Electoral Cycles in Macroeconomic Forecasts*

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Abstract

This paper documents the existence of electoral cycles in GDP growth forecasts released by governments. In a theoretical model of political selection, we show that governments release overly optimistic GDP growth forecasts ahead of elections to increase the reelection probability. The bias arises from lack of commitment if voters are rational and from manipulation of voters' beliefs if they do not expect the incumbent to be biased. Using high-frequency forecaster-level data from the United States, the United Kingdom, and Sweden, we document that governments overestimate short-term real GDP growth by 0.1–0.3 percentage points.

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JEL Classification: D72, D82, E37, H68

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1 Introduction

Elections empower voters to select the most preferred politician and ensure the accountability of elected officials. However, the empowerment is limited when voters lack sufficient knowledge regarding the traits of competing candidates. Often, voters use observable signals to infer crucial information about candidates before the election. For example, voters can use fiscal-policy outcomes and economic-performance indicators to learn about the incumbent's ability to handle the economy. Since voters lack sufficient information, the incumbent candidate can attempt to raise the reelection probability by adjusting the tax-collection and public-spending composition before an election. This is the well-known *Political Budget Cycle*.[1] When a political budget cycle is rampant and voters fail to consider its repercussions, elections fail to deliver an effective selection and good accountability of politicians.

This paper documents the existence of *Political Forecast Cycles* in GDP growth estimates released by governments. Policy outcomes and economic realizations help voters to learn about the incumbent government. However, elections often occur before the complete realization of policy decisions' effects on public goods or economic growth. Therefore, to thoroughly evaluate the incumbent candidate, voters need to form expectations about the future effects of policies. Forming such expectations is challenging, and voters need to seek readily available information.[2] Macroeconomic forecasts published by governments are publicly available and reported in mass media. Voters may use these forecasts when forming beliefs about the economy and the incumbent politician's ability. When voters interpret economic performance as a signal of a leader's ability, the incumbent leader can gain an electoral advantage by intentionally manipulating the forecasts released to the public before an election.[3] Hence, on top of strategically using fiscal policy, the incumbent government may also strategically use the policy-outcome forecasts to gain an electoral advantage.

The notion of politically compromised forecasts can be further motivated by anecdotal evidence. First, after the 2010 general election in the United Kingdom, the newly appointed government created the Office for Budget Responsibility for the primary purpose of providing unbiased forecasts and ending government interference with economic and fiscal forecasting (Giugliano, 2015, in the *Financial Times*). Second, former Prime

[1] The early literature by Nordhaus (1975) and MacRae (1977) on political business cycles provided models where politicians exploit the so-called Phillips curve by inflating the economy during election years to reduce unemployment. Rogoff and Sibert (1988) and Rogoff (1990) expanded the literature to variables such as taxes, government spending, and deficits, resulting in the vast literature on political budget cycles.

[2] Voters do not invest in costly information since the probability of casting the decisive vote is negligible (Downs, 1957).

[3] See, for example, Markus (1988, 1992) and Bagues and Esteve-Volart (2016) for empirical evidence that general economic conditions shape voters' support for the incumbent.

Minister Berlusconi of Italy reportedly claimed that his governments had created 1.5 million new jobs in the economy. Despite lacking evidence that Italy experienced such a large increase in occupation over the period or that newly created jobs were due to the government intervention (Guzzi and Lisciandro, 2018), Berlusconi has continuously reported the figure, including during the 2018 campaign. Moreover, while it is natural to think of politically compromised forecasts as a feature of democracies, Martinez (2022) finds that official figures released by the government in dictatorships overestimate actual GDP growth by 35 percent.

We provide a theoretical rationale and empirical evidence of electoral incentives in macroeconomic forecasts released by the government. We show, in a theoretical model of political selection, that governments release overly optimistic GDP growth forecasts just before general elections. Using high-frequency forecaster-level data from the United States, the United Kingdom, and Sweden, we confirm key model predictions. We document that governments overestimate short-term real GDP growth by 0.1 – 0.3 percentage points during campaign periods. Furthermore, we find that the bias is larger when the incumbent government is not term-limited or constrained by a parliament led by the opposition. Consistent with the model, we also find that the election timing and amount of available information determine the size of the bias at different forecast horizons.

Our theoretical framework adapts the Persson and Tabellini (2002) model of political selection by allowing the government to release forecasts for GDP growth to the public. In the model, voters use the forecasts to update their beliefs about the incumbent's ability before casting a vote. The incumbent politician faces a trade-off between the accuracy of the released forecast (due to reputational concerns) and the incentive to bias the estimates to increase reelection probability.

The first prediction of the model is that the government releases overly optimistic GDP growth forecasts before an election. Hence, the model predicts the existence of political forecast cycles. Second, we show that the incumbent government biases its estimates only in the presence of contingent electoral incentives. For example, incumbents who can run for reelection are predicted to bias their forecasts more than term-limited incumbents. Third, we show that the bias depends on the political strength in parliament of the incumbent government. For instance, a government politically aligned with the parliament releases more biased estimates than a government facing a parliament controlled by the opposition. We can also interpret this prediction through the lens of Jones and Olken (2005). They show that there is a stronger link between individual leaders and economic growth when there are fewer constraints and checks and balances on a leader's power. In our model, the bias is larger when the link between the politician's ability and the economic outcome is stronger. For instance, when an opposition party controls the parliament or part of it, the government needs to negotiate with it in order to approve bills. Fourth, the month of the year in which elections occur predicts whether the gov-

ernment biases the forecasts targeting the election-year outcome or the following year's growth. In our model, biased forecasts for the election year's GDP growth are more effective in shaping the voters' beliefs. However, they are also more costly for the government than biased forecasts for the following year's outcome. When elections are held later in the year, the marginal cost of bias dominates the expected marginal benefit and the incumbent bias its forecasts for future growth rather than for growth in the election year. Fifth, incumbent governments will release relatively more biased estimates when electoral uncertainty is high (i.e., when they expect a close election) than when they expect to either win or lose the election. The intuition for this prediction is straightforward: the marginal benefit from releasing a biased forecast is much larger when elections are tight, while the marginal cost does not depend on electoral uncertainty.

To test the model's theoretical predictions, we propose an empirical strategy that allows us to identify cycles using country-level data even in the absence of sharp quasi-experiments. We exploit the multiplicity of agencies that release forecasts for a country's GDP growth on a high-frequency basis to compare forecasters targeting the same outcome. More specifically, our data allow us to identify electoral cycles by combining three different sources of variation. We compare forecasts released by the government with forecasts released by other institutions in the same period, forecasts released before the election and those released after it within the same year, and forecasts released in election years and those released in off-election years. The countries in our sample differ in terms of institutions since we include presidential and parliamentary democracies as well as majoritarian and proportional electoral systems. Also, the frequency and the timing of elections differ since we include countries voting every second year, countries voting more seldom, and countries voting both earlier and later in the year. These institutional differences strengthen our empirical results' external validity and allow us to test the theoretical predictions.

For all three countries, we detect large electoral cycles in the forecast bias for short-term real GDP growth. In other words, we detect the existence of political forecast cycles. In our estimations, we find that the coefficient of interest—which captures the additional impact of the pre-election months on the bias in government forecasts—ranges between 0.1 and 0.3 percentage points. As compared to average GDP growth in our samples (2.5% in the U.S., 1.6% in the U.K., and 2.3% in Sweden), our results suggest that governments overestimate economic performances by up to 13 percent ahead of elections.

Consistent with the theoretical predictions, we find that the election timing matters. Specifically, we find that, in the United States, where elections occur late in the year, the government releases biased forecasts targeting the following year instead of the election year. We find for the United Kingdom, where elections in our sample take place during the spring, a bias in the forecasts targeting the election year but not the following year. We find for Sweden, where elections take place in September, that the government releases

biased forecasts for both the election year's and the following year's outcome during campaign periods.

We take advantage of the presence of term limits and cases of divided government in the United States, as well as of data on the U.S. President's approval and historical opinion polls on forthcoming elections in Sweden to test the other theoretical predictions. Consistent with the model, the results show that the bias is more pronounced when i) the president has contingent individual reelection incentives, ii) the party of the president has the majority in both branches of Congress, and iii) elections are expected to be close. Thus, this highlights electoral incentives as the primary channel behind the evidence of the overestimation of GDP growth approaching elections.

The theoretical model also shows that it is inefficient to release biased forecasts if voters are rational—i.e., expect the government to overestimate economic growth—because it is costly to bias while the probability of being reelected does not increase in equilibrium. In contrast, if voters do not expect the government to release biased forecasts, the incumbent politician will gain electoral advantage from the bias since there would be an impact on posterior beliefs about the politicians' ability. Hence, the bias in equilibrium leads to an increase in reelection probability only in the case of naive voters, and, subsequently, the bias results in an incumbency advantage.

The inefficient outcome in the case of rational voters arises since the politicians cannot credibly commit not to bias and are forced to bias since voters expect them to. The data availability and institutional settings in Sweden and the United Kingdom allow us to evaluate two possible tools available to the government to commit not to bias. First, we exploit the reform after the 2010 general election that outsourced the government's primary forecasting function in the United Kingdom from the H.M. Treasury to the Office for Budget Responsibility (OBR). This reform was motivated by the notion of politically compromised forecasts and aimed to end government interference with economic and fiscal forecasting (Giugliano, 2015, in the *Financial Times*). Our results show that outsourcing the forecasting function reduced the overall forecast error compared to the period before the reform. However, it failed to reduce or eliminate the cyclical bias estimated in proximity to elections—suggesting that outsourcing does not necessarily represent a credible commitment device. Second, we exploit the heterogeneity across forecasters in the public sector in Sweden. Several public agencies provide forecasts that are independent of those released by the Ministry of Finance. We find that only the Ministry of Finance releases biased forecasts approaching elections. Other administrative agencies, which either are independent from the central government or have mild connections to it, release estimates that do not follow the election cycle. These results indicate that governments can limit the damage to voters generated by biased forecasts if other agencies release unbiased information to the public.

