus cannot capture personal expectations. Moreover, in our econometric analysis we control

for individual characteristics that might influence the incentive to hide true expectations such as membership in a budgetary committee. In addition, we undertake a unit non-response analysis to check whether politicians with a certain characteristic are more or less likely to participate in the survey (described in more detail below, see also Appendix B).

2.2 Compliance expectations: levels and changes over time

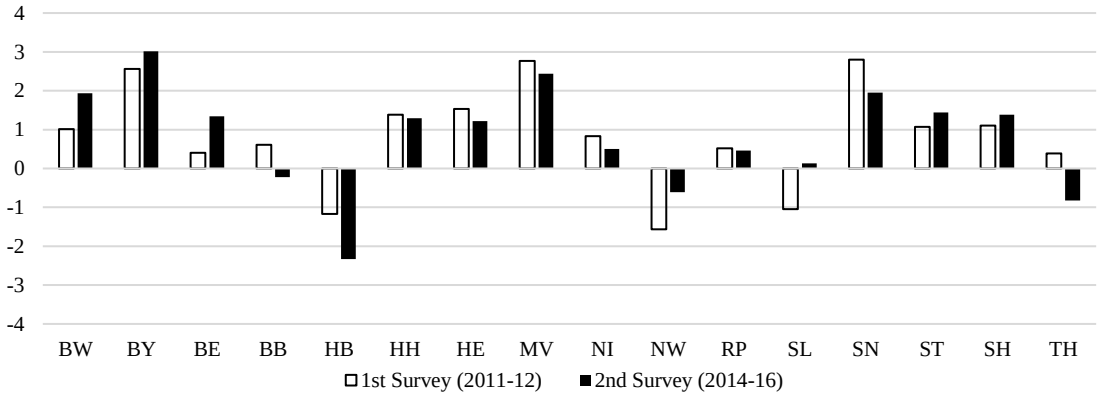
Compliance expectations are covered through the following question:

In your view, how likely is it that your state will comply with the requirements of the constitutional debt brake and have a balanced budget (cyclically adjusted) from 2020 onwards?

An answer was requested on a nine-point scale from (-4) "impossible" to (+4) "certain".

Figure 1 summarizes average assessments in both waves. Compliance expectations are similar in both waves and overall pessimistic. Only in three states (Bavaria, Mecklenburg-Western Pomerania, Saxony), did parliamentarians assign an average score of about two or higher to the likelihood of their state's compliance in both waves. Over time, mean scores have declined for the majority of states (9 out of 16). When differentiating between opposition and government parliamentarians, we find that the compliance expectation increased from 1.38 to 2.14 for the average parliamentarian that was a member of the governing coalition, while it decreased from 0.51 to -0.32 for the average parliamentarian in the opposition. We explore these differences in more detail below.

Figure 1: Compliance expectations for own state



Notes: This figure depicts the average of answers to the survey question about compliance expectations („In your view, how likely is it that your state will comply with the constitutional debt brake and will present a balanced budget (cyclically adjusted) from 2020 onwards"). Scale from -4 ("impossible") to +4 (certain). The figure uses the full sample of answers. State abbreviations are as follows - BW: Baden-Württemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB: Bremen, HH: Hamburg, HE: Hesse, NI: Lower Saxony, MV: Mecklenburg-Western Pomerania, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia.

While fairly pessimistic expectations may be not too surprising for the first wave given the aftermath of the economic and financial crisis of 2008, the stability of expectations and pessimism shown in the second wave appears surprising given the substantial improvement of economic fundamentals between the two waves. We will assess the change in the fiscal and political environment that occurred between both survey waves in the next section.

Table 1: Survey details

	No. of MPs / responses		Response rate, %		Survey date		Last election date		Parties in government coalition		No. of AfD responses
	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	(wave 2)
Baden-Württemberg	138 / 77	139 / 78	55.80	56.12	3/2012-4/2012	12/2014-1/2015	3/2011	3/2011	Green, SPD	Green, SPD	0
Bavaria	187 / 75	160 / 69	40.11	38.33	2011	5/2015-6/2015	9/2008	9/2013	CSU, FDP	CSU	0
Berlin	149 / 30	149 / 38	20.13	25.33	3/2012-4/2012	12/2014-1/2015	9/2011	9/2011	SPD, CDU	SPD, CDU	0
Brandenburg	88 / 18	88 / 18	20.45	20.45	2011	2/2016-4/2016	9/2009	9/2014	SPD, Left	SPD, Left	2
Bremen	83 / 18	83 / 24	21.69	28.92	3/2012-4/2012	2/2016-4/2016	5/2011	5/2015	SPD, Green	SPD, Green	3
Hamburg	124 / 39	121 / 27	31.45	22.31	12/2011-1/2012	2/2016-4/2016	2/2011	2/2015	SPD	SPD, Green	2
Hesse	114 / 49	110 / 45	42.98	40.91	12/2011-1/2012	2/2016-4/2016	1/2009	9/2013	CDU, FDP	CDU, Green	0
Lower Saxony	152 /54	137 / 53	35.53	39.42	2011	12/2014-1/2015	1/2008	1/2013	CDU, FDP	SPD, Green	0
Mecklenburg Western Pomerania	71 / 17	71 / 23	23.94	32.39	3/2012-4/2012	12/2014-1/2015	9/2011	9/2011	SPD, CDU	SPD, CDU	0
North Rhine-Westphalia	181 / 51	237 / 84	28.18	35.44	12/2011-1/2012	12/2014-1/2015	5/2010	5/2012	SPD, Green	SPD, Green	0
Rhineland- Palatinate	101 / 48	107 / 52	47.52	48.60	3/2012-4/2012	12/2014-1/2015	3/2011	3/2011	SPD, Green	SPD, Green	0
Saarland	51 / 20	51 / 15	39.22	29.41	2011	5/2015-6/2015	8/2009	3/2012	CDU, FDP, Green	CDU, SPD	0
Saxony	133 / 45	126 / 39	33.83	30.95	12/2011-1/2012	2/2016-4/2016	8/2009	8/2014	CDU, FDP	CDU, SPD	3
Saxony-Anhalt	106 / 29	105 / 36	27.36	34.29	12/2011-1/2012	12/2014-1/2015	3/2011	3/2011	CDU, SPD	CDU, SPD	0
Schleswig-Holstein	95 / 29	69 / 31	30.53	44.93	2011	5/2015-6/2015	9/2009	5/2012	CDU, FDP	SPD, Green, SSW	0
Thuringia	88 / 36	91 / 34	40.91	37.36	2011	2/2016-4/2016	8/2009	9/2014	CDU, SPD	Left, SPD, Green	4
Overall	1,861 / 635	1,865 / 667	34.12	35.76							

Notes: Party names refer to Christian Democrats (CDU, conservative), Free Democrats (FDP, center-right liberal), Social Democratic Party (SPD, social-democratic), Green Party (Green, ecologist, centre-left), Left Party (Left, left-wing populist), South Schleswig voters union (SSW, representing the Danish minority), Alternative for Germany (AfD, right-wing populist). Number of AfD responses in survey wave 1 was zero (party did not exist).

3 Fiscal and political environment

3.1 Political power and changes in parliamentary composition

Table 1 states the incumbent coalition parties for each survey wave. The parties in our survey are: the Christian Democrats (CDU/CSU), a center-right party, the Free Democrats (FDP), a market-liberal party, the Social Democrats (SPD), a center-left party, the Green Party (Green), a center-left party, the Left Party, a left-wing socialist party, the Alternative for Deutschland (AfD), a right-populist party, the Süd-Schleswigsche Wählerverband (SSW), a Danish minority party in Schleswig-Holstein, and the Piraten (Pirates), a liberal left-of-center party.

Changes in political power

Table 1 shows that in several states the party composition of the incumbent government changed between the two surveys because of elections that took place in 13 states. There were eight changes in incumbent parties. Some were of minor nature, such as in Bavaria and Hamburg, where one party was added or dropped to the list of incumbent parties. In other cases, a coalition partner was substituted, such as in Hesse and Schleswig-Holstein (Green for FDP), Saarland (SPD for FDP and Greens), Saxony (SPD for FDP), and Thuringia (Left and Green for CDU). In Lower Saxony, the governing coalition changed completely. Changes from opposition to government and vice versa were relatively balanced with several gains and losses for both left-leaning and right-leaning parties. As a consequence of these changes of government composition between the two survey waves, some parliamentarians changed from being an opposition member to supporting the governing coalition (56 responding parliamentarians in our sample) or vice versa (60 responding parliamentarians in our sample), while others either remained in the opposition or in the government coalition throughout the survey period. We identify the effect of incumbency from these changes over time.

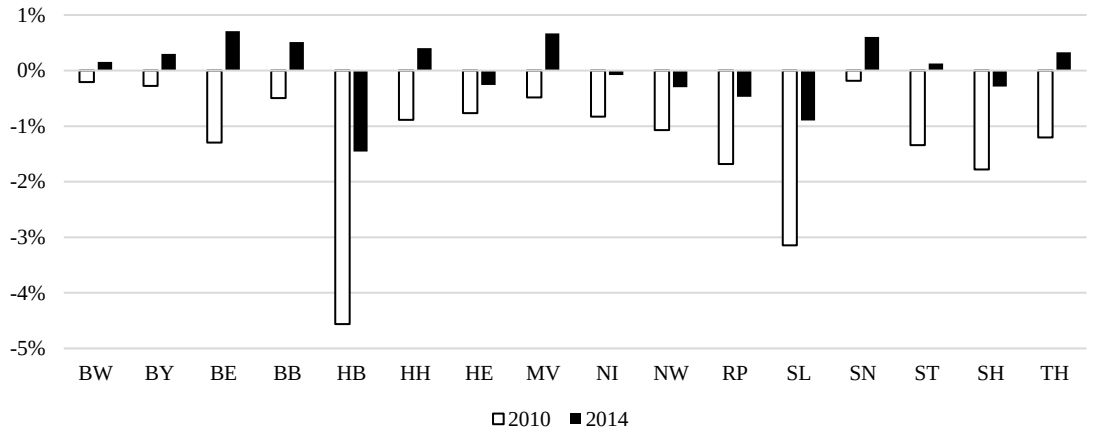
3.2 Fiscal environment

The period covered through both survey waves experienced substantial variation in the economic and fiscal environment. The first wave was conducted in the years 2011-2012 and, hence, a period that still felt the consequences of the financial crisis of 2008-2009 that had pushed Germany into its record post-war recession with a GDP decline of -5.6 per cent in 2009 (AMECO Database) and severe consequences for tax revenues and government deficits. Moreover, the survey wave was concurrent with the height of the euro area debt crisis raising severe concerns about the future of the euro area.

The economic and fiscal situation improved considerably in subsequent years. The German economy experienced a stable development with high growth rates (relative to its average performance in the preceding decade), a strong continuous employment growth (from a total domestic

employment of 41 million in 2010 to 43 million in 2014, AMECO database) and a marked reduction of unemployment from 7 to 5 per cent between 2010 and 2014 (Eurostat definition, AMECO database). As a consequence, state finances considerably improved between both survey waves. Figure 2 demonstrates this improvement with regard to the financial balances of the German states. While in 2010 none of the 16 state budgets was in surplus, four years later nine states could present a surplus, and the remaining states moved their deficits closer to a balanced budget. Contributions to these improvements came from both the revenue side and the expenditure side. Regarding the former, economic growth led to substantially higher state revenues, called fiscal capacity, which increased from an average across states of EUR 2,981 (USD 3,919) per capita in 2010 to an average of EUR 3,714 (USD 4,883) in 2014. This upward trend also materialized in individual states (see Figure A.1 in appendix).

Figure 2: Financial balances of German states in % of GDP



Notes: This figure presents the financial balance of the 16 German states in 2010 and 2014 in % of GDP. State abbreviations are as follows - BW: Baden-Württemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB: Bremen, HH: Hamburg, HE: Hesse, NI: Lower Saxony, MV: Mecklenburg-Western Pomerania, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia.

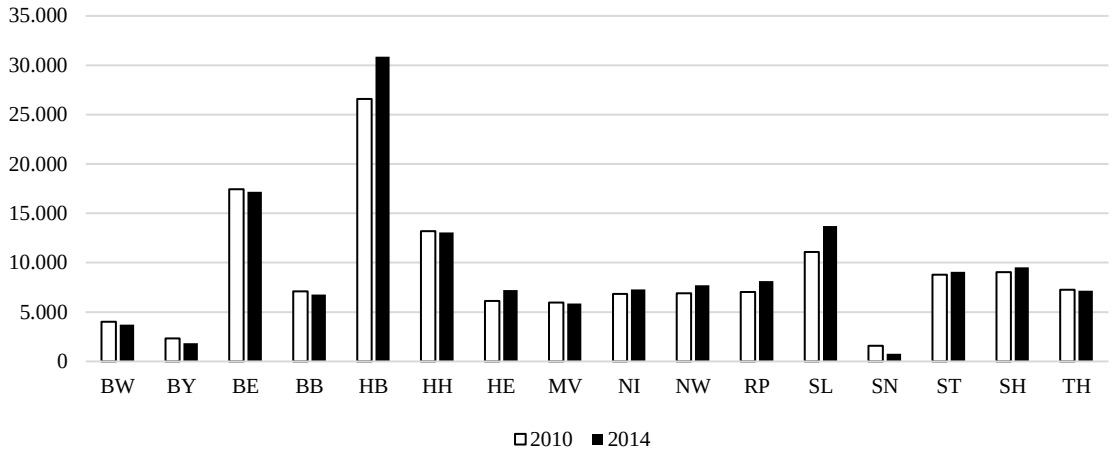
On the expenditure side, lower interest payments had a positive impact on financial balances (see Figure A.2 in the appendix). From 2010 to 2014, the average nominal interest rate on German government bonds decreased from 2.4 to 1.1 per cent (Deutsche Bundesbank), because of both the euro-crisis induced capital flight into the European safe havens and the expansive monetary policy of the ECB.[4] The improvement in financial balance shown in Figure 2 occurred despite moderate increases in spending on public employment (see Figure A.3 in appendix), which is the major spending item at state level.

While the budgetary situation improved in all states between 2010 and 2014, the legacy burden

[4] Falling interest rates affect the actual debt service only gradually with the replacement of maturing bonds. Still, there occurred a marked reduction in interest rate payments in this period.

was quite different across states. Figure 3 shows the debt level per capita. The situation differed both among city-states (Bremen HB, Hamburg HH, Berlin BE) and among all other states. Differences are not easily explained by differences between Western and Eastern Germany (e.g. the former GDR), as Saarland and Schleswig-Holstein in Western Germany have the highest levels per capita, as well as Sachsen-Anhalt in the East.

Figure 3: State debt per capita



Notes: This figures presents public debt per capita of the 16 German states in 2010 and 2014 in million EUR. State abbreviations are as follows - BW: Baden-Württemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB: Bremen, HH: Hamburg, HE: Hesse, NI: Lower Saxony, MV: Mecklenburg-Western Pomerania, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia.

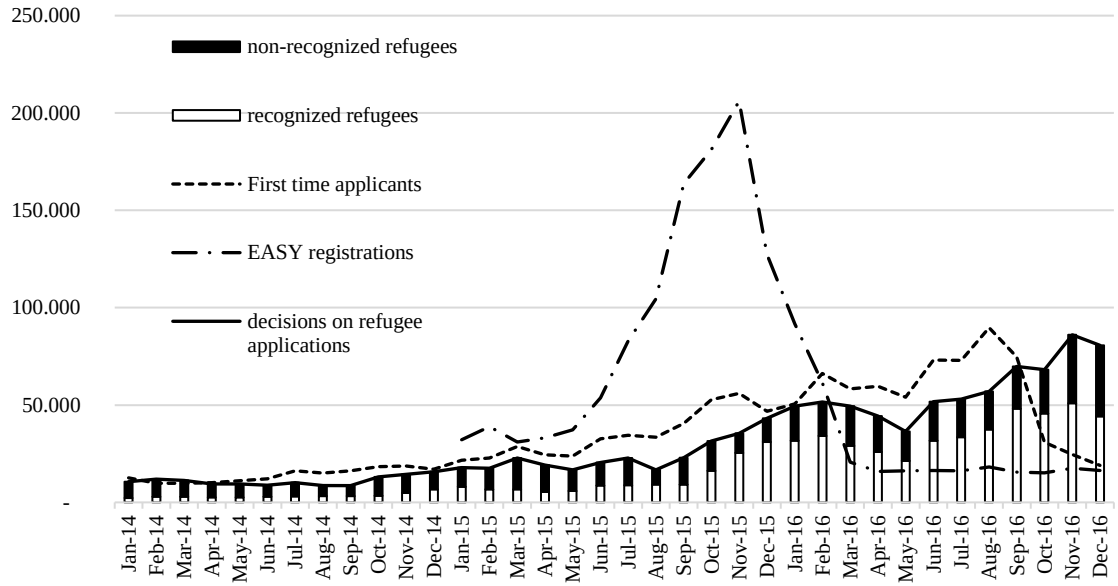
3.3 Unexpected event: refugee arrival in 2015

The unexpected arrival of a large number of refugees in Germany in the course of 2015 constitutes an event that might plausibly have changed the medium- and long-run fiscal outlook and thus the compliance expectations of politicians. In the Summer of 2015, the number of persons seeking protection in Europe in general, and in Germany in particular, started to rise strongly (for details on the 2015 events see Kürschner Rauck and Kvasnicka 2018). On August 31, the German head of the federal government, Angela Merkel, publicly announced the willingness of the German government to accept a large number of refugees. Soon after, German borders were opened for refugees that had arrived in Hungary following their passage through the Balkan states. Thus, August 2015 marks the beginning of exceptionally high numbers of refugees received by German states. In this month alone more than 100,000 refugees were registered with registration numbers crossing this threshold for the first time. The peak was reached in November 2015 with more than 200,000 entries (see Figure 4).[5] Immigration only slowed when the passage through the Balkan countries was closed in March 2016. By then, almost one million refugees had reached Germany

[5] The events were of high salience with arrival numbers of refugees reaching the main train station in Munich amounting to more than 17,500 persons on single days (Kürschner Rauck and Kvasnicka 2018).

in 2015.

Figure 4: Refugee statistics Germany 2014 - 2016



Notes: This figure displays the number of asylum applications in Germany. The "EASY registrations" indicate the actual registration of refugees who enter German territory independent of when the formal asylum application procedure ("first time applicants") actually starts or has even resulted in a decision on the refugee status ("non-recognized refugees"/"recognized refugees"). EASY registrations not available before January 2015. Source: Replication of Chart 89 in German Council of Economic Experts (2016), based on publications by the Federal Office for Migration and Refugees and the Federal Ministry of the Interior, Building and Community.

The refugee migration originating in the Middle East unfolded while the second survey wave was ongoing. Because of the staggered execution of the survey, which was unrelated to the refugee arrival (see Section 2.1), some parliamentarians were randomly questioned several months after the full extent of the refugee migration became apparent through the public statement of the German government (August 31, 2020). They were exposed to the information shock, while others responded to the survey several months before this date and were thus not exposed to the information shock (see Table 1 for the timing of the survey waves in individual states). Table A.2 in the appendix shows which states were surveyed early and which late. The magnitude of the arrival was largely unexpected and was at the time considered to initiate a significant negative fiscal shock with estimated additional government spending of 0.5% of GDP in the following year (Independent Advisory Board of the Stability Council 2015). It should be noted that eventually the federal government took over a large part of the costs associated with refugees through vertical transfers. However, at the time of the second survey both the magnitude and the vertical distribution of the burden were not clear.[6] We thus consider the surprising refugee arrival as an

[6] In the real-time projection from May 2015 states expected a balanced budget in the aggregate for fiscal year 2016. By November of 2015, however, the state governments expected an aggregate deficit of €9.5 billion, mostly due to rising expenditures (from €336 billion to €353 billion), see supporting documents for the 12th meeting of the Stability Council on December 9, 2015, found at https://www.stabilitaetsrat.de/DE/Beschluesse-und-Beratungsunterlagen/20151209_12.Sitzung/Sitzung20151209_node.html. As for the longer term, the expected expenditures and tax revenues relating to the integration of refugees into society and the labor market seemed highly uncertain. The Council of Economic Experts ("Sachverständigenrat") emphasized in its November 2015 annual report that these uncertainties

unexpected shock to the information environment at the time of the survey whose implications for future fiscal fundamentals were generally negative. We analyze the extent to which this shock affects compliance expectations, and whether this relates to incumbency.

3.4 Variables and summary statistics

We conclude with a presentation of the variables that we use in the empirical analysis. Table 2 shows the variables grouped into four categories (i) politicians‘ personal characteristics (gender, age, part of governing coalition (*GOVT*) and member budget committee), (ii) party affiliation (AfD, CDU/CSU, FDP, Greens, SPD, Left, Others), (iii) fiscal variables, and (iv) dummies for time after refugee arrival peak (*POST*).

Regarding the fiscal variables (iii), we use concurrent measures of debt over GDP (log) and the year-on-year percentage change of debt in a state. The budgetary situation is captured by the financial balance (revenues minus expenditures), as seen in Figure 2. To deal with the particularly high cyclical volatility of the financial balance we apply a moving average for this indicator. We take the weighted average of the balance (relative to GDP) for the year of survey participation and the two preceding years. We abstain from a forward-looking measure due to the high volatility and difficult predictability of deficits.