The empirical results presented in this paper document that governments overestimate

GDP growth ahead of elections and are consistent with a theoretical model of intentional manipulation. However, they are not conclusive about the underlying inter-governmental dynamics. Specifically, our data cannot disentangle between cases in which the government's internal forecasts are systematically biased ahead of an election—for instance, because of overconfidence during elections or a principal-agent dynamics between the political and bureaucratic staffs in the government—and cases of unbiased internal forecasts that are manipulated upon release to the public. We conduct a careful analysis of the potential mechanisms to highlight that all the available empirical evidence strongly indicates the attempt to influencing voters' beliefs is the key driver. Readers, however, should be aware that proving intentions with observational data is, as usual, complicated.

While our model only considers the potential loss to voter welfare, biased forecasts could also damage the economy from a broader perspective. Beaudry and Willems (2022) find that overly optimistic growth expectations cause a reduction in GDP growth in the following years. The effect is due to accumulation of both public and private debt. Coibion et al. (2018) show that firms care about macroeconomic variables such as GDP, inflation, and unemployment. They also show that firms update their beliefs (forecasts) when presented with forecasts from professionals. Furthermore, Tanaka et al. (2019) show that firms' GDP forecasts are associated with their investment and employment choices. Hence, biased forecasts could result in inefficient firm and household decisions if they fail to account for electoral incentives.

1.1 Related literature and contribution

This paper contributes to two strands of the literature. On the one hand, it contributes to the vast literature that studies electoral cycles.[4] Even though the literature predominantly covers political budget cycles and the underlying conditions, it is not limited to electoral cycles in fiscal policy. For example, Brown and Dinc (2005) and Dam and Koetter (2012) provide evidence for electoral cycles in bank bail-outs, and Müller (2020) identifies electoral cycles in macroprudential regulations.

Previous work on pre-election biased forecasts has focused on the government's manipulation of revenues and expenditures forecasts to expand their fiscal room for pre-election manipulation of fiscal policy. Bohn and Veiga (2021) develop a theoretical model of moral hazard in which overly optimistic revenue forecasts are used to increase pre-election ex-

[4] Empirical evidence of electoral cycles in fiscal policy is well established and can be found in, for example, Akhmedov and Zhuravskaya (2004); Alesina et al. (1992); Alesina and Paradisi (2017); Bartolini and Santolini (2009); Brender and Drazen (2013); Drazen and Eslava (2010); Repetto (2018); and Shi and Svensson (2006). The literature has also expanded to study the underlying conditions for political budget cycles: country development (Schuknecht, 1996), political fragmentation (Perotti and Kontopoulos, 2002), transparency and political polarization (Alt and Lassen, 2006), media freedom (Veiga et al., 2017), budget process and checks and balances (Saporiti and Streb, 2008), and politician characteristics (Hayo and Neumeier, 2012), to mention a few.

penditures and tested their theory using data from Portuguese municipalities. Boylan (2008) finds that U.S. states tend to overestimate revenues ahead of elections in the presence of a balanced-budget requirement. Similar results are found by Picchio and Santolini (2020) in Italian municipalities subject to fiscal rules. Other evidence of manipulation of fiscal policy forecasts has been found by Kauder et al. (2017) in East-Germany states and by Boukari and Veiga (2018) in Portuguese and French municipalities.[5]

We contribute in several dimensions to this area of research. First, we show another mechanism through which governments may find it optimal to release biased estimates. Specifically, overestimating economic outcomes may affect voters' beliefs on the incumbent politician's innate ability to deliver high economic growth. Second, we document that governments tend to release overly optimistic GDP growth estimates and that such biased estimates can arise even when the government does not manipulate fiscal policy. Third, we propose an empirical strategy that allows to identify government forecasting bias at the national level without relying on cross-country comparisons or on intranational governmental units. Fourth, we show that releasing biased forecasts is sufficient for generating an incumbency advantage if voters do not expect the government to release biased estimates. Thus, we also extend the literature on the mechanisms behind incumbency advantages, often observed in the data.[6] Lastly, we document how political forecast cycles evolve within the election year. Previous studies, to our knowledge, identified cycles either comparing the election year (or the year before) with the other years in a term. Conversely, our identifying variation allows to compare the government's behavior in the months just before and just after the election date.

On the other hand, we contribute to research on strategic incentives of macroeconomic forecaster (e.g., Laster et al., 1999; Marinovic et al., 2013) by establishing the different trade-offs faced by the government as compared to private forecasters. This paper generalizes the work in Cipullo and Reslow (2021), which introduces the concept of electoral incentives of macroeconomic forecasters theoretically and empirically. The analysis in Cipullo and Reslow (2021) is limited to cases of referenda with substantial potential consequences for the economy. This paper shows that governments systematically released biased estimates approaching each election.

The results in this paper also highlight a need for watchfulness in the macroeconomic

[5] Others have drawn attention to cognitive biases worsening the quality of the forecasts in abnormal macroeconomic periods (Krause, 2006) and depending on party ideology (Frendreis and Tatalovich, 2000). Krause et al. (2006) isolate the relationship between political incentives and government revenue forecasts by comparing the U.S. states in which the forecasting function is controlled by a combination of politically appointed and merit-selected subordinates, with states in which the forecasting function is completely controlled by politically appointed staff.

[6] The existence of an incumbency advantage has empirically been confirmed in numerous papers (e.g., Erikson, 1971; Freier, 2015; Gelman and King, 1990; Lee, 2008) There are several commonly invoked sources of incumbency advantage: access to resources (such as staff) attached to legislative office, press coverage, name recognition, and pork-barrel spending.

literature. Macroeconomic forecasts are often used in research studying, for example, information rigidity (e.g., Coibion and Gorodnichenko, 2015) or economic uncertainty (e.g., Altig et al., 2020; Bomberger, 1996). Researchers need to be careful regarding the incentives of forecasters and consider that some of them, during certain periods, may face electoral incentives. For instance, greater disagreement between forecasters before an election might depend on both increased economic uncertainty and divergent electoral incentives.

2 Theoretical Framework

This section proposes a simple model to analyze the incentives that incumbent politicians face when releasing GDP growth forecasts before an election. For the purpose at hand, our model builds on the two-period career concern model from Persson and Tabellini (2002) by allowing for purely office-motivated politicians and exogenous fiscal policy as well as the forecasting function of the government.

2.1 Setup

Consider a two-period model of voters and one incumbent politician who will face a random opponent in an election held during the first period. In the first period, the incumbent politician implements a fiscal policy and is tasked with supplying forecasts about the economy to the public. When the incumbent politician releases the forecasts, they can decide whether to release the best (unbiased) prediction or release manipulated (biased) information. After the election, the winner implements a fiscal policy during the second period.

Neither voters nor the incumbent politician perfectly observe the current or future state of the economy. However, they do know the structure of the economy and prior distributions of relevant variables. In addition, the incumbent politician receives noisy unbiased information about the economy. Before the election, the incumbent politician releases the forecasts, and voters use noisy media reports on the released forecasts when deciding on whom to support.

The politician in office is office-motivated and receives an exogenous rent from holding office. This rent is zero otherwise. When incumbents release the forecasts, they face a trade-off between the accuracy of the forecasts and the incentive to overestimate the state of the economy to increase the reelection probability. Voters aim to elect the politicians that yield the highest future economic outcome, net of ideological preferences, which are orthogonal to the economy.

In this political economy, the economic outcome comes as a combination of fiscal policy and an idiosyncratic shock to productivity. We think of GDP growth as the economic

outcome. In each period, the incumbent politician implements a fiscal policy that comes exogenously as a function of their innate ability. Formally, the economic outcome is given by

$$y_T = \lambda \eta^P + \nu_T \quad \forall\, T \in \{1, 2\}, \tag{1}$$

where $\eta^P \sim \mathcal{N}(\bar{\eta}, \tau_\eta^{-1})$ is the innate ability of the politician in office, and $\nu_T \sim \mathcal{N}(0, \tau_\nu^{-1})$ is a productivity shock, orthogonal to η^P. The politician's true ability is unobserved by all individuals in the economy, including the politician itself. The parameter $\lambda \in (0, 1)$, known to all individuals in the economy, represents the fiscal-policy transformation from the ability to the performance of the economy.[7] According to (1), the politician in this model is not endowed with a tool to manipulate fiscal policy to increase the probability of reelection. This assumption keeps the model more tractable and allows us to show that bias in macroeconomic forecasts directly impacts electoral success. The model consists of two periods, $T = \{1, 2\}$. We think of a period as a calendar year. The election is held during period one at time $t \in (0, 1)$. We define t such that $t \to 0$ represents the beginning of period one, and $t \to 1$ represents the end of period one. Figure 1 illustrates the timing of the model.

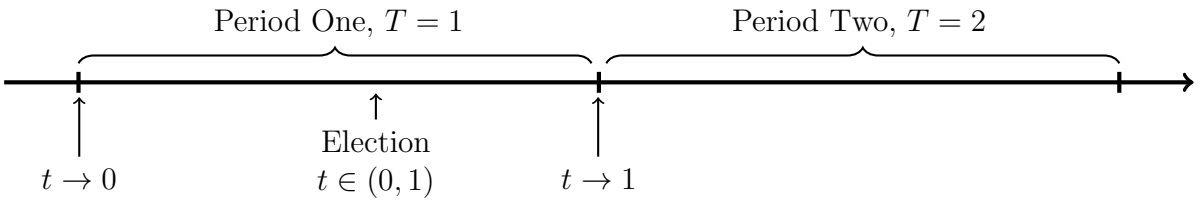

Figure 1: Timing Illustration

2.2 Information

The true state of the economy, y_T, is unobserved by voters and the incumbent politician. However, just before the election takes place, at point t of the first period, the incumbent receives two private signals about the future realizations of the economy.[8] Formally, the politician observes

$$\widetilde{y}_T = y_T + \varepsilon_T, \tag{2}$$

[7] See, for example, Meriläinen (2022) for a study of the links between politician quality and fiscal policy, Besley et al. (2011) for the link between leader education and economic growth, and Jones and Olken (2005) who show that changes in political leadership lead to changes in economic growth.