Table 2: Summary statistics

	No. of obs.	Minimum	Maximum	Mean	Standard Dev
Comply	1,302	-4	4	0.970	2.540
GOVT	1,302	0	1	0.530	0.500
Female	1,302	0	1	0.240	0.420
Age	1,302	26	78	55.090	10.430
Budget Committee	1,302	0	2	0.350	0.610
AfD member	1,302	0	1	0.010	0.100
CDU/CSU member	1,302	0	1	0.420	0.490
FDP member	1,302	0	1	0.060	0.230
Greens member	1,302	0	1	0.110	0.310
Left member	1,302	0	1	0.070	0.260
SPD member	1,302	0	1	0.290	0.450
Other party member	1,302	0	1	0.040	0.190
Personnel exp.	1,302	891.740	2359.700	1410.580	342.810
Balance	1,302	-2.960	0.810	-0.410	0.700
Interest payment	1,302	4.300	84.790	26.990	16.530
Change debt	1,302	-19.270	4.960	-1.870	5.610
Log debt over GDP	1,302	1.760	4.260	3.230	0.630
POST	1,302	0	1	0.140	0.350

This table displays the summary statistics for the variables used in the empirical estimation. Detailed descriptions for the individual variables are displayed in Table A.1.

In addition, we consider the fiscal variables interest payments (Figure A.2) and spending on public sector employment (Figure A.3). As a proxy for the interest rate burden, we multiply the debt-GDP-level with the 10-year federal government bond yield for Germany in the year after the

were very large and did not make any prediction as to how these costs and benefits would be distributed across levels of governments.

respondent took the survey.[7] The construction of the indicator was chosen to have a faster reaction of the indicator to changes in market rates compared to the actual interest payments. The actual debt service adjusts only slowly in line with maturing bonds and their refinancing. Our more responsive indicator is well suited for the respondents' long-term expectations since the fall of the actual interest rate is predictable if market interest rates have come down relative to the average interest coupons of the government bonds in circulation. Table 2 provides summary statistics for all variables.

4 Empirical method

We examine the role of incumbency and determinants of parliamentarians' assessment of their own-state's compliance with the fiscal rule running the following regression model:

$$Comply_{ist} = \alpha_1 GOVT_{it} + \alpha_2 FISC_{st} + \alpha_3 GOVT_{it} \cdot FISC_{st} + \beta X_{it} + \phi_i + \phi_t + \epsilon_{ist} \qquad (1)$$

where $Comply_{ist}$ is a categorical variable that contains the response to the question in survey wave t of parliamentarian i, who has a mandate in the parliament of state s. As described in Section 2.2, the response is measured on a nine-point Likert scale from -4 ("impossible") to +4 ("certain").

A key variable of interest is the dummy variable $GOVT_{it}$, which allows us to compare responses from parliamentarians belonging to the government coalition and the opposition. The dummy is equal to one if parliamentarian i is a member of the governing coalition in survey wave t and zero otherwise. The effect is identified from those who switch in and out of the government coalition. ϕ_i and ϕ_t are parliamentarian and survey wave fixed effects. In some specifications, state-fixed effects replace one or two of the former. Depending on the set of fixed effects included in the model, the identification of key determinants stems from both cross-sectional variation among individuals (if only survey wave fixed effects are included) or variation within parliamentarians over time. $FISC_{st}$ is a vector of time-varying state-level variables that characterize the sustainability of public finances in state s in survey wave t. We include the indicators relating to state government debt, financial balance of the state budget, and in further analyses consider interest payments, and expenditure on public sector employment, as described in Sections 3.2 and 3.4.

We also analyze the plausibly exogenous shock to parliamentarians' information environment resulting from the refugee arrival in 2015. We replace the variable $FISC_{st}$ with a dummy variable

[7] Bond yields for bonds of German states differ only to a very small extent due to the explicit and implicit guarantees of the federal level for state debt. Hence, yields for federal bonds are a reasonable proxy for interest costs of all German jurisdictions.

$POST$ that is equal to one if the respondent took the second survey after August 2015, that is, after the surge in refugee migration became apparent. For a list of states (and the number of answers obtained) who fall into the category, see Table A.2 in the appendix. As described in Section 3.3, the sudden increase in refugee migration was largely unexpected. It can thus be viewed as an event that exogenously shifted parliamentarians' expectations. We consider the interaction between $POST$ and $GOVT_{it}$ to see whether members of governing parties respond differently to the refugee arrival. Whether parliamentarians of a particular state were surveyed before or after the surge in refugee migration became apparent was determined *ex ante* and thus unrelated to parliamentarian and state characteristics. In Table A.3, we compare the means of key parliamentarian and state characteristics across parliamentarians surveyed before and after August 2015 to empirically examine the result of this randomization. Respondents are largely similar but differ slightly in age and political affiliation such that we control for these characteristics in our specification. Differences in state characteristics result from the fact that parliamentarians of a whole state were surveyed either before or after August 2015. We account for differential effects of these characteristics before and after August 2015 by including the interaction of $POST$ and these variables in a robustness check.

X_{it} is a vector of fixed and time-varying parliamentarian characteristics comprising the gender of the parliamentarian (a dummy variable equal to one if the parliamentarian is female and zero otherwise), the age of the parliamentarian, and a dummy variable that is equal to one if the parliamentarian is a member of the budget committee in her or his state parliament. These variables serve as controls and their effect on compliance expectations may be ambiguous. Membership in the budget committee could be associated with a higher level of expertise and more information on fiscal developments while age could be related to a parliamentarian's experience with long-run fiscal processes. Such information and experience could shift the parliamentarian's expectations either towards a more optimistic or a more pessimistic view, depending on the content of the information for the average parliamentarian. With regard to gender effects, prior behavioral research finds that men are more overconfident than women, a finding that holds in particular for tasks perceived to be in the masculine domain such as financial decisions (Barber and Odean 2001) and also has an impact on political behavior (Ortoleva and Snowberg 2015). From this we predict male parliamentarians to be more optimistic than females to keep their state on track towards compliance with the constitutional rule.

Potential concerns about proper identification arise from sample selection, as responding to the survey was voluntary and not all parliamentarians responded. To assess whether this introduces a bias to our estimates, we run a unit non-response analysis using the full sample of all state parliamentarians in both survey waves. Details of this analysis are presented in Appendix B. We regress a dummy variable that is equal to one if a parliamentarian responded to the survey on

several parliamentarian characteristics in a probit model. While we find that some of these significantly affect the response probability, we also observe that these effects are constant over time and, importantly, not conditional on parliamentarians' expectations with regard to the compliance of their state with the debt brake. Hence, our results are unlikely to be driven by selection bias: we can account for selection based on parliamentarian characteristics by controlling for time-varying parliamentarian attributes and including parliamentarian fixed effects.

During the survey period 2011-2016 there were 13 parliamentary elections on the state level of which eight resulted in a change of the composition of the governing coalition. Changes in government participation can arguably be considered as exogenous events from the parliamentarian's perspective in the sense that an individual parliamentarian's future expectations of fiscal rule compliance are unlikely to affect the probability of his party being part of a governing coalition. There are several reasons for this. First, both the election of an individual parliamentarian and the election outcome as well as the government formation as a whole are relatively uncertain, and not easily influenced by an individual parliamentarian's opinion. Second, the timing of the survey ensured that parliamentarians received the survey in the middle of their term when re-election considerations are not very relevant. Finally, fiscal rule compliance did not play a major role in any of the state-level election campaigns. A Google Trends analysis supports the latter observation. Within a window of fourteen weeks around the election we compare the frequency of searches for "debt brake" or "state indebtedness" from Google users in the respective state with a list of other terms representing other policy fields of importance for the state level ("education", "security", "unemployment", "economy", "environment"). We present the results in Appendix Figure A.4 for the elections in the three largest states with an election between our two survey waves (i.e. North Rhine-Westphalia, Bavaria and Lower Saxony). The results show that neither the term "debt brake" nor the more general term of "state indebtedness" played a significant role relative to other crucial state level topics. This result also holds for all other state elections between the survey waves (not reported).

When we consider ideological biases, we augment regression model (1) by dummy variables that indicate the party affiliation of the respondent. We chose the market-liberal FDP as reference case whose voters are particularly supportive for the debt brake (Hayo and Neumeier 2016).

We run linear models throughout the main analysis because of their simplicity and transparence and because the estimated coefficients are easier to interpret (Angrist and Pischke 2008). In robustness checks, we also run ordered logit regressions.

5 Empirical results

We begin with a general examination of the incumbency effect. Taking the full sample that includes both waves, column (1) of Table 3 presents the outcome when individual characteristics

are considered, as well as survey and state fixed effects, but time-varying fiscal variables are left out. We observe a strong and highly significant effect for incumbents, as measured by the dummy *GOVT*. Members of governing parties are more optimistic regarding compliance, by close to 1.4 points on the scale that ranges from -4 to +4. If we use respondent fixed effects (column 2), the incumbency effect becomes even larger by about 0.5.

Returning to column (1), consistent with male overconfidence, female politicians are more pessimistic, but membership in the budget committee does not seem to matter in a systematic way. Regarding political ideology, members of the populist AfD are substantially more pessimistic (almost two points) relative to the benchmark of the market liberal Free Democrats. This effect comes on top of the opposition effect (so far the AfD has never been part of a government coalition) since we control for the different perspective of government and opposition parliamentarians.

Table 3: Regression results, incumbency bias

	Full sample		Wave 1	Wave 2	Comparison groups (see Table 4)			
					(i) Govt. in both waves vs. switch to opp. in wave 2	(ii) Opp. in both waves vs. switch to govt. in wave 2	(iii) Opp. in both waves vs. switch to opp. in wave 2	(iv) Govt. in both waves vs. switch to govt. in wave 2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GOVT	1.390***	1.878***	0.715***	2.121***	2.864***	2.433***	1.346*	0.935
	(0.140)	(0.477)	(0.204)	(0.182)	(0.687)	(0.765)	(0.701)	(0.763)
AFD member	-1.923***			-1.362**				
	(0.435)			(0.530)				
CDU/CSU member	0.111		-0.096	0.110				
	(0.281)		(0.383)	(0.392)				
Greens member	0.495		0.138	0.199				
	(0.327)		(0.460)	(0.453)				
Left member	0.709*		0.983**	0.197				
	(0.376)		(0.490)	(0.544)				
SPD member	0.626		0.416	0.504				
	(0.412)		(0.406)	(0.405)				
Other party member	0.741**		0.551	0.401				
	(0.294)		(0.661)	(0.544)				
Female	-0.384**		-0.434**	-0.377*				
	(0.151)		(0.220)	(0.198)				
Age	0.006	0.068	0.012	-0.002	0.357*	0.002	0.381**	0.005
	(0.006)	(0.102)	(0.009)	(0.007)	(0.184)	(0.054)	(0.175)	(0.054)
Budget Committee	-0.072	0.046	-0.049	-0.158	-0.127	0.318	0.049	0.107
	(0.097)	(0.194)	(0.214)	(0.111)	(0.199)	(0.338)	(0.317)	(0.222)
State FE	Y	N	Y	Y	N	N	N	N
Respondent FE	N	Y	N	N	Y	Y	Y	Y
Survey wave FE	Y	Y	N	N	Y	Y	Y	Y
Observations	1,302	1,302	635	667	484	385	402	467
p-value for *F* stat. (excl. controls)	0.00	-	0.04	0.00	-	-	-	-
Adjusted R^2	0.321	0.438	0.236	0.446	0.285	0.535	0.440	0.354

This table presents the regression results of an OLS model using specification (1). The dependent variable is the respondent's expectation about the compliance of his or her state. A detailed variable description is displayed in Table A.1. Regressions (1) and (2) include the full sample. Regression (3) and (4) include only responses in survey wave 1 and 2, respectively. Regression (5) compares parliamentarians that retain power to those that lose it. Regression (6) compares parliamentarians that gain power to those that never had power. Regression (7) compares parliamentarians that lose power to those that never had it. Regression (8) compares parliamentarians that retain power to those that gain it. Regression (1), (3) and (4) includes state fixed effects while regressions (2) and (5) to

(8) include respondent fixed effects. All regressions with the exception of (3) and (4) include survey wave fixed effects. Standard errors (adjusted for clustering at respondent level) are presented in parentheses. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.

Next, we analyze in more detail the incumbency effect. As a first step, we split the sample along the two waves and observe a strong difference in the incumbency effect over time. In wave 1 (column 3), the incumbency effect is positive (0.715) and highly significant, but in the order of one third of the size in wave 2 (column 4), and about half of what we observed in the full sample. The observed difference in the coefficient estimates for *GOVT* in columns (3) and (4) is highly statistically significant (*t*-statistic 5.34, *p*-value 0.00). This finding suggests that the incumbency effect has become stronger over time.

We elaborate on this claim by further disentangling the treatment and control groups in our sample. Effectively, there are four sets of comparisons from which we identify the incumbency effect in our analysis, summarized in Table 4: (i) among parliamentarians that were part of the government coalition in wave 1, compare those whose party lost power before wave 2 to those who retained it; (ii) among parliamentarians that were in the opposition in wave 1, compare those that joined the government coalition in wave 2 to those that did not; (iii) among parliamentarians that were in the opposition in wave 2, compare those that were part of the government coalition in wave 1 to those that were not; (iv) among parliamentarians that were in the government coalition in wave 2, compare those that were part of the government coalition in wave 1 to those that were not. Columns (1) and (2) of Table 3 present specifications that estimate the average incumbency effect across these four groups, while columns (5)-(8) present the estimated effect for each sub-group.

In columns (5) and (6) the two groups share the same role in wave 1 (both in opposition or both in government), but differ in wave 2, while in columns (7) and (8) the common position is in wave 2, but not in wave 1. Finding differences in results across these two groups of regressions speaks therefore to the incumbency effect over time.

Table 4: Comparisons in empirical analysis

	Comparison (i)		Comparison (ii)		Comparison (iii)		Comparison (iv)	
	1st group	2nd group	1st group	2nd group	1st group	2nd group	1st group	2nd group
Wave 1	Government	Government	Opposition	Opposition	Government	Opposition	Government	Opposition
Wave 2	Government	Opposition	Government	Opposition	Opposition	Opposition	Government	Government

This table displays the comparison groups used in the empirical analysis.

In column (5), we compare politicians who stayed in power over the two survey dates with those that were incumbents in the first wave, but not any more in the second. The former are much more optimistic than the latter by more than 2.8 points. Similarly, column (6) indicates that politicians that gained power are much more optimistic than those who never held power. By contrast, column (7) shows that losing power has a strong negative effect, because those who were not in

power in either wave are more pessimistic by about 1.3 points, but the effect is only marginally significant. The difference between those who stay in power to those who gain power (column 8) is insignificant.[8]

The results of Table 3 demonstrate the existence of a strong incumbency effect that rises over time. One may think that this is related to reelection chances, the power to influence fiscal policy until the debt brake becomes binding, and voter appreciation for compliance with the debt brake and the fiscal policy path towards rule compliance. We spell out this idea more formally in a theoretical model in Section 6, from which we derive implications that are consistent with a rising incumbency effect over time.

Table 5: Regression results, interaction with fiscal fundamentals

	(1)	(2)	(3)	(4)	(5)	(6)
GOVT	1.919***	2.074***	2.206***	1.797***	2.326***	1.888***
	(0.503)	(0.488)	(0.514)	(0.469)	(0.499)	(0.501)
GOVT × Balance (demeaned)		1.005***				
		(0.344)				
Balance (demeaned)	0.391	-0.425				
	(0.384)	(0.340)				
GOVT × Change debt			-0.116**			
			(0.057)			
Change Debt (demeaned)	-0.072		0.013			
	(0.090)		(0.048)			
GOVT × Log debt over GDP (demeaned)				0.360		
				(1.001)		
Log debt over GDP (demeaned)	0.832			1.059		
	(1.298)			(1.451)		
GOVT × Personnel exp. (demeaned)					0.005***	
					(0.002)	
Personnel exp. (demeaned)	-0.003				-0.008***	
	(0.004)				(0.003)	
GOVT × Interest payment (demeaned)						-0.073*
						(0.042)
Interest payment (demeaned)	-0.004					0.051
	(0.059)					(0.038)
Controls	Y	Y	Y	Y	Y	Y
Respondent FE	Y	Y	Y	Y	Y	Y
Survey wave FE	Y	Y	Y	Y	Y	Y
Observations	1,302	1,302	1,302	1,302	1,302	1,302
Adjusted R^2	0.436	0.451	0.444	0.437	0.452	0.441
F statistic $FISC_{st} + GOVT_{it} \cdot FISC_{st} = 0$	-	3.07*	4.21*	1.64	1.60	0.25

This table presents the regression results of an OLS model using specification (1). The dependent variable is the respondent's expectation about the compliance of his or her state. A detailed variable description is displayed in Table A.1. All regressions include controls for the respondent's age and membership in the parliamentary budget committee. Standard errors (adjusted for clustering at respondent level) are presented in parentheses. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.

Next, we analyze the incumbency effect and its interaction with fiscal variables, which are specified as deviations from their mean. In Table 5 we include fiscal variables individually and in interaction with *GOVT*. We first note the positive and highly significant incumbency effect that

[8] These differences in coefficients are also significant in a statistical sense when comparing column (5) vs. (7) (χ^2 statistic 17.34, *p*-value 0.00), column (5) vs. (8) (χ^2 statistic 3.22, *p*-value 0.07), and column (6) vs. (8) (χ^2 statistic 18.54, *p*-value 0.00). The difference for column (6) vs. (7) is insignificant (χ^2 statistic 0.98, *p*-value 0.32).

is found in all specifications, which in terms of size is comparable to the estimates for the full sample or wave 2 sample in Table 3. Note that we use demeaned interaction variables such that the estimated coefficient of *GOVT* reflects the incumbency effect at the average value of the respective fiscal variable. Turning to the fiscal variables, we find that they individually rarely matter on average as can be seen from the non-significant coefficient estimates for the fiscal variables in column (1) of Table 5.

There is, however, substantial heterogeneity in the effect of fiscal variables with respect to incumbency. When interacted with the *GOVT* variable, some fiscal variables are significant. A better budgetary situation with an increasing fiscal balance (column 2) and a falling debt level (column 3) leads to a more optimistic view by incumbent politicians. In both cases, we cannot reject that $FISC_{st} + GOVT_{it} \cdot FISC_{st} > 0$ (*F* statistics 3.07 and 4.21, respectively). Furthermore, the expectations of members of governing parties are not negatively affected by higher per capita expenditures on state employment, as can be seen from the non-significant sum of the coefficient for this fiscal variable and the coefficient for its interaction with the government dummy (*F* statistic 1.64, see column 5). A one percentage point increase in per capita expenditures leads to 0.005 increase on the answer scale, a relatively small effect. The interaction with interest payments is negative (with marginal significance) and confirms that improving fundamentals (i.e. falling interest rates) increase optimism stronger for government parliamentarians compared to the opposition although its average effect is not significantly different from zero (*F* statistic 0.25, see column 6).

We now turn to a plausibly exogenous event that influenced fiscal balances of states negatively, namely the arrival of refugees into Germany in 2015. In Table 6 we consider the full specification of regression (1), which includes now the dummy *POST* (for *FISC*) to reflect the influence of the refugee arrival. Column (1) confirms the findings on *GOVT* from Table 5 (column 1): The incumbency effect is of same significance and very similar magnitude (almost 1.4 points).[9] In the absence of interaction between the two dummies, the estimated coefficient of *POST* is negative. Hence, the sudden increase in inward migration appears to be a negative shock on the compliance expectations in German states. Parliamentarians that were aware of this shock (i.e. questioned after August 2015, indicated by *POST* = 1) were substantially more pessimistic with regard to the future debt brake compliance of their state. These two results are robust to including respondent fixed effects in column (2), and become rather bigger in absolute size, which is confirming what we found in Table 3. Column (3), however, indicates that the negative effect of

[9] It remains significantly positive also when considering interactions with the *POST* variable (i.e. the sum of the coefficients of $GOVT$ and $POST \times GOVT$ is highly significant with a *p*-value of 0.0002)

POST is concentrated among opposition parliamentarians and thus again largely driven by incumbency (i.e. we cannot reject that $POST + POST \times GOVT = 0$, *F* statistic 0.95, *p*-value 0.33). Incumbents are more optimistic to contain possibly adverse consequences of refugee immigration on fiscal sustainability. The effect is only marginally significant though.[10] These results are robust to including the interaction of *POST* with the full set of state and parliamentarian characteristics (see Table 2). Hence, differences in these variables for parliamentarians surveyed before and after August 2015 do not drive the results.