[8] To reduce the number of timing parameters in the model, we assume that the signals arrive and the forecasts are released at the same time as the election is held.

where $\varepsilon_T \sim \mathcal{N}(0, \tau_{\varepsilon_{T,t}}^{-1})$ is a random error. Hence, the government observes signals for both periods' outcomes.[9] To model the fact that signals about outcomes further into the future are noisier, we assume that $\tau_{\varepsilon_{T,t}} = \tau^{\frac{1}{h}}$, where $\tau > 1$ is a scaling parameter and $h = T - t$ is defined to be the forecast horizon. The forecast horizon measures the distance between the realization of the outcome and the release of the forecast. The true state of the economy in a given period T is revealed to both voters and the politician as the period ends.

The shape of the functional form of the signal precision $\tau_{\varepsilon_{T,t}}$ accounts for the fact that the precision in the signals that the incumbent politician receives decreases non-linearly in the forecast horizon when forecasting annual growth rates. When the election is scheduled at the beginning of the period, then $t \to 0$ and $\tau_{\varepsilon_{1,t}} \to \tau$ while $\tau_{\varepsilon_{2,t}} \to \tau^{\frac{1}{2}}$. Conversely, if the election takes place at the end of the period, then $t \to 1$ and $\tau_{\varepsilon_{1,t}} \to \infty$ while $\tau_{\varepsilon_{2,t}} \to \tau$. Hence, at $t \to 1$, the signal for the current year is received without noise and the government observes the true state.[10]

As mentioned before, the incumbent politician is tasked with supplying forecasts about the economy to the public. The politician first forms expectations about the economy using prior knowledge and the two signals

$$\mathbb{E}(y_T|\widetilde{y}_1, \widetilde{y}_2) = m_{0,T}\lambda\bar{\eta} + m_{1,T}\widetilde{y}_1 + m_{2,T}\widetilde{y}_2, \tag{3}$$

where $m_{0,T}$, $m_{1,T}$ and $m_{2,T}$ are optimal weights according to Bayesian updating.[11] Optimal weights reflect that the signal targeting a period $T \in \{1, 2\}$ is more informative for T than for the other target period $-T$. In turn, $m_{1,1} > m_{2,1}$ and $m_{1,2} < m_{2,2}$. The incumbent politician then releases separate forecasts for targets $T = \{1, 2\}$, which are potentially biased by an additive factor b_T:

$$F_T = \mathbb{E}(y_T|\widetilde{y}_1, \widetilde{y}_2) + b_T. \tag{4}$$

We assume that voters receive forecast information via mass media.[12] The media observes the forecasts and generates a noisy report

$$\widetilde{F}_T = F_T + e_T, \tag{5}$$

[9] Note that during period one, the economic policy in period two is not yet realized. Hence, the signal represents a reduced form expectation regarding the outcome—conditional on unchanged economic policies, such that it implicitly assumes reelection of the incumbent.

[10] See Figure A1a in the Appendix for an illustration of the signal precision as a function of t.

[11] Due to the common component $\lambda\eta^I$, the signal for the period one outcome, $\widetilde{y}_1$, is informative not only for the first period but also for the second period, and vice versa. See Section A.1 in the Appendix for the weights.

[12] See, for example, Durante and Knight (2012); Durante et al. (2019); Gentzkow et al. (2011); Knight and Tribin (2018) for the media's role in shaping beliefs as an information channel.

such that voters observe $\widetilde{F}_T$, where $e_T \sim \mathcal{N}(0, \tau_e^{-1})$ is a random media error. Noise in the media report reflects the observation that the media releases news articles in which the official figures are mitigated in longer pieces of information. The media noise also plays the technical role of keeping the model probabilistic from the politician's perspective.

2.3 Politician

The incumbent politician chooses an optimal bias in the forecasts by trading off accuracy of the estimates and the probability of reelection. Formally, politician I chooses b_1 and b_2 to maximize the expected utility

$$\max_{b_1,b_2} \quad \mathbb{E}\Big(p^I(\cdot)|\widetilde{y}_1, \widetilde{y}_2\Big)R - \sum_{T\in\{1,2\}} \tau_{\varepsilon_{T,t}}\big(b_T\big)^2, \tag{6}$$

where $p^I(\cdot)$ is the probability that politician I wins the election held in period 1. $R > 0$ is the exogenous rent for holding office, and b_T is the bias that the politician has the opportunity to add to the forecast for target period T.

We assume that the cost of biasing a forecast for a given target is quadratic in the bias.[13] We also assume that the marginal cost of a forecast error is increasing in the precision of the available information. Hence, it is not as costly to bias the forecast for the second period as it is for the first period since the available information is more precise for the first period. Therefore, we add to the cost component of (6) the precision in the signals, $\tau_{\varepsilon_{T,t}} = \tau^{\frac{1}{h}}$, as a scaling term.[14] Figure A1b in the Appendix illustrates the evolution of the cost structure in (6) as t moves from 0 to 1. The figure shows that the cost is relatively similar across the two target periods when the horizon is long and explodes for period one when t approaches 1 since the forecast horizon then approaches 0.

It is worth noting that the cost function is a reduced-form representation of a more complex process. One way to think about the cost function is as a reputation cost that negatively impacts future reelection probabilities and outside options of the politician who releases biased information. The willingness to maintain a reputation is often thought of as the mechanism that keeps politicians in check (see, e.g., Besley and Case, 1995a).

[13] Note that, according to (4), the bias is analogous with the expected forecast error. Quadratic loss of the forecast error is a standard assumption and the most common in the forecasting literature (see, e.g., Granger, 1999; Granger and Pesaran, 2000; Laster et al., 1999).

[14] The intuition for this assumption is as follows: When $t \to 1$, the politician has perfect information about y_1, but not about y_2. Hence, the cost of releasing a biased forecast should be approaching infinity for period one, but not for period two. See, for example, Andersson et al. (2017) for an analysis of the relationship between horizon and forecast error when forecasting annual growth rates.

2.4 Voters

Consider a continuum of voters indexed by i with total mass 1. We assume that voters have period-by-period linear preferences over policy outcomes represented by $W(y_T) = y_T$ and ideological preferences against the incumbent $\sigma_i \sim \mathcal{U}[-\frac{1}{2\phi}; \frac{1}{2\phi}]$ with density $\phi > 0$.[15] Hence, the utility of voters can be represented as

$$U_{i,T} = y_T - \sigma_i. \tag{7}$$

From (7) we see that voters care about the economy as well as having individual ideology preferences. The ideology parameter σ_i captures all policy preferences that are orthogonal to the economic outcome y_T.

At the time of election, prospective voters decide whether to support the incumbent from period one or the random opponent based on rational expectations over future economic performance.[16] Formally, voter i votes for the incumbent if and only if

$$\mathbb{E}\Big(y_2^I | \widetilde{F}_1, \widetilde{F}_2\Big) - \sigma_i \geq \mathbb{E}\Big(y_2^O | \widetilde{F}_1, \widetilde{F}_2\Big). \tag{8}$$

Given that the productivity shock in (1) is orthogonal to either politician's abilities, the unique component of y_2 that voters value for their decision is η^P. Therefore, voters use the forecasts on economic performance released by the incumbent government in period one as a signal of the innate ability η^I. The voter then decides whether to support the incumbent or vote for the random opponent with expected innate ability $\mathbb{E}(\eta^O) = \bar{\eta}$. Hence, we can rewrite the decision problem as

$$\mathbb{E}\Big(\lambda\eta^I | \widetilde{F}_1, \widetilde{F}_2\Big) - \sigma_i \geq \lambda\bar{\eta}. \tag{9}$$

The decision rule in (9) shows that voters cast their vote based on the comparison between the expected innate ability of the incumbent politician and the expected ability of the challenger. The expected ability of the incumbent is formed from observable information. In contrast, the expected ability of an opponent, drawn at random, is equal to the average ability $\bar{\eta}$.

Voters perform Bayesian updating using the prior distribution of abilities as well as the observed forecasts $\widetilde{F}_1$ and $\widetilde{F}_2$ to infer the ability of the incumbent politician. We assume voters to be rational (i.e., we assume voters to expect the politician to release biased estimates and to form Bayesian beliefs about the bias attached to forecast releases). We

[15] These assumptions about the voters' utility allow for an electorate that is not too polarized, so that at least some voters can be persuaded by the forecasts.

[16] Voters are prospective in the sense that the relevant utility outcome for the election decision regards future policies and economic outcomes. However, they are retrospective in their beliefs formation. Voters form beliefs conditional on already implemented policies and a static incumbent ability.

will compare the prediction of this model with a version in which voters are, instead, naive (i.e., they do not expect the incumbent to release biased estimates) in Section 2.7. Their posterior belief about $\lambda\eta^I$ is given by

$$\mathbb{E}\left(\lambda\eta^I|\widetilde{F}_1,\widetilde{F}_2\right)=\gamma_0\big(\lambda\bar{\eta}\big)+\gamma_1\big(\widetilde{F}_1-\mathbb{E}(b_1|\widetilde{F}_1,\widetilde{F}_2)\big)+\gamma_2\big(\widetilde{F}_2-\mathbb{E}(b_2|\widetilde{F}_1,\widetilde{F}_2)\big), \tag{10}$$

where γ_0, γ_1 and γ_2 represent the optimal weighting according to Bayes' rule.[17] Optimal weights are such that the observed forecast for $T=1$ is a more precise signal of the politicians' ability than the observed forecast for $T=2$ (i.e., $\gamma_1>\gamma_2$). In (10), $\mathbb{E}(b_T|\widetilde{F}_1,\widetilde{F}_2)$ represents the voters' posterior belief about the biases, consistent with all observables and Bayesian beliefs about unobservables. Hence, to form rational expectations about $\lambda\eta^I$, voters must take into account that they cannot perfectly identify the $\lambda\eta^I$ component in y_1 and y_2 due to the productivity shocks ν_T, and the errors in the signals ε_T. They also need to account for the media errors, e_T, and the potential bias, b_T, in the forecasts.