Table 6: Regression results, information shock through refugee migration

	(1)	(2)	(3)	(4)
POST	-0.925***	-1.493***	-2.169***	-5.424**
	(0.260)	(0.429)	(0.540)	(2.377)
GOVT × POST			1.453*	1.980***
			(0.788)	(0.737)
GOVT	1.376***	1.787***	1.606***	1.678***
	(0.140)	(0.488)	(0.514)	(0.539)
AFD member	-1.511***			
	(0.446)			
CDU/CSU member	0.180			
	(0.281)			
Greens member	0.540*			
	(0.327)			
Left member	0.809**			
	(0.372)			
SPD member	0.814***			
	(0.294)			
Other party member	0.654			
	(0.412)			
Female	-0.398***			
	(0.151)			
Age	0.004	0.090	0.114	0.089
	(0.006)	(0.134)	(0.145)	(0.122)
Budget Committee	-0.086	0.005	0.006	-0.001
	(0.097)	(0.192)	(0.191)	(0.208)
State FE	Y	N	N	N
Respondent FE	N	Y	Y	Y
Survey wave FE	Y	Y	Y	Y
Interaction of state and parliamentarian characteristics with POST	N	N	N	Y
Observations	1,302	1,302	1,302	1,302
p-value for *F* stat. (excl. controls)	0.00	-	-	-
Adjusted R^2	0.327	0.462	0.466	0.460

This table presents the regression results of an OLS model using specification (1). The dependent variable is the respondent's expectation about the compliance of his or her state. The specification in column (4) includes the interaction of POST and the time-varying

[10] Interestingly, our results for the interaction of the government dummy with fiscal fundamentals (deficit, debt and interest payments) in Table 5 and the refugee-related fiscal shock in Table 6 reveal different signs. A fiscally more adverse situation with higher deficits, debt and interest payments has a larger negative effect on compliance expectations of the government than on those of the opposition. For the refugee shock the sign of the interaction is reversed and government parliamentarians are more optimistic that the fiscal consequences from these events do not endanger rule compliance. One possible explanation is that deficits, debt and interest payments reflect fiscal fundamentals that are already realized whereas the fiscal consequences of the refugee shock are more uncertain and depend on the government's own future handling of the crisis. Hence, government parliamentarians should have a larger confidence to cope with this adverse development compared to the opposition. With this interpretation, the specific result is also in line with our reasoning on the asymmetric perceptions on rule compliance as a consequence of political competition.

parliamentarian-level control variables as well as with the demeaned state-level fiscal variables explored in Table 5 (Balance, Change Debt, Log debt over GDP, Personnel exp., Interest payment). Log debt over GDP is not included as an interaction due to its collinearity with Interest payment (see variable description in Table A.1). Standard errors (adjusted for clustering at respondent level) are presented in parentheses. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.

A caveat of the linear OLS regression model used in the main analysis is that it assumes that the dependent variable is cardinal, that is, that the increase in expected compliance is the same when moving from -3 to -2 as when moving from 2 to 3. If this assumption is violated, e.g. if the change in expected compliance is non-linear with respect to the chosen categories in our survey question, the OLS model is inconsistent. The effect is then better estimated by an ordered logit model that only assumes that the categories of the dependent variable are ordinally comparable. Although this appears to be less of a problem when there is a larger set of categories (Ferrer-i-Carbonell and Frijters 2004), we check the robustness of our main findings to the specification choice by replicating the main results of our analysis in an ordered logit estimation. Results are presented in the appendix (see Table A.4 and Table A.5) and are qualitatively similar. In these specifications, the dummy *GOVT* is always highly significant and positive, female politicians are somewhat and AfD politicians are strongly more pessimistic. The impact of fiscal fundamentals and the sudden increase in refugee migration is again heterogeneous with respect to incumbency of the respondent. The interaction between *GOVT* and *POST* is significant at the 5% level.

6 Theoretical model

In this section, we develop a model that delivers results consistent with our empirical findings about the incumbency effect. The model reflects the time structure of our two surveys and the implementation of the German debt brake and thus corresponds closely to the empirical analysis. At the same time, we believe that the two key assumptions, as highlighted below, are well motivated and may apply in other fiscal policy contexts.

The economy lasts for two periods. At the beginning of period 1, the government "inherits" an initial deficit D_0. This deficit prevails in period 1 if no action is taken. The deficit can be lowered by reduction measures R over the two periods though. The deficit at the end of period 1 and 2, respectively, are:

$$D_1 = D_0 - R_1 \quad (1)$$

$$D_2 = D_1 - R_2 + e, \quad (2)$$

where e represents a deficit shock with cumulative distribution $F(e)$ und density $f(e)$, which happens at the end of the period. The shock could stand for the uncertain fiscal fundamentals or the unknown outcome of vertical tax sharing agreements (i.e., the to be negotiated agreement between the federal government and the states that started in 2020). The fiscal rule that we consider is a balanced budget rule and requires

$$D_2 \leq 0. \tag{3}$$

In period 2, but before the shock realizes, the probability of complying with the fiscal rule is

$$Prob(D_2 \leq 0) = Prob(e \leq R_2 - D_1) = F(R_2 - D_1), \tag{4}$$

which depends on deficit reduction in period 2 and the inherited deficit from period 1, D_1, which in turn is determined by deficit reduction in period 1, R_1.

Deficit reduction is costly for the incumbent government in terms of popularity (because either expenditures are cut or taxes raised), which we capture in a reduced form by a strictly convex cost function $C(R) \geq 0$, with properties $C', C'' > 0$. Compliance with the fiscal rule gives a benefit of b (alternatively, one could assume that violation of the rule is costly). Importantly, we assume that b is split between the incumbents of periods 1 and 2 in some fixed way. If one party governs in period 1 and 2 it gets b, if only in period 1 it gets b_1, and if only in period 2 it gets b_2, where $b_1 + b_2 = b$.[11] This assumption reflects that a party with a long-lasting incumbency will receive a larger credit for compliance compared to a party with a shorter history in power. This is the first key assumption of our theoretical model.

In each period elections take place that determine the politician who implements the deficit reduction measure in that period. There are always two candidates: incumbent and opposition. At the beginning of period 1 there is an incumbent government, say party A, and the opposition, say party B. In the following four possible paths are feasible depending on election outcomes: AA (party A is twice reelected), AB (party A wins the first, but loses the second election), BA (party A first loses, but then wins), and BB (party A loses both elections). In the first and last case, the benefit b goes only to one party, whereas in the other two cases, the benefit is split.

As we are interested in the expectations in compliance with the balanced budget rule, we introduce subjective election winning beliefs by the incumbent $p^I \in [0,1]$ and the opposition $p^O \in [0,1]$. The incumbent believes to win with probability p^I, and similarly for the opposition; we assume that these probabilities are constant over time and are tied to the politician's role in the political arena (i.e., an incumbent in period 1 believes to win with probability p^I, but if next period that person is in opposition she believes to win with probability p^O).

Later we consider the role of joint optimism bias, that is, $p^I + p^O > 1$. This means that together the subjective winning probabilities are not rational, but it does not imply that an individ-

[11] In place of the fix benefit structure one could assume that the benefit is split according to the actual share of deficit reduction undertaken by each government. This would complicate things analytically and would require a more detailed memory on sides of voters. Since in our model there is no restriction on how large or small b_2 is, as long as $b_2 < b$, we believe that our modeling captures the main mechanism.

ual's beliefs are necessarily irrational: The sum of an individual's beliefs for the two events, winning and losing the election, always add to 1, that is, $p^I + (1 - p^I) = p^O + (1 - p^O) = 1$. The possible existence of an optimism bias is well-grounded in the behavioral literature on wishful thinking and overconfidence (see Section 1). The optimism bias is the second key assumption of our model.

We consider the compliance expectations of incumbents and opposition before the elections take place (as observed in our survey). Politicians are forward looking and anticipate the subsequent deficit reduction efforts, conditional on who wins the election.

Period 2

We start with the compliance expectations at the beginning of period 2, before elections take place. D_1 is given at this point. The deficit reduction effort in period 2 depends on who is elected because the benefit of compliance is split between the incumbents of period 1 and 2.

If the incumbent in period 2 is the same as in period 1, choosing R_2 the politician maximizes

$$bF(R_2 - D_1) - C(R_2), \tag{5}$$

that is, expected benefit from compliance minus deficit reduction cost. The first-order condition

$$bf(R_2 - D_1) - C'(R_2) = 0 \tag{6}$$

defines implicitly the optimal deficit reduction in period 2, $R_2^*(b, D_1)$. The second-order condition is satisfied if f' is not too positive (which holds, for example, when e is uniformly distributed).

If the elected incumbent in period 2 differs from incumbent in period 1, then the new incumbent maximizes $b_2F(R_2 - D_1) - C(R_2)$. Note the slight but important difference to (5). The first-order condition

$$b_2f(R_2 - D_1) - C'(R_2) = 0 \tag{7}$$

mirrors (6), with b being replaced by b_2, and defines optimal deficit reduction $R_2^*(b_2, D_1)$. In the following we will use $R_2^*(b_2)$ and $R_2^*(b)$ as shortcuts to simplify notation.

It is easy to show that optimal deficit reduction is rising in the benefit of compliance. Hence,

$$R_2^*(b) > R_2^*(b_2). \tag{8}$$

Reelected incumbents act more than newly elected incumbents.

We now turn to compliance expectations of the incumbent and opposition at the beginning of period 2 *before* elections are held. At this point, the incumbent is the winner of the previous election (in period 1). Using (4), her expected compliance in period 2, denoted by a capital letter, is

$$P_2^I = p^I F(R_2^*(b) - D_1) + (1 - p^I) F(R_2^*(b_2) - D_1), \quad (9)$$

where the first term is the probability that the incumbent wins reelection and then undertakes optimal deficit reduction with the chance of winning benefit b, as described by (6), while the deficit reduction effort is smaller if the opposition wins, which is expected with probability $(1 - p^I)$.

By contrast, from the viewpoint of the *opposition* expected compliance is given by

$$P_2^O = p^O F(R_2^*(b_2) - D_1) + (1 - p^O) F(R_2^*(b) - D_1), \quad (10)$$

which mirrors the incumbent's expectation (9), with a difference in the subjective winning probability.

The difference in expectations between incumbent and opposition is therefore

$$\Delta P_2 = P_2^I - P_2^O = (p^I + p^O - 1)[F(R_2^*(b) - D_1) - F(R_2^*(b_2) - D_1)]. \quad (11)$$

The term in square brackets is positive by (8), while the first term on the right hand side is positive if there exists a joint optimism bias, that is $p^I + p^O > 1$. This establishes the incumbency effect in period 2.

Period 1

We now turn to the first period. After election, the incumbent in that period chooses deficit reduction R_1 to maximize

$$p^I[bF(R_2^*(b) - D_1) - C(R_2^*(b))] + (1 - p^I)[b_1 F(R_2^*(b_2) - D_1) - C(R_2^*(b_2))] - C(R_1) \quad (12)$$

where $D_1 = D_0 - R_1$, and the expected deficit reduction in period 2 is given by the solution to (6) and (7), respectively. Using these, the following condition

$$p^I bf(R_2^*(b) - D_1) + (1 - p^I) bf(R_2^*(b_2) - D_1) - C'(R_1) \quad (13)$$

characterizes implicitly the optimal first period deficit reduction $R_1^*(D_0, b, b_2, p^I)$ or R_1^* for short.

We can now determine the compliance expectations prior to election in period 1. The *incumbent* from period 0, party A in the above example, expects compliance according to

$$\begin{aligned} P_1^I = p^I[&p^I F(R_2^*(b) - D_0 + R_1^*) + (1 - p^I) F(R_2^*(b_2) - D_0 + R_1^*))] \\ &+ (1 - p^I)[p^O F(R_2^*(b_2) - D_0 + R_1^*) + (1 - p^O) F(R_2^*(b) - D_0 + R_1^*))], \end{aligned} \quad (14)$$

where we have used $D_1 = D_0 - R_1^*$ in $F(R_2^*(.) - D_1)$. The top line is the probability when the initial incumbent gets reelected in period 1, and then has two further outcomes depending on

election outcome in period 2 (paths AA and AB), while the second line is the outcome when the initial incumbent loses the first election (paths BA and BB).

Similarly, the opposition expects

$$P_1^O = p^O[p^I F(R_2^*(b) - D_0 + R_1^*) + (1 - p^I)F(R_2^*(b_2) - D_0 + R_1^*))] \\ + (1 - p^O)[p^O F(R_2^*(b_2) - D_0 + R_1^*) + (1 - p^O)F(R_2^*(b) - D_0 + R_1^*))] \quad (15)$$

The top line now captures paths BB and BA, while the second line paths AB and AA. The only difference between (14) and (15) lies in the subjective winning probability term in front of the square brackets. Taking the difference between (14) and (15), we can write

$$\Delta P_1 = P_1^I - P_1^O = (p^I - p^O)(p^O + p^I - 1)\left[F\left(R_2^*(b) - D_0 + R_1^*\right)\right) - F(R_2^*(b_2) - D_0 + R_1^*)\Big], \quad (16)$$

which is positive under the assumption of optimism bias if $p^I > p^O$, since the term in square brackets is positive (see above).

The weaker (conditional) incumbency effect in period 1 compared to period 2 comes from the fact that incumbent and opposition have identical expected net benefits in period 1, conditional on winning the first election. This is not the case in period 2, however, as the deficit reduction effort is conditional on the identity of who wins due to differences in benefits from compliance.

As a final step, we compare the difference in expectations over time. We ask whether

$$\Delta P_1 = P_1^I - P_1^O < P_2^I - P_2^O = \Delta P_2?$$

Inserting from (11) and (16), and also using the fact that $D_1 = D_0 - R_1^*$, as given by the period 1 optimal deficit reduction characterized in (13), the inequality can be shown to hold whenever the condition of optimism bias holds. This establishes the increasing incumbency effect over time.

Our results are summarized more formally.

Proposition 1. *Assume that politicians suffer from an optimism bias:* $p^I + p^O > 1$.

a) At the beginning of period 1, compliance expectation of incumbents are more optimistic than those of the opposition if $p^I > p^O$.

b) At the beginning of period 2, compliance expectation of incumbents are more optimistic than those of the opposition.

c) Over time, the difference in compliance expectations between incumbents and opposition increases from period 1 to period 2.

One could use the model to consider the role of shocks on the information environment such as the unexpected refugee arrival during the second survey wave in our empirical analysis. In our model this could be captured by differentiating the expectations at the beginning of period 2 with respect to D_1. An increase in D_1 captures the negative effect on the perception of the fiscal environment of those politicians surveyed after the refugee arrival. The comparative statics of the difference in expectations (11), are ambiguous, as they depend on specific assumptions on the distribution function $F(e)$ and the cost function $C(R)$.[12]

7 Discussion and conclusions

Many governments use numerical fiscal rules to constrain public debt and support the sustainability of public budgets. Whether fiscal rules are effective, is hard to identify causally because rules are endogenous and exogenous variation is hard to come by. We contribute to the literature on fiscal rule effectiveness by assuming that an effective numerical rule should be reflected in positive compliance expectations of policymakers. To this end, we analyze the compliance expectations of individual members of all 16 state parliaments in Germany via unique data from two surveys, relating to compliance with the German debt brake.

We find a strong and increasing incumbency effect over time: Members of the government coalition are more optimistic than members from the opposition. We identify this effect using "within person" variation by exploiting cases of individual parliamentarians who change the roles between government and opposition between the two survey waves. Moreover, we are able to study asymmetries between government and opposition in the parliamentarians' expectational updating to an exogenous fiscal shock. Thus, our analytical design is able to disentangle the heterogeneity in compliance expectations that is a natural outcome of political competition from the more worrisome heterogeneity that is unrelated to the government-opposition contest. We show that the compliance pessimism of opposition politicians must be rather unrelated to the institutional features of the fiscal rule since it largely vanishes once a politicians switches from the opposition to the perspective of the responsible government.

In addition to the empirical contribution, we provide a theoretical explanation for the incumbency effect, which builds on insights from the literature on wishful thinking and overoptimism. Policymakers are assumed to suffer from an optimism bias regarding their subjective election winning probability. Voters attribute the benefit of compliance with the fiscal rule not only on the

[12] To see this, note that the gap in compliance expectations is unaffected if the density function $f(e)$ is flat, because in that case changes in deficit D_1 do not effect deficit reduction effort R_2 (as can be seen by differentiation of (6) or (7)). In general, however, the gap in expectations is affected by changes in D_1. The gap is decreasing if $\frac{f(R_2(b))C''(R_2(b))}{bf'(R_2(b))-C''(R_2(b))} < \frac{f(R_2(b_2))C''(R_2(b_2))}{bf'(R_2(b_2))-C''(R_2(b_2))}$, and increasing if the inequality is reversed, where f' is the derivative of the density function.

current incumbent government, but to some extent also to its predecessor who is partially responsible for the later (non-)compliance. Under these assumptions, our model predicts a pattern of expectations that is consistent with our key empirical findings of a positive incumbency effect that is increasing over time.

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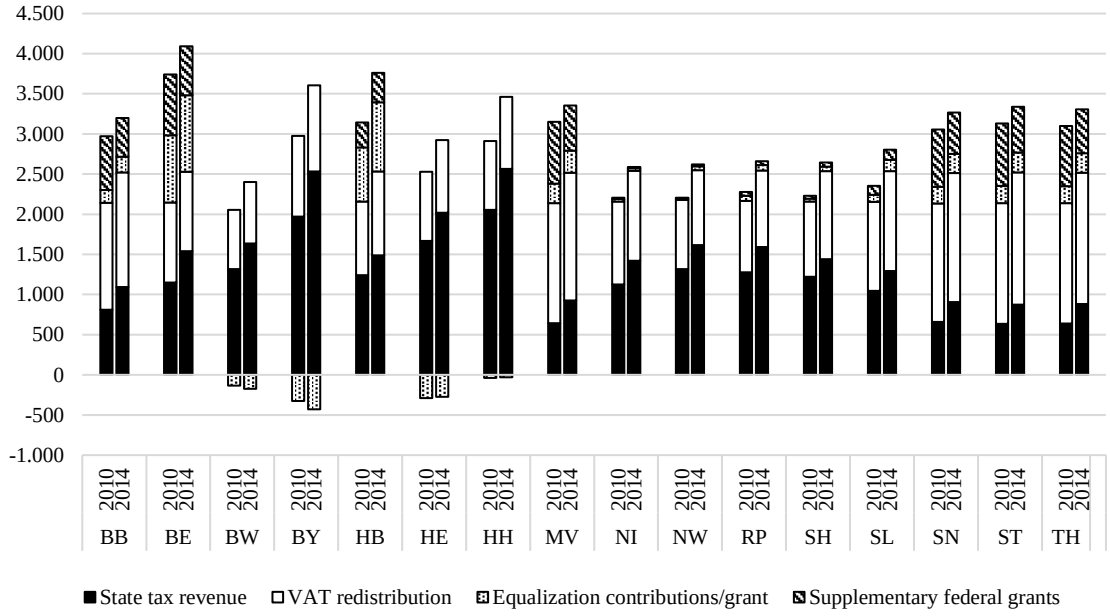
Appendix A: Additional tables and figures

Table A.1: Variable description

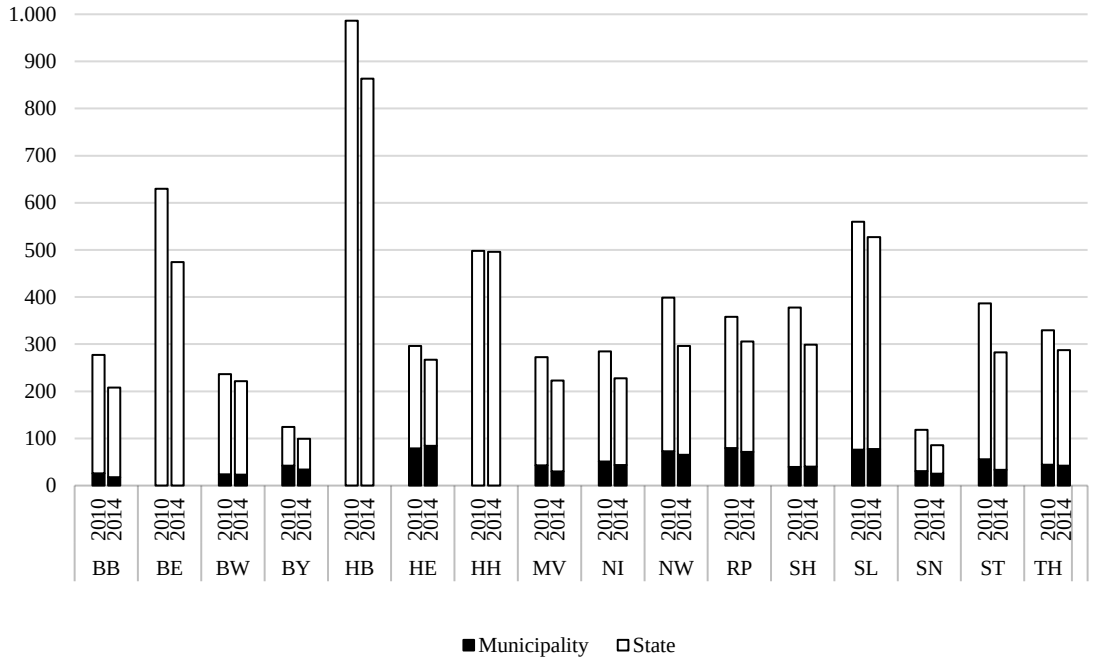
Variable	Description
Comply	Answer to survey question
GOVT	Dummy equal to one if respondent is member of a party in the governing coalition
Female	Dummy equal to one if the respondent is female
Age	Age of the respondent
Budget Committee	Dummy equal to one if the respondent is member of the parliamentary budget committee
AFD member	Dummy equal to one if the respondent is member of the AfD
CDU/CSU member	Dummy equal to one if the respondent is member of the CDU or CSU
FDP member	Dummy equal to one if the respondent is member of the FDP
Greens member	Dummy equal to one if the respondent is member of the Greens
Left member	Dummy equal to one if the respondent is member of the left party
SPD member	Dummy equal to one if the respondent is member of the SPD
Other party member	Dummy equal to one if the respondent is member of another party (except AfD, CDU, FDP, Greens, left party, SPD)
Personnel exp.	Per capita expenditure for public employees in the current year
Balance	Weighted avg. fiscal balance in the respondent's state in the last three years (weights: t-1 50%, t-2 30%, t-3 20%)
Interest payment	Interest payments to non-public sector divided by population in the respondent's state in the current year
Change debt	% change in the debt level in the respondent's state from last year to current year
Log debt over GDP	Logarithm of public debt per GDP in the respondent's state in the current year
POST	Dummy equal to one if questionnaire was returned in 2016