2.5 Equilibrium

Voters that are indifferent about the incumbent and the random opponent are denoted swing voters, and according to (9) they are defined by

$$\widetilde{\sigma}=\mathbb{E}\left(\lambda\eta^I|\widetilde{F}_1,\widetilde{F}_2\right)-\lambda\bar{\eta}. \tag{11}$$

All individuals who prefer the incumbent, and this preference is stronger or equal to the preference of the swing voters, will support the incumbent. Therefore, the equilibrium vote share for the incumbent politician is given by

$$\pi^I=\int_{-\frac{1}{2\phi}}^{\widetilde{\sigma}}\phi\;di=\frac{1}{2}+\phi\Big[\,\mathbb{E}\left(\lambda\eta^I|\widetilde{F}_1,\widetilde{F}_2\right)-\lambda\bar{\eta}\Big], \tag{12}$$

while the probability that the incumbent politician wins the electoral competition is equal to

$$p^I=P\left(\pi^I>\frac{1}{2}\right)=G\left(\mathbb{E}(\lambda\eta^I|\widetilde{F}_1,\widetilde{F}_2)\right), \tag{13}$$

[17] See Section A.1 in the Appendix for the weights and Figure A1c for the dynamics of γ_T with respect to the timing of the election. In the model, we assume that the voters only use forecasts published by the government. If voters were to have access to additional information or other forecasts, for example, from private forecasters, they would weight all the available information. Hence, the voters' weight on the government forecasts would be lower, and, in turn, the politicians' impact on voters' beliefs would be lower, but still present. See Cipullo and Reslow (2021) for a model with multiple forecasters.

where $G(\cdot)$ is the cumulative distribution function of the random variable $\lambda\bar{\eta} + \gamma_1 e_1 + \gamma_2 e_2 \sim \mathcal{N}\left(\lambda\bar{\eta}, \tau_e^{-1}(\gamma_1^2 + \gamma_2^2)\right)$.[18] Substituting (13) in (6), and taking politician's expectations over (10), the politician maximizes

$$\max_{b_1, b_2} \; G\Big(\mathbb{E}\left(\mathbb{E}(\lambda\eta^I|\widetilde{F}_1, \widetilde{F}_2)\big|\widetilde{y}_1, \widetilde{y}_2\right)\Big)R - \sum_{T\in\{1,2\}} \tau_{\varepsilon_{T,t}}\big(b_T\big)^2. \tag{14}$$

The first-order conditions with respect to b_T for an interior solution imply that

$$b_T = \frac{R\gamma_T}{2\tau_{\varepsilon_{T,t}}} g\Big(\mathbb{E}\left(\mathbb{E}(\lambda\eta^I|\widetilde{F}_1, \widetilde{F}_2)\big|\widetilde{y}_1, \widetilde{y}_2\right)\Big) \quad > 0, \tag{15}$$

$\forall\, T \in \{1, 2\}$, so that it is optimal for the government to release biased forecasts for both periods when approaching an election. In (15), $g(\cdot)$ is the probability density function associated with the cumulative distribution function $G(\cdot)$. In a Perfect Bayesian Equilibrium, voters' beliefs about the bias in the forecasts are consistent with optimal strategies, and strategies are optimal given consistent beliefs, such that

$$\mathbb{E}(b_T|\widetilde{F}_1, \widetilde{F}_2) = \frac{R\gamma_T}{2\tau_{\varepsilon_{T,t}}} g\Big(\mathbb{E}(\lambda\eta^I|\widetilde{F}_1, \widetilde{F}_2)\Big). \tag{16}$$

Finally, the politician's expectations over (16), which is needed to solve for (15), closes the model implicitly.

2.6 Model Predictions and Intuition

This section presents several testable model predictions and further intuition for how to interpret the model parameters. While some predictions can be derived directly from (15), we also solve the model using numerical methods to derive additional predictions.[19] The model predictions of interest are as follows.

Prediction 1: existence of bias. The first and main prediction of the model is the existence of bias. The model predicts that, in the run up to elections, the government will overestimate the forecast for both the election year (period one) and the following year (period two) to influence voters' beliefs. This overestimation generates an electoral cycle in the forecast bias of the government. The prediction follows directly from (15) and establishes a theoretical rationale behind the existence of political forecast cycles.

Prediction 2: electoral incentives. (15) shows that the bias is increasing in R. This prediction is not surprising since R captures the strength of the electoral incentives of the incumbent politician. Since term limits, which prevent incumbents from running for reelection, represent a case of reduction in R (see, e.g., Besley and Case, 1995a,b), the

[18] Hence, the random variable captures the uncertainty that arises due to the media error, e_T.

[19] See Table A1 in the Appendix for calibration of parameter values.

model predicts that term-limited incumbents will release more accurate forecasts than incumbents who can run for reelection.[20]

Prediction 3: divided government. λ determines the correlation between ability and economic growth. Hence, λ captures how strong the link between ability and economic growth is and can be interpreted to capture the incumbent government's political strength. Figure 2a shows that the optimally chosen bias is negligible for low values of λ (i.e., when the incumbent politician's ability plays a limited role in shaping the economy) and the bias increases when λ increases. The intuition is that, for higher values of λ, the marginal benefit from releasing biased forecasts is higher since economic growth is a strong predictor of the incumbent's ability. Instead, when λ is low, whether the economy is growing at a fast rate or not does not predict the incumbent's ability and, in turn, biased forecasts are not a viable option to increase the chances of re-election. Several examples of variations in λ are possible to make (trade barriers, fiscal or constitutional rules that limit the government intervention, relative strength of the government vs. the opposition). We will test this prediction empirically by exploiting cases in which the executive and the legislative are politically aligned or, conversely, they are controlled by alternative parties. In turn, λ is higher when the president is politically aligned with the parliament compared to when the government is divided. Therefore, the model predicts that the bias is reduced if the government is not aligned with the parliament. We can also interpret this prediction through the lens of Jones and Olken (2005). They show that there is a stronger link between individual leaders and economic growth when there are fewer constraints and checks and balances on a leader's power.

Prediction 4: election timing. The month of the year in which elections occur is a crucial ingredient of the model. Both the impact of a forecast on the voters' posterior belief about the incumbent's ability and the marginal cost of bias depend on the forecast horizon. In the model, the election timing is determined by the parameter t. More specifically, $t \to 0$ represents an election held in the beginning of the year. $t \to 1$, instead, indicates elections held at the end of the year. Figure 2b shows that the model predicts that politicians will strategically bias differently across the two available target periods, depending on t. For small values of t, the bias is comparable between the two targets. Although the period one forecast has a higher weight on voters' posterior beliefs about the incumbent's ability, the cost is also always higher for the first period than the second period. When t approaches one, the cost of biasing the forecast for the first period rapidly approaches infinity while the influence on voters' beliefs is bounded. Therefore, for large values of t, it becomes relatively more profitable for politicians to bias the forecast

[20] Harrington (1992) shows in an OLG model that infinitely lived parties that care for survival into office also after the end of the incumbent politician's career can induce the incumbent to trade individual incentives for partisan incentives. In such cases, R is lower, not zero, for term-limited incumbents. If parties do not affect the incumbent politician's incentives, term limits move R to zero. Our model, under both assumptions, predicts that term limits reduce the bias.

subject to only the longer horizon, even if this has a lower impact on voters' beliefs.[21]

(a) Divided Government (b) Election Timing

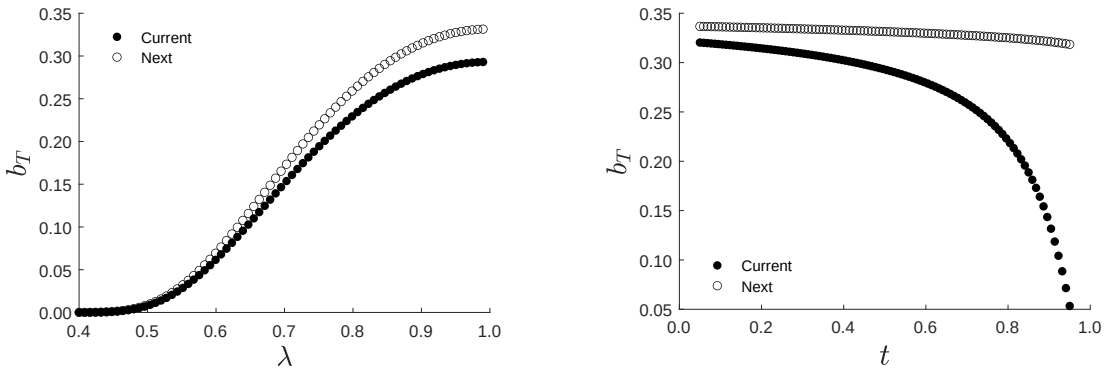

Figure 2: Model Predictions

Notes: Model predictions based on the calibration presented in Table A1. The filled dots represent the bias in the forecasts targeting the election period ($T = 1$) while the non-filled dots represent the bias in the forecasts targeting the following year ($T = 2$).

Prediction 5: electoral uncertainty. Electoral uncertainty is another key ingredient in the model. Formally, it is represented by the cumulative distribution function $G(\cdot)$ and by its partial derivatives with respect to b_T. Equation (15) shows that the bias depends positively on $g(\cdot)$. The intuition is straightforward: the incumbent politician's marginal benefit from releasing biased estimates is higher when $g(\cdot)$ is higher, while the marginal cost does not depend on electoral uncertainty.[22] Electoral uncertainty is measurable by relying on opinion polls; in turn, the model predicts that larger bias should arise when the incumbent expects a close election than when the incumbent foresees either a victory or a defeat.