Figure A.1: Individual state fiscal capacity, 2010-2014 (per capita EUR, 2010 constant prices)



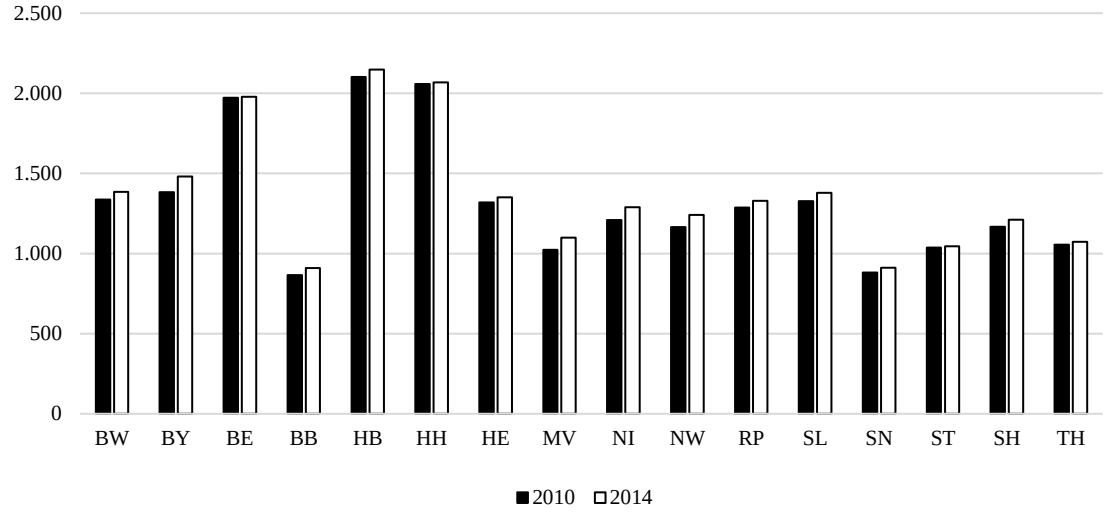
This figure displays the individual components of government revenue for each of the 16 German states in euros per capita for 2010 and 2014 (EUR, in constant 2010 prices). State tax revenue is the sum of a state's shares of income and corporation tax revenue as well as revenue from state taxes. VAT redistribution is the state's share of VAT revenue. Supplementary federal grants are grants from the federal government. Equalization contributions and grants are transfer payments between the states. Source: German Ministry of Finance. State abbreviations are as follows - BW: Baden-Württemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB: Bremen, HH: Hamburg, HE: Hesse, NI: Lower Saxony, MV: Mecklenburg-Western Pomerania, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia.

Figure A.2: Interest payments, 2010-2014 (per capita EUR, 2010 constant prices)



Notes: This figures presents the intereste payments for the 16 German states and their municipalities in 2010 and 2014 to the non-public sector per capita (EUR, in 2010 constant prices). The nominal amounts have been inflation adjusted (values in constant 2010 prices). Source: German Statistical Office (Destatis). State abbreviations are as follows - BW: Baden-Württemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB: Bremen, HH: Hamburg, HE: Hesse, NI: Lower Saxony, MV: Mecklenburg-Western Pomerania, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia.

Figure A.3: State expenditure on public sector employment, 2010-2014 (per capita EUR, 2010 constant prices)



Notes: This figures presents the per capita expenditure (EUR, in 2010 constant prices) for state personel of the 16 German states in 2010 and 2014. Source: German Statistical Office (Destatis). State abbreviations are as follows - BW: Baden-Württemberg, BY: Bavaria, BE: Berlin, BB: Brandenburg, HB: Bremen, HH: Hamburg, HE: Hesse, NI: Lower Saxony, MV: Mecklenburg-Western Pomerania, NW: North Rhine-Westphalia, RP: Rhineland-Palatinate, SL: Saarland, SN: Saxony, ST: Saxony-Anhalt, SH: Schleswig-Holstein, TH: Thuringia.

Table A.2: Number of responses before and after the substantial increase in migration to Germany in August 2015

	First survey wave	Second survey wave	
		Before August 31, 2015	After August 31, 2015
State	(POST = 0)	(POST = 0)	(POST = 1)
Baden-Württemberg	77	78	-
Bavaria	75	69	-
Berlin	30	38	-
Brandenburg	18	-	18
Bremen	18	-	24
Hamburg	39	-	27
Hesse	49	-	45
Mecklenburg Western Pomerania	17	23	-
Lower Saxony	54	54	-
North Rhine- Westphalia	51	84	-
Rhineland- Palatinate	48	52	-
Saarland	20	15	-
Saxony	45	-	39
Saxony-Anhalt	29	36	-
Schleswig-Holstein	29	31	-
Thuringia	36	-	34
Total	635	480	187

This table reports the number of respondents before and after the extent of the refugee migration into Germany became apparent through a public statement of the German government in August 2015.

Table A.3: Differences in means for control variables in survey wave 2, before and after the substantial increase in migration to Germany in August 2015

	Mean		Difference in Means
	POST = 0	POST = 1	(*t* statistic)
GOVT	0.537	0.481	0.056 (1.305)
Female	0.215	0.267	-0.053 (-1.457)
Age	54.802	51.230	3.572*** (4.025)
Budget Committee	0.502	0.417	0.085 (1.356)
AfD member	0.000	0.075	-0.075*** (-6.223)
CDU/CSU member	0.400	0.369	0.031 (0.736)
FDP member	0.056	0.037	0.019 (0.992)
Greens member	0.115	0.075	0.040 (1.513)
Left member	0.040	0.166	-0.126*** (-5.684)
SPD member	0.331	0.262	0.069 (1.735)
Other party member	0.058	0.016	0.042* (2.336)
Personnel exp.	1,444.923	1,514.713	-69.790* (-2.349)
Balance	-0.013	0.030	-0.043 (-1.345)
Interest payment	23.882	26.212	-2.330 (-1.741)
Change debt	-2.597	-5.225	2.628*** (5.645)
Log debt over GDP	3.259	3.108	0.151** (2.618)

This table reports the means and difference in means in control variables before and after the extent of the refugee migration into Germany became apparent through a public statement of the German government in August 2015. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.

Table A.4: Regression results, interaction with fiscal fundamentals (Ordered logit)

	Full sample		Wave 1	Wave 2	Full sample				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
GOVT	1.181***	4.186***	0.484***	2.170***	4.964***	5.990***	4.124***	5.436***	4.364***
	(0.123)	(1.212)	(0.162)	(0.199)	(1.339)	(1.506)	(1.389)	(1.350)	(1.509)
GOVT × Balance (demeaned)					2.737***				
					(0.906)				
Balance (demeaned)					-1.772**				
					(0.885)				
GOVT × Change debt						-0.506***			
						(0.193)			
Change Debt (demeaned)						-0.023			
						(0.129)			
GOVT × Log debt over GDP (demeaned)							0.179		
							(3.564)		
Log debt over GDP (demeaned)							3.003		
							(6.088)		
GOVT × Personnel exp. (demeaned)								0.013**	
								(0.005)	
Personnel exp. (demeaned)								-0.025***	
								(0.009)	
GOVT × Interest payment (demeaned)									-0.177
									(0.125)
Interest payment (demeaned)									0.197*
									(0.101)
Female	-0.303**		-0.407**	-0.288					
	(0.127)		(0.178)	(0.195)					
AFD member	-1.935***			-1.584***					
	(0.423)			(0.540)					
CDU/CSU member	0.125		-0.050	0.124					
	(0.233)		(0.320)	(0.359)					
Greens member	0.302		0.107	-0.171					
	(0.270)		(0.367)	(0.423)					
Left member	0.526*		0.548	0.141					
	(0.317)		(0.413)	(0.523)					
SPD member	0.481*		0.267	0.195					
	(0.248)		(0.339)	(0.384)					
Other party member	0.519		0.739	0.286					
	(0.373)		(0.698)	(0.536)					
Age	0.005		0.009	-0.001	0.918**	0.980**	0.781**	0.499	0.852**
	(0.005)	(0.350)	(0.007)	(0.007)	(0.363)	(0.385)	(0.369)	(0.350)	(0.350)
Budget Committee	-0.090	0.051	-0.031	-0.207*	0.084	-0.457	0.048	-0.095	-0.148
	(0.083)	(0.492)	(0.178)	(0.110)	(0.526)	(0.555)	(0.487)	(0.483)	(0.518)
State FE	Y	N	Y	Y	N	N	N	N	N
Respondent FE	N	Y	N	N	Y	Y	Y	Y	Y
Survey wave FE	Y	Y	N	N	Y	Y	Y	Y	Y
Observations	1,302	1,302	635	667	1,302	1,302	1,302	1,302	1,302
p-value for χ^2 (excl. controls)	0.03	-	0.15	0.01	-	-	-	-	-
p-value $FISC_{st} + GOVT_{it} \cdot FISC_{st} = 0$	-	-	-	-	0.01	0.01	0.70	0.01	0.11

This table presents the regression results of an Ordered logit model using specification (1). The dependent variable is the respondent's expectation about the compliance of his or her state. A detailed variable description is displayed in Table A.1. Standard errors (adjusted for clustering at respondent level) are presented in parentheses. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.

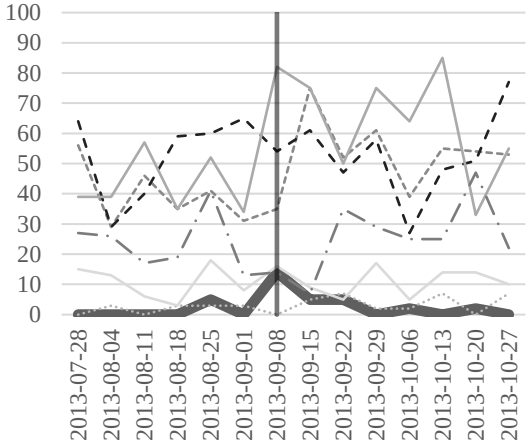
Table A.5: Regression results, information shock through refugee migration (Ordered logit)

	(1)	(2)	(3)
POST	-0.786***	-3.987***	-6.112***
	(0.228)	(1.355)	(1.572)
GOVT × POST			5.676**
			(2.649)
GOVT	1.171***	3.990***	3.197**
	(0.122)	(1.362)	(1.413)
AFD member	-1.602***		
	(0.434)		
CDU/CSU member	0.181		
	(0.237)		
Greens member	0.338		
	(0.271)		
Left member	0.574*		
	(0.320)		
SPD member	0.550**		
	(0.252)		
Other party member	0.534		
	(0.380)		
Female	-0.325**		
	(0.127)		
Age	0.003	1.099***	1.290***
	(0.005)	(0.399)	(0.388)
Budget Committee	-0.107	-0.053	-0.055
	(0.083)	(0.493)	(0.479)
State FE	Y	N	N
Respondent FE	N	Y	Y
Survey wave FE	Y	Y	Y
Observations	1,302	1,302	1,302
p-value for χ^2 (excl. controls)	0.00	-	-
p-value $POST_{it} + GOVT_{it} \cdot POST_{it} = 0$	-	-	0.83

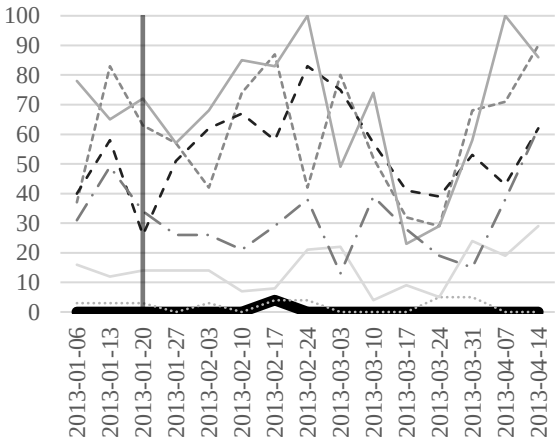
This table presents the regression results of an Ordered logit model using specification (1). The dependent variable is the respondent's expectation about the compliance of his or her state. A detailed variable description is displayed in Table A.1. Standard errors (adjusted for clustering at respondent level) are presented in parentheses. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.

Figure A.4: Google trends on topic salience around state elections

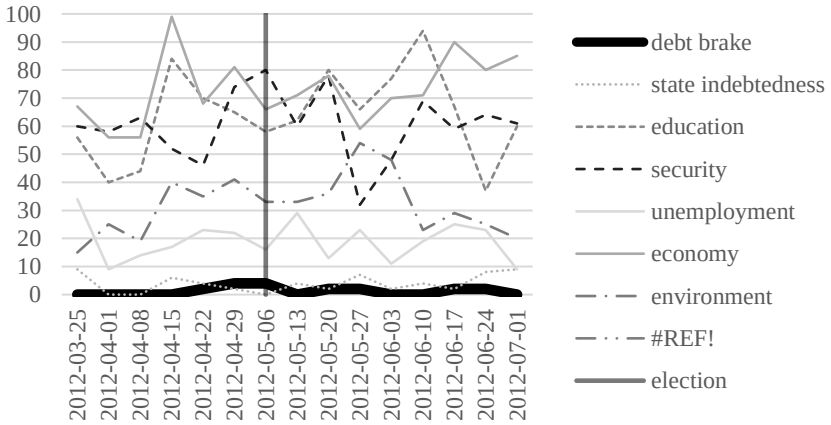
(a) State election in Bavaria (2013)



(b) State election in Lower Saxony (2013)



(c) State election in North Rhine-Westphalia (2012)



Notes: Results from a comparative Google Trend search, search limited to research requests from Google users in the sta. Data normalized with 100 as the most frequent search term throughout the period. The vertical line in all figures represents the date of the election

Appendix B: Unit non-response analysis

In order to assess whether the selection of certain types of parliamentarians into the sample of survey respondents affects our results, we conduct a unit non-response analysis in which we use the full sample of state parliamentarians in Germany during both survey waves. In a probit regression model, we relate a dummy variable that is equal to one if a parliamentarian has responded to several parliamentarian characteristics. The results of this analysis are presented in Table B.1. Columns (1) and (2) present the results for waves 1 and 2, respectively. In both waves, members of the government coalition were less likely to respond while older parliamentarians and those who were members of the budget committee were more likely to respond. This implies that it is important to control for these variables as we do in the main regression analysis. Importantly, the effect of these time-varying parliamentarian characteristics on the response probability does not significantly change from wave 1 to wave 2. Hence, the incumbency effect, which is identified from changes within individual parliamentarians, is unlikely to be biased due to selection on these characteristics. In addition to time-varying characteristics, parliamentarian-fixed characteristics such as party membership, gender and economics education also affect the response probability. These characteristics are fully captured by the parliamentarian fixed effects in our main regression model.

A remaining concern is that parliamentarians' response probability changes over time when they (through decisions on the party level) switch between opposition and supporting the government coalition. In particular, such changes in the probability might be conditional on the stated compliance expectation of the parliamentarian in the first survey wave. For example, if parliamentarians that switch from opposition to government between the two waves are less likely to respond in wave 2 if they were more pessimistic in wave 1, we would overestimate the incumbency effect, as identified from comparing parliamentarians that switch from opposition to government to those that stay in opposition, because the potentially pessimistic government coalition members in wave 2 would have been endogenously selected out of the sample.

In columns (3) to (6), we assess this potential bias by rerunning the probit model on the sample of parliamentarians that have responded in wave 1, such that we know their compliance expectation, and stayed in parliament throughout wave 1 and 2. The dependent variable then is a dummy that indicates whether parliamentarians responded in wave 1 and 2 (or responded in wave 2, conditional on having responded in wave 1). The explanatory variables now include dummy variables that indicate whether a parliamentarian stayed in the government coalition or opposition or switched between these groups. These dummy variables are also interacted with the parliamentarian's stated compliance expectation in wave 1 to estimate possible unit non-response with respect to incumbency conditional on the compliance expectation in wave 1. In each of the columns

(3)-(6), we exclude one of the four possible parliamentarian groups (staying in government, staying in opposition, switching from opposition to government, switching from government to opposition) which serves as a baseline in the regression to compare the other groups to. We find that parliamentarians which are government coalition (opposition) members in both waves are significantly less (more) likely to respond, which is consistent with our results on the individual survey waves. Similarly, parliamentarians that switch to opposition are more likely to respond in wave 2. However, we estimate no significant coefficient for any of the interaction terms between the incumbency changes and the compliance expectation in wave 1. Hence, the bias described above is unlikely to drive our results.

To conclude, the unit non-response analysis shows that the response probability is significantly affected by parliamentarian characteristics. However, these effects are constant over time and not conditional on parliamentarians' expectations with regard to the compliance of their state with the debt brake. Hence, we can account for this selection by controlling for time-varying parliamentarian characteristics and including parliamentarian fixed effects.

Table B.1: Unit non-response analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	All MPs in office during survey		All MPs in office during survey wave 1 & 2 and responding in wave 1			
	wave 1	wave 2				
GOVT	-0.222***	-0.141*				
	(0.067)	(0.074)				
Age	0.005	0.005*				
	(0.003)	(0.003)				
Budget Committee	0.331***	0.222***				
	(0.082)	(0.044)				
Compliance exp. (wave 1)			0.113	0.023	-0.019	0.138*
			(0.079)	(0.075)	(0.057)	(0.071)
GOVT_TO_OPP				0.204	0.031	0.575*
				(0.402)	(0.298)	(0.320)
GOVT_TO_OPP × Comply (wave 1)				0.090	0.132	-0.024
				(0.109)	(0.098)	(0.107)
OPP_TO_GOVT			-0.204		-0.173	0.371
			(0.402)		(0.321)	(0.323)
OPP_TO_GOVT × Comply (wave 1)			-0.090		0.042	-0.114
			(0.109)		(0.093)	(0.103)
STAY_IN_OPP			-0.031	0.173		0.544**
			(0.298)	(0.321)		(0.251)
STAY_IN_OPP × Comply (wave 1)			-0.132	-0.042		-0.156
			(0.098)	(0.093)		(0.095)
STAY_IN_GOVT			-0.575*	-0.371	-0.544**	
			(0.320)	(0.323)	(0.251)	
STAY_IN_GOVT × Comply (wave 1)			0.024	0.114	0.156	
			(0.107)	(0.103)	(0.095)	
Female	-0.275***	-0.351***	-0.478**	-0.478**	-0.478**	-0.478**
	(0.069)	(0.069)	(0.213)	(0.213)	(0.213)	(0.213)
Economics education	0.173**	0.151*	0.011	0.011	0.011	0.011
	(0.087)	(0.082)	(0.212)	(0.212)	(0.212)	(0.212)
AFD member		-0.414				
		(0.256)				
CDU/CSU member	0.236*	-0.151	-0.037	-0.037	-0.037	-0.037
	(0.128)	(0.166)	(0.432)	(0.432)	(0.432)	(0.432)
Greens member	0.007	-0.319*	-0.381	-0.381	-0.381	-0.381
	(0.148)	(0.184)	(0.626)	(0.626)	(0.626)	(0.626)
Left member	-0.297*	-0.320*	0.110	0.110	0.110	0.110
	(0.159)	(0.187)	(0.580)	(0.580)	(0.580)	(0.580)
SPD member	0.008	-0.143	-0.068	-0.068	-0.068	-0.068
	(0.132)	(0.175)	(0.501)	(0.501)	(0.501)	(0.501)
Other party member	-0.115	-0.234	-0.068	-0.068	-0.068	-0.068
	(0.217)	(0.214)	(0.657)	(0.657)	(0.657)	(0.657)
Observations	1,861	1,861	232	232	232	232

This table presents the regression results of a probit model using specification. The dependent variable a dummy variable that is equal to one if the parliamentarian answered the survey in wave 1 and wave 2 in columns (1) and (2), respectively, and a dummy equal to 1 if the parliamentarian answered the survey in wave 2 in columns (3)-(6). GOVT_TO_OPP (OPP_TO_GOVT) is a dummy variable that is equal to one if the parliamentarian changed from the government coalition (opposition) to the opposition (government coalition) from wave 1 to wave 2. STAY_IN_OPP (STAY_IN_GOVT) is a dummy variable that is equal to one if the parliamentarian was in the opposition (government coalition) in both wave 1 and 2. Economics education is a dummy that is equal to one if the parliamentarian as a business or economics degree from a tertiary education institution. Definitions for the other explanatory variables can be found in Table A.1. Standard errors (adjusted for clustering at respondent level) are presented in parentheses. Stars behind coefficients indicate the significance level, * 10%, ** 5%, *** 1%.