2.7 Commitment vs. Manipulation

Suppose voters are rational and expect the government to release biased estimates. In this case, they can account for it in expectations, and the signaling tool used by the politician will represent a Pareto inefficiency. The bias is costly and neither increases the equilibrium probability of success nor helps voters sort out able incumbents in equilibrium.

[21] See Figure A1 in the Appendix for the signal precision, cost of bias, and impact on voter beliefs as a function of t.

[22] While, for simplicity, electoral uncertainty in the model is only generated by media errors, the same prediction would arise by introducing other aggregate shocks in the model. For instance, Persson and Tabellini (2002), introduce aggregate election uncertainty by assuming that voters cast their choice based on policy preferences, ideology, and an aggregate popularity shock in favor/against the incumbent.

However, politicians who cannot commit credibly not to bias are forced to do so as long as voters expect them to overestimate economic growth.

Suppose voters are naive in the sense that they do not expect the government to overestimate the economy intentionally. In this case, the politician will gain electoral advantage from the bias since posterior beliefs about the politicians' ability would be affected by its magnitude. Compared to a counterfactual world with no bias, voters then would be worse off because of systematic voting mistakes, and incumbent politicians would be better off thanks to an increased reelection probability.

We solve our model for the case of naive voters by imposing the condition $\mathbb{E}(b_T|\widetilde{F}_1, \widetilde{F}_2) = 0$ instead of (16). Voters perform Bayesian updating according to (10) but do not account for the bias, while the politician's expectations about voters' expectations are correct. Figure 3 documents that the probability of reelection is higher for any level of innate ability when voters are naive compared to when voters are rational. For instance, politicians with average innate ability have a probability of reelection equal to 50 percent when voters account for the bias. In contrast, the probability of reelection is higher under the assumption of naive voters.[23]

Hence, the overestimation of economic growth generates an incumbency advantage only if voters do not expect the government to release biased estimates. The bias is present both in the case of rational and naive voters, yet the mechanisms behind it and the consequences for the electoral competition change substantially. While the bias arises from lack of commitment under rational voters, it comes from manipulation of voters' beliefs if voters are naive.

3 Institutional Background and Data

We test the predictions of the theoretical model by exploiting high-frequency panel data at the forecaster level from the United States, Sweden, and the United Kingdom. We have data that contains the short-term (current and next year) real GDP growth forecasts from multiple forecasters for all three countries. The countries included in the sample are primarily selected because they satisfy our data availability needs. We require at least bi-annual releases from both the government and a pool of non-government forecasters—of which one release is before and one is after the election day. Multiple countries strengthen the external validity of our empirical results and allow us to test the theoretical predictions by including countries that are heterogeneous in terms of both electoral rules and institutions and the seasonality of elections and length of electoral cycles. We combine the forecast data with the latest available information (as of May 2022) on the actual realization of real GDP growth in each year from the OECD to measure the ex-post

[23] For ability levels further away from the average, the gain in the probability of reelection is attenuated.

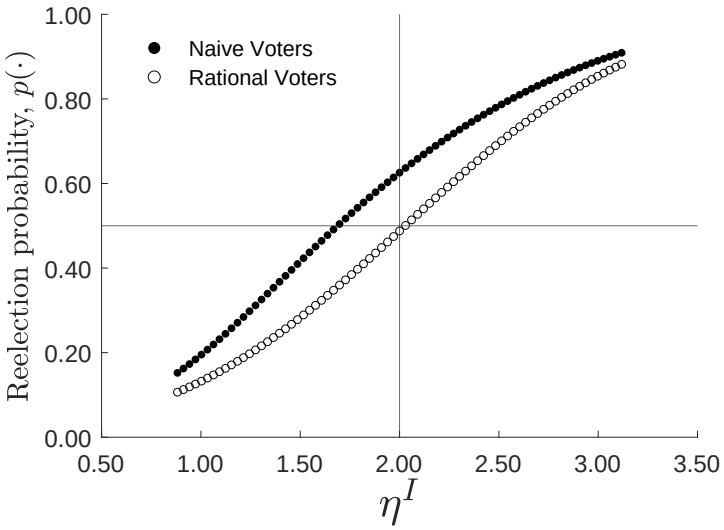

Figure 3: Reelection Probability under Rational and Naive Voters

Notes: Model prediction based on the calibration presented in Table A1. The filled dots represent the bias assuming naive voters while the non-filled dots represent the bias assuming rational voters. We illustrate the reelection probability for the ability levels (η^I) that lie within one-half standard deviation from the mean of 2.

forecast error.[24] In the remainder of this section, we summarize the relevant information about the form of government and national elections in the countries included in the sample as well as the sources and main qualities of the data.

3.1 United States

Background. The United States is a presidential democracy. The union is composed of fifty states, which elect their representatives to the national parliament (*Congress*) and participate in the election of the president. Elections at any level are held on the first Tuesday after the first Monday in November in even-numbered years.

Congress holds the legislative power and is formed by the *House of Representatives* and the *Senate*. The members of the House of Representatives serve two-year terms representing the people of a single constituency. The Senate members serve six-year terms, with staggered elections, so that every second year, approximately one-third of the Senate is up for election.

Presidential elections take place every fourth year.[25] The popular vote for the pres-

[24] GDP growth releases are subject to revision, and definition changes over time. This does not represent a concern to our analysis since real GDP growth is constant across forecaster that target the same country-by-year pair. Moreover, in Section 6 we show that the results are not affected by the chosen measure of ex-post realization of real GDP growth.

[25] If the president resigns at some point during the term, the vice president steps in until the natural end

ident is indirect. Each state is assigned as many delegates to the *Electoral College* as its number of Congress members, and each state has the authority to determine whether to assign all its delegates to the candidate with the most votes or proportionally.[26] Incumbent presidents are term-limited after two consecutive terms. The variation in the timing of elections has generated relatively many cases of *Divided Government*, in which the party of the president does not have the support of the majority of both branches of Congress.

Data. We build our panel of forecasts based on the *Livingston Survey* collection. The Livingston Survey is a survey of banking, governmental, academic, and other forecasters. It was started in 1946 by the columnist Joseph Livingston and is currently published in June and December every year. Our data report real GDP growth forecasts for the current and the next year released between 1972 and 2018.[27] We create an indicator called *government* that takes the value 1 for all forecasters labeled as Government in the Livingston Survey and 0 otherwise. Panel A of Table A2 in the Appendix presents descriptive statistics regarding our data for the United States, and Figure A4a provides the forecast coverage by institution type.

3.2 Sweden

Background. Sweden is a parliamentary democracy. The national parliament (*Riksdagen*) is composed of one house, elected every fourth year on the second Sunday in September.[28] Members of the parliament are elected based on a proportional representation system in small constituencies and an entry threshold of 4% of the votes.

The head of political power is the prime minister. After each general election, the parliament votes on the incumbent prime minister and determines whether the incumbent can remain in power or not. Every time the prime minister resigns, the speaker holds consultations with the parties represented in parliament and appoints a new prime minister, who needs to receive approval from the majority of the parliament.[29]

Data. Our analysis builds on real-time data collected by the National Institute of Economic Research (*Konjunkturinstitutet*), reporting forecasts released between 1994 and 2018 for the current and next year's growth by the most prominent forecasters for the

of the term. Since the first contested election held in 1796, the country has never experienced early presidential elections.

[26] Only Maine and Nebraska assign their delegates based on a proportional system. Notice that the District of Columbia, which does not elect any voting member of Congress, is awarded the same number of delegates as the lowest-represented states. Currently, D.C. is guaranteed three members so that the members of the electoral college amount to 538.

[27] The collection of the survey has been the responsibility of the Federal Reserve Bank of Philadelphia since 1990. The relevant forecasts for our study have been collected since 1972.

[28] Until 2010, general elections took place on the third Sunday of September.

[29] According to the Constitution, the parliament has four chances to approve the proposed prime minister before an early election becomes mandatory. The most recent early election took place in 1958.

Swedish economy. The collection includes financial institutions as well as public and international agencies, trade and industry unions, and labor unions.[30]

In Sweden, official forecasts are released independently by multiple governmental divisions and agencies, which differ in terms of distance from the electoral incentives of policymakers. We define the government forecasts to be those released by the Ministry of Finance and are under the finance minister's direct control. The presence of several other government forecasters, such as the National Institute of Economic Research, the Swedish Public Employment Service (*Arbetsförmedlingen*), the Swedish National Debt Office (*Riksgäldskontoret*), and the Swedish National Financial Management Authority (*Ekonomistyrningsverket*), allows us to disentangle those who may have stakes in the election results from those that are without incentives to affect voters' beliefs.[31] Panel B of Table A2 in the Appendix presents descriptive statistics regarding our data for Sweden, and Figure A4b reports the forecast coverage by institution type.

3.3 United Kingdom

Background. The United Kingdom is a parliamentary democracy. The national parliament is composed of the *House of Commons* and the *House of Lords*. The head of the executive power is the prime minister, who is appointed by the King or Queen. Conventionally, the monarch appoints the person who is most likely to gather the confidence of the majority of the House of Commons.[32]

Historically, the length of terms in the United Kingdom was not predetermined by law, even if, in most cases, elections took place every fourth or fifth year. Since 2011, the House of Commons is elected every fifth year while membership to the House of Lords is granted by appointment, based on heredity or official function. The House of Commons is the only house in the parliament assigned the right to vote in favor of or against the government.

Early elections are called either when it is impossible to form a government with the confidence of the House of Commons or following an explicit decision by the incumbent government, which has the formal power to choose the election date. In this century, early elections were called in 2017 and 2019 since it has been difficult to approve the set of bills necessary to effect the withdrawal from the European Union after the result of the 2016 Brexit referendum. In both cases, early elections have been called following a

[30] The data collection is updated immediately when a forecaster releases a new update, so we can observe the exact timing instead of a screen-shot determined by a survey date.

[31] The National Institute of Economic Research is an agency under the Ministry of Finance tasked to perform *independent* analysis and forecasts for the Swedish and international economy as a basis for economic policy.

[32] In the event of the prime minister's resignation, or a loss of the confidence from the House of Commons, the monarch has the opportunity of appointing a new prime minister, whose government needs the support from the House of Commons.

decision by the incumbent government.

Data. Government forecasts for real GDP growth and other macroeconomic indicators had been released by the H.M. Treasury (the U.K. Ministry of Finance) until the 2010 elections. Subsequently, the newly appointed conservative government outsourced the task to a newly formed agency (Office for Budget Responsibility), motivated by the presumption that the Labour party had previously used the Treasury's forecasts to boost their reelection probability.

Our empirical analysis builds on the monthly survey *Forecasts for the U.K. economy*, conducted and released by the H.M. Treasury, observed between January 1998 and April 2018. The survey publishes forecasts for the current and next year released by financial institutions as well as research companies, industrial and public forecasters that are either located in the City of London's financial district or elsewhere. We merge this data with the government forecasts released by the H.M. Treasury itself, observed between 1998 and May 2010, and forecasts from the Office for Budget Responsibilities between June 2010 to the end of 2017.[33] Descriptive statistics for the United Kingdom are presented in Panels C and D of Table A2 in the Appendix, while Figure A4c provides the forecast coverage by institution type.

4 Empirical Strategy

The theoretical model presented in Section 2 predicts that the incumbent government manipulates the economic growth forecasts just before elections to increase the probability of being reelected. The main empirical challenge is that a significant forecast error might depend both on the attempt to influence voters before the election and on confounders that make it more difficult to develop forecasts approaching a vote. For instance, a comparison between the ex-post forecast error that the government makes before and after the ballot date would be affected by the different forecast horizons, as all pre-election forecasts would systematically be released when relatively less information is available. Similarly, a comparison between the forecasts released in election years and the estimates published in off-election years would be affected by the additional uncertainty that the election outcome generates (see, e.g., Bloom, 2014; Bloom et al., 2007), as well as by the presence of electoral cycles in real macroeconomic variables (see, e.g., Alesina et al., 1992). Lastly, a cross-sectional comparison between forecasts released by the government and the ones released by other forecasters would be threatened by the potential differences in available information between the government and other forecasters and alternative

[33] In the main analysis, we restrict the sample to the observations collected before the decision to outsource the forecasting competence to the independent OBR. In Section 5.3, we investigate whether the replacement of forecasts released by the H.M. Treasury itself with the newly formed independent agency had an impact on forecast errors and their potential election cyclicality.

incentives motivating the forecasting activity of national governments and private firms.

Our data's panel structure and high frequency allow us to alleviate the potential endogeneity concerns by simultaneously combining three sources of variation. In particular, we compare i) variation within a forecaster, across different periods; ii) variation within each forecasting horizon, across forecasts released in election and off-election years; iii) variation within each year, across predetermined election dates. The dependent variables of interest are the ex-post forecast errors at different forecast horizons. We define the forecast errors as the difference between the forecast and the ex-post realization of the outcome. The use of the forecast error as the dependent variable is beneficial in two ways. First, it allows us to address whether the government releases systematically different estimates than private forecasters during the pre-election periods compared to differences in off-election periods. Second, it provides information regarding which institutions were releasing on average overly optimistic or pessimistic forecasts compared to the ex-post realization of real GDP growth.

We explore whether the government releases biased GDP growth forecasts during campaign periods with the difference-in-differences model

$$E_{i,t,h} = \theta_i + \delta_h + \mu_{y(t)} + \alpha\ campaign_t + \beta\ government_i \times campaign_t + \varepsilon_{i,t,h}, \qquad (17)$$

where $E_{i,t,h}$ is the forecast error made by institution i when releasing at time t (month-by-year or quarter-by-year) and horizon h a forecast for GDP growth in a given target year (current year or next year). The forecast error is defined as the difference between the forecast and the ex-post actual realization of real GDP growth. The indicator $campaign_t$ takes the value one if the forecast is released in the same year of a national election and before the election day and zero otherwise. Likewise, $government_i$ is an indicator taking the value one if the forecaster is defined to be the government and zero otherwise. θ_i is the forecaster fixed effect, while δ_h and $\mu_{y(t)}$ are respectively the horizon and the year fixed effects.[34] θ_i controls for all observable and unobservable determinants of forecast errors which are specific to each forecaster and constant over time. For instance, θ_i would capture the fact that some forecasters might have systematically more (less) optimistic views than others. δ_h controls for all observable and unobservable characteristics of the forecast error which are common to all forecaster that release an estimate at a given horizon. For instance, δ_h controls for the fact that releasing a forecast in January is subject to higher uncertainty than releasing a forecast in later months of the same year. Lastly, $\mu_{y(t)}$ controls for all observable and unobservable determinants of forecast errors

[34] For the United States, many forecasters are included in the sample only for a few years. To not lose an important source of variation, we estimate a version of (17) for the United States in which we replace the forecaster fixed effects with industry (type) fixed effects.

which are common to all forecaster in a given year. For instance, $\mu_{y(t)}$ controls for the fact that forecasting GDP growth in an election year might be subject to higher uncertainty than forecasting GDP growth in other years. Importantly, $\mu_{y(t)}$ also controls for any fiscal policy measures that the government implements—including decisions taken with the intent of increasing the chances of re-election—either in the year of forecast release or in the year of GDP growth realization.

For each country, we estimate (17) using the current-year forecasts and the next-year forecasts, separately. Current-year forecasts are those released within the same year to which the outcome refers, while next-year forecasts are those released during the year preceding the target year of the forecast. The coefficient of interest, β, captures the government forecasts' additional forecast error during election campaigns compared to other institutions and the government itself in non-campaign periods. A positive and significant β would imply that the government systematically overestimates real GDP growth during campaign periods, given the information available at the time of the release. We also present the results using the following specification, in which we replace the individual forecaster fixed effects with a common constant and a government indicator:

$$E_{i,t,h} = \theta + \delta_h + \mu_{y(t)} + \alpha\ campaign_t + \beta\ government_i \times campaign_t + \psi\ government_i + \varepsilon_{i,t,h}. \tag{18}$$

The estimation of (18) is informative to show the overall robustness of our findings and endow the reader with additional information on the possible over-optimism in forecasts released by the government when elections are not approaching.

The validity of the empirical strategy rests on two main identifying assumptions. First, absent the campaign, the difference between the forecasts released by the government and those released by other forecasters would reflect the difference observed by the two groups of forecasters in periods without elections. This assumption reflects the standard parallel trends assumption of difference-in-differences models. Second, the forecasts released by institutions in the control group should not be affected by political campaign incentives at the time of the release and should reflect the efficient use of the available information. In Section 6, we perform several robustness checks to alleviate potential concerns regarding our identifying assumptions.

The literature on opportunistic election timing often assumes that early elections are timed for partisan advantage by incumbent governments to coincide with favorable circumstances, such as peaks in economic performance (see, e.g., Balke, 1990; Kayser, 2005). Therefore, the empirical literature on political budget cycles strongly relies on the exogeneity of the election schedule with respect to the fiscal policy implemented by

politicians. In the context of this paper, this is of no concern. Favorable circumstances, such as high economic growth, do not contest our results. Our analysis's validity only requires that governments do not call early elections as a consequence of overly optimistic forecasts, which seems very unlikely. Moreover, as described in Section 3, two of the three countries included in our sample have not called an early election during the sample period.

We estimate the model separately for the United States, Sweden, and the United Kingdom, taking a threefold advantage from showing evidence from multiple countries. First, these countries vote in different months of the year. Suppose the predictions of the model find support in the data. In this case, the governments in each of the countries should bias differently across forecast targets based on whether elections are held at the beginning, in the middle, or at the end of the year. Second, this allows us to address external-validity concerns and establish the presence of electoral cycles in the government's macroeconomic forecasts as consistent evidence across institutional rules, election frequency, and election timing. Third, data availability differs across countries in terms of the number of elections, frequency of forecast updates, and the number of observations. Restricting the attention to either one of the countries would have generated a trade-off between the characteristics.[35]

In all specifications, the inference is based on two-way cluster robust standard errors (Cameron et al., 2011; Cameron and Miller, 2015) at the forecaster and the horizon-by-target year levels. In this way, we account for the potential autocorrelation in the forecast error of each forecaster as well as for the cross-sectional correlation of forecasts subject to the same target and available information.[36]

5 Results

In this section, we present the results of the empirical analysis. We start by providing evidence that, in all countries in our sample, the government overestimates real GDP growth in the months approaching an election compared to the other forecasters in the economy and the government itself in off-election years and the months following the vote. We also show that the forecasts for the current-year and the next-year GDP growth are differently biased depending on the season in which each country casts its vote.

[35] For instance, our data for the United States goes back to the 1972 election but contains only biannual observations, while our U.K. data are monthly but observed only between 1998 and 2010 given our main specification.

[36] For Sweden, we only have 20 forecasters in the sample, so cluster-robust inference is not feasible (Donald and Lang, 2007). We account for this data limitation by calculating two-way cluster robust standard error at the forecaster and the time (month-by-year) levels based on 999 wild bootstrap repetitions at the individual level (Cameron et al., 2008). The two-way wild bootstrap standard errors turn out, as expected, to be more conservative than the standard two-way clustered standard errors.

Table 1: Estimated Election Cycle Bias

	Current		**Next**	
	(1)	(2)	(3)	(4)
Panel A. United States				
Government × *Campaign*	0.049	0.043	0.274***	0.265***
	(0.069)	(0.070)	(0.095)	(0.094)
Government	–0.030*		0.017	
	(0.018)		(0.045)	
Observations	3,082	3,082	3,057	3,057
R^2	0.662	0.666	0.750	0.753
Panel B. Sweden				
Government × *Campaign*	0.111***	0.111***	0.315***	0.308***
	(0.036)	(0.037)	(0.056)	(0.052)
Government	0.019		0.062	
	(0.034)		(0.053)	
Observations	1,028	1,028	1,034	1,034
R^2	0.818	0.829	0.920	0.927
Panel C. United Kingdom				
Government × *Campaign*	0.172***	0.156**	0.039	0.015
	(0.036)	(0.062)	(0.148)	(0.170)
Government	0.101***		0.453***	
	(0.026)		(0.055)	
Observations	3,471	3,471	3,271	3,271
R^2	0.816	0.843	0.863	0.907
Fixed Effects		✓		✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. In columns (1) and (3) the estimated equation is (18), while in columns (2) and (4) the estimated equation is (17). In Panel A. United States, the fixed effects are replaced with type effects. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year or quarter-by-year) levels are in parentheses. In Panel B. Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level. *,**,*** represent the 10%, 5%, 1% significance levels.

Table 1 reports the results using the current-year forecasts in columns (1) and (2), while columns (3) and (4) refer to the estimations using the next-year forecasts. In columns (1) and (3) we estimate (18), while in columns (2) and (4) we estimate (17). The coefficient of interest β—which captures the additional impact of the pre-election months on the bias in government forecasts—is reported as the interaction term *Government* × *Campaign*. In the estimations without forecaster fixed effects, the coefficient ψ—which captures the average difference in the forecast error between private and government

forecasters—is reported with the label *Government*. Even if our empirical strategy is not designed to identify ψ consistently, its size and sign can still be informative about the government's behavior, independently of elections. For instance, the government may in general be overconfident about its policy's effects on the economy (e.g., Krause, 2006) or bias the forecasts to deviate from balanced-budget requirements (e.g., Bohn and Veiga, 2021; Picchio and Santolini, 2020).

Panel A of Table 1 presents the results of the empirical analysis for the United States, where elections are held every second year in November. We detect that the government, during campaign periods, releases overly optimistic forecasts for real GDP growth in the next year of 0.265–0.274 percentage points. At the same time, we estimate very small—and statistically indistinguishable from zero—coefficients in columns (1) and (2) where we use the current-year forecasts. We can interpret these findings through the lens of the model. When elections are held late in the year, it is too costly for the incumbent government to bias the current-year forecasts. Subsequently, electoral cycles are found only in the forecasts with the longer horizon.

In Panel B, we report the main results for Sweden, in which elections are held every fourth year in September. When elections occur in the middle of the year, the theoretical model predicts that the government manipulates both the current-year and next-year forecasts. In line with that prediction, we find that the government, during campaign periods, releases overly optimistic forecasts of 0.111 percentage points for the current-year GDP growth and 0.308–0.315 percentage points for the next-year growth.

In Panel C, we present the empirical results for the United Kingdom, in which elections in our sample take place during the spring. Prediction 4 of the theoretical model predicts that, in the case of elections held early during the year, the government has a large incentive to bias the forecast for the current-year outcome. This prediction finds support in the data. We document that the government, during campaign periods, overestimates real GDP growth for the current year by 0.156–0.172 percentage points. However, we do not find any evidence of significant biased releases targeting the next year. For the United Kingdom, the manipulation of released forecasts approaching the elections is, however, accompanied by evidence that the government, in general, is more optimistic compared to the other forecasters. Specifically, we detect a general overestimation of 0.101 percentage points in the current-year forecasts and 0.453 percentage points in the next-year forecasts, as reported by the coefficients attached to the *Government* indicator in columns (1) and (3).

The results presented in Table 1 confirm predictions 1 and 4 presented in Section 2.6. Governments in all countries in our sample release overly optimistic GDP growth forecasts during campaign periods. Moreover, they decide whether to overestimate GDP growth for the current year or next year based on the month in which the election occurs.

Table 2: Reelection Incentives and Divided Government

	Current			**Next**		
	(1)	(2)	(3)	(4)	(5)	(6)
Gov. × *Cam.* × *Presidential*	0.020			–0.191		
	(0.104)			(0.257)		
Gov. × *Cam.* × *Term-Limited*		–0.158			–0.416*	
		(0.130)			(0.219)	
Gov. × *Cam.* × *Divided Government*			–0.035			–0.238
			(0.103)			(0.256)
Government × *Campaign*	0.036	0.112	0.068	0.348***	0.431***	0.424*
	(0.080)	(0.089)	(0.107)	(0.124)	(0.105)	(0.235)
p-value: sum of coefficients = 0	0.563	0.649	0.652	0.435	0.936	0.086
Observations	3,082	3,082	3,082	3,057	3,057	3,057
R^2	0.666	0.666	0.666	0.753	0.753	0.753
Type Effects	✓	✓	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. Standard errors robust to two-way clustering at the forecaster and the time (quarter-by-year) levels are in parentheses. *,**,*** represent the 10%, 5%, 1% significance levels.

5.1 Reelection Incentives and Divided Government

We take advantage of our data from the United States, which spans several years and elections, to test additional predictions from the theoretical model derived in Section 2.6. In Table 2, we interact the variable of interest from (17) $Government \times Campaign$ with institutional indicators capturing the parameters of our model. First, in columns (1) and (4), we investigate if the bias depends on whether voters are called upon to select only the members of Congress or also the president. The results show that forecasts are not comparably biased approaching both types of elections since the estimated coefficients are not significantly different from zero. This result does not come as a surprise since presidents are substantially affected by the outcome of a mid-term election, even if they are not unseated due to a defeat.

Second, the theoretical model predicts that the electoral bias in government forecasts depends on the incumbent politician's electoral incentives. When R decreases, the incumbent is predicted to reduce the bias in the estimates released to the public. In columns (2) and (5), we test this prediction by exploiting term limits that prevent the incumbent president from competing for a third consecutive term. The results show that the government overestimate next-year real GDP growth by 0.4 percentage points when the president is not term-limited, while the government does not release biased forecasts when the president is serving for a second consecutive term.

Prediction 3 indicates that the bias is smaller when the politician's relevant traits have a limited impact on economic outcomes. In the United States, the institutional

setting generates relatively frequent cases in which the president's party does not have the majority of seats in one or both branches of Congress. In such cases, the president and Congress limit each other's autonomy and can either compromise to agree on a policy (Trubowitz and Mellow, 2005) or stop each other's decision (Coleman, 1999; Sundquist, 1988).[37] In particular, the President's party needs to negotiate with the other party to get bills approved. Bills, in turn, reflect the President to a lesser extent and, in turn, their impact on the economy has a lower correlation with the President's characteristics. Despite a loss in precision, the results in column (6) of Table 2 suggest, in line with the prediction, that government forecasts are relatively less biased when the president is not politically aligned with both branches of Congress.

5.2 Opinion Polls and Electoral Uncertainty

Prediction 5 postulates that governments overestimate GDP growth especially when the incumbent politician expects a close election. To test this prediction empirically, we accessed data on i) U.S. presidents' approvals according to the Gallup survey and made available by *The American Presidency Project* at the University of California Santa Barbara and ii) vote intentions for parties running in parliamentary elections in Sweden according to major opinion polls, collected and made available by *Politico.eu*.[38] To make sure that our measures of electoral uncertainty are exogenous to forecasting bias, for each year in our sample we limit our attention to the first available release, which usually refers to surveys conducted during the first or second week of January.

For the United States, we interact the model in (17) with the absolute-value of the difference between the share of respondents who declared to "approve" the incumbent President's mandate and the share of respondents who declared to "disapprove" the incumbent President's mandate. Formally, we interact (17) with the variable *Approval*, defined as

$$Approval_{y(t)} = |\%Approving_{y(t)} - \%Disapproving_{y(t)}|.$$

For Sweden, we take a slightly different approach to take into account that the incumbent government's objective approaching an election is to secure a stable governing majority (i.e., an absolute majority) in Parliament during the next term. Specifically, we rely on Carozzi et al. (2022), who find that stable majorities are feasible only when parties receive at least 40 percent of the votes in a parliamentary democracy featuring

[37] See, for example, Persson et al. (1997), Persson et al. (1998), and Persson et al. (2000) for more on the separation of powers in a presidential-congressional regime and how this can improve accountability of elected officials through checks and balances.

[38] Politico.eu makes available analogous data for the United Kingdom only since 2014, after the introduction of the OBR.

a proportional representation system with a 5% entry threshold.[39] In turn, we interact (17) with the absolute-value difference between the expected vote percentage of all parties that participate in the incumbent government and 40 percent. Formally, we interact (17) with the variable *Approval*, in this case defined as

$$Approval_{y(t)} = |\%Incumbent_{y(t)} - 40|.$$

For both countries, the variable approval is defined so that it takes value 0 in cases of maximal electoral uncertainty (i.e., when the number of the incumbent's supporters and incumbent's opponents is perfectly balanced or when the incumbent government's parties are on the edge between having a stable majority in the next Parliament and not having a stable majority in the next Parliament), and takes positive and large values when either the government expects a large victory or a large defeat.

The results of this exercise are reported in Table 3. Table 3 is strongly consistent with Prediction 5 of the theoretical model. In both the United States and in Sweden, incumbent governments overestimate real GDP growth ahead of elections significantly more when they expect a close election than when they expect a predictable victory or defeat. In particular, the results in column (1) indicate that forecasts that target current-year GDP growth in the United States, which as documented in Table 1 are on average not significantly biased, incorporate a sizeable and statistically significant bias in the years of maximal electoral uncertainty. Taken together, the results in Table 3 show that pre-election forecasting bias is approximately twice as large in high-uncertainty years than in the average year.

5.3 Outsourcing and Multiple Forecasters

As the theoretical model shows, it is inefficient to bias if voters are rational. The inefficient outcome arises since the politicians cannot credibly commit not to bias and are forced to do so since voters expect them to. This section evaluates different approaches and potential commitment devices to limit the negative economic effects of electoral cycles in forecasts. Specifically, we exploit the reform that outsourced the U.K. government's primary forecasting function in 2010 and the presence of multiple forecasters in the public sector of Sweden.

5.3.1 Forecast Outsourcing in the United Kingdom

During the 2010 election campaign, the opposition leader David Cameron openly criticized the incumbent Labour party for manipulating the Treasury's forecasts and advo-

[39] Carozzi et al. (2022) use data from municipalities in Spain, which share with the national parliament of Sweden several features, including the presence of a 5% entry threshold and a proportional representation voting system.

Table 3: Opinion Polls Approval in U.S. and Sweden

	Panel A. United States		***Panel B. Sweden***	
	Current	**Next**	**Current**	**Next**
	(1)	(2)	(3)	(4)
Government × *Campaign* × *Approval*	–0.006**	–0.010	–0.021**	–0.053***
	(0.002)	(0.008)	(0.009)	(0.012)
Government × *Campaign*	0.182***	0.477**	0.207***	0.543***
	(0.067)	(0.219)	(0.056)	(0.056)
Observations	3,082	3,057	1,028	1,034
R^2	0.666	0.754	0.830	0.928
Fixed Effects	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. In Panel A. United States, the fixed effects are replaced with type effects. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year or quarter-by-year) levels are in parentheses. In Panel B. Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level. *,**,*** represent the 10%, 5%, 1% significance levels.

cated for the creation of an independent government budget office. After winning the election, the new government announced the creation of the Office for Budget Responsibilities (OBR), to which the government outsourced its primary forecasting function. Chancellor George Osborne was quoted as saying at the creation of the OBR that it would "rebuild confidence" in economic forecasts from the government. Later, Prime Minister David Cameron recalled "fiddled forecasts and fake figures" before the OBR was set up—blaming the Labour Party for manipulating the forecasts.

We exploit the introduction of the OBR to evaluate whether outsourcing has been effective to limit the government's opportunity to bias its releases using a triple difference specification. We estimate

$$\begin{aligned} E_{i,t,h} = {} & \theta_i + \delta_h + \mu_{y(t)} + \alpha_0\, campaign_t + \alpha_1\, campaign_t \times post_{y(t)} \\ & + \beta_0\, government_i \times campaign_t \\ & + \beta_1\, government_i \times campaign_t \times post_{y(t)} \\ & + \psi_1\, government_i \times post_{y(t)} + \varepsilon_{i,t,h}, \end{aligned} \tag{19}$$

where *Post* is an indicator variable taking the value one if the forecast was released after June 2010 and zero otherwise. Hence, we extend the dataset from May 2010 to April 2018, and *Government* takes the value 1 for forecasts released by the H.M. Treasury until June 2010 and by the OBR afterwards. The coefficients of interest are β_1, capturing the

Table 4: Effect of the 2010 U.K. Forecast Reform

	Current		**Next**	
	(1)	(2)	(3)	(4)
Government × *Campaign* × *Post*	0.001	0.000	–0.128	–0.142
	(0.059)	(0.076)	(0.111)	(0.116)
Government × *Campaign*	0.170***	0.160***	0.073	0.053
	(0.045)	(0.056)	(0.120)	(0.124)
Government × *Post*	–0.113***	–0.156**	–0.285***	–0.348***
	(0.040)	(0.061)	(0.067)	(0.099)
Government	0.085***		0.418***	
	(0.025)		(0.055)	
Observations	5,551	5,551	5,140	5,140
R^2	0.792	0.811	0.833	0.869
Fixed Effects		✓		✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. The estimated equations are (19) and (20). Standard errors robust to two-way clustering at the forecaster and the time (month-by-year) levels are in parentheses. *,**,*** represent the 10%, 5%, 1% significance levels.

cyclical component of the forecast error after the 2010 reform, and ψ_1, which is informative of whether the introduction of the reform was able to correct the average over-optimism in forecasts released by the government in general. We also estimate a version where we suppress the forecaster fixed effect in (19) and instead include a government indicator to obtain the specification presented in (20):

$$\begin{aligned} E_{i,t,h} = \theta + \delta_h + \mu_{y(t)} + \alpha_0\ & campaign_t + \alpha_1\ campaign_t \times post_{y(t)} \\ & + \beta_0\ government_i \times campaign_t \\ & + \beta_1\ government_i \times campaign_t \times post_{y(t)} \\ & + \psi_0\ government_i + \psi_1\ government_i \times post_{y(t)} + \varepsilon_{i,t,h}. \end{aligned} \tag{20}$$

This natural experiment addresses one of the key points developed in the theoretical model. Suppose voters expect governments to bias their forecasts at the time of an election. In this case, the bias survives in equilibrium even if it does not increase the likelihood that the incumbent is reelected. This Pareto inefficiency arises because politicians cannot commit not to bias their releases. Outsourcing of the government's forecasting function to an external agency can represent a credible commitment if the agency does not have connections to the government's electoral incentives and does not aim to please the incumbent.

The results of this policy evaluation exercise are presented in Table 4. The estimates

of β_1, presented in the first row in Table 4, show that the outsourcing did not reduce the additional forecast error during election years. However, the estimates for ψ_1 show that the introduction of the OBR had a significant impact on correcting the general over-optimism in the government forecasts (see the *Government* × *Post* coefficients). Since the reform, the average error in OBR releases has been more in line with the average forecast error of private forecasters.

The results presented in Table 4 indicate that outsourcing does not imply a commitment to not bias the forecasts before an election but does improve the average quality of the releases. Moreover, the outsourcing might have affected voters' beliefs about the bias in forecasts. Hence, the outsourcing might have manipulated voters' preferences toward the incumbent if the reform changed voters' beliefs about government bias. There are several reasons why outsourcing may not work as a credible commitment device. The OBR is highly connected to the government, and executives are appointed by politicians. Executives may bias to please the government to ensure reappointment. Furthermore, the actual independence of the OBR is not undisputed, and the Treasury may have sought to meddle with the OBR forecasts (Ralph, 2015, in *The Times*).

5.3.2 Heterogeneous Government Forecasting in Sweden

In Sweden, several additional institutions and agencies in the public sector, whose interests might not coincide with the central government's electoral incentives, release forecasts regularly. The main results presented in Panel B of Table 1 refer to the bias of the Ministry of Finance compared to all other forecasters in the sample. This section repeats the exercise, focusing on the other forecasters in the public sector (albeit still sorted under the government). The economic consequences of electoral cycles in the government's forecasts will be attenuated if agencies with little or no electoral incentives release unbiased estimates to the public.

In Table 5, we report the results from estimating (17) among government agencies other than the Ministry of Finance.[40] In columns (1) and (3), we compare the National Institute of Economic Research (NIER)—whose core objective is to produce *independent* forecasts—to all other forecasters in the sample. In columns (2) and (4), we compare forecasts released by the Swedish Public Employment Service (PES), the Swedish National Debt Office (NDO), and the Swedish National Financial Management Authority (NFMA) with the estimates released by other forecasters.[41] The results presented in columns (1) and (3) show no evidence of electoral cycles in the forecasts released by the independent forecast agency NIER. Turning to PES, NDO, and NFMA, we see in column (2) that the estimated coefficient for the current year is just slightly attenuated compared

[40] In this analysis, we drop the Ministry of Finance (MoF) from the sample.

[41] We analyze PES, NDO, and NFMA jointly due to the limited amount of data.

Table 5: Independent Government Forecasters in Sweden

	Current		**Next**	
	(1)	(2)	(3)	(4)
NIER × *Cam.*	–0.064		0.043	
	(0.046)		(0.054)	
PES, NFMA, NDO × *Cam.*		0.121		0.002
		(0.209)		(0.082)
Observations	945	945	950	950
R^2	0.826	0.826	0.927	0.927
Fixed Effects	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. The estimated equation is (17), where the *Government* indicator has been replaced with the agencies specified in the table. Standard errors robust to two-way clustering at the individual and the time (month-by-year) levels based on 999 wild bootstrap repetitions at the individual level are in parentheses. *,**,*** represent the 10%, 5%, 1% significance levels.

to the results in Table 1. However, it is not statistically different from zero. The results presented in Table 5 suggest that lower electoral incentives are associated with less pronounced electoral cycles in the different forecasting functions of the public sector. Hence, the negative consequences of biased forecasts may be mitigated if the public sector can also provide unbiased information.[42]

5.4 Inter-governmental Dynamics

Even if our theoretical model considers the case of one incumbent politician who directly faces the benefits and the costs of releasing biased estimates, the actual development of macroeconomic forecasts entails the interaction between different agents, which may or may not have aligned incentives. One example refers to the relationship between the political staff at the government and their employees, which likely incorporates principal-agents dynamics. Another example is the possibility is that, when more than one party participates in the government, the junior coalition partner might not have the same incentives as the largest party. Lastly, there is the possibility that politicians at the Ministry of Finance have their own career concerns which are not necessarily aligned with their party leader's. While providing compelling empirical evidence on these mechanisms is beyond the scope of this paper, in what follows we provide evidence on whether coalition governments tend to release more accurate GDP growth forecasts than single-party governments. We expect to detect a large and significant reduction in the pre-election

[42] In Table A3 in the Appendix, we investigate whether central banks overestimate real GDP growth approaching elections in the United States (the *Federal Reserve*) and in Sweden (the *Riksbank*). The results do not show any consistent evidence of overestimation of GDP growth ahead of elections akin to the one conducted by the government.

Table 6: Coalition Governments in Sweden

	Current		**Next**	
	(1)	(2)	(3)	(4)
Gov. × *Cam.* × *Coalition*	0.084	0.077	0.233	0.230
	(0.091)	(0.083)	(0.164)	(0.148)
Government × *Campaign*	0.049	0.057	0.114	0.111
	(0.092)	(0.085)	(0.166)	(0.153)
Observations	1,028	1,028	1,034	1,034
R^2	0.819	0.829	0.921	0.927
Fixed Effects		✓		✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year) levels and based on 999 wild bootstrap repetitions at the individual level are in parentheses. *,**,*** represent the 10%, 5%, 1% significance levels.

forecasting bias when coalitions are sharing government responsibilities if the junior partner has own electoral incentives which are not aligned with those of the major party. On the contrary, if coalitions are rather strong and the junior partner expects to remain in power only in the event of the major partner's victory, then we expect governments to release forecasts not significantly different to the ones released by single-party governments.

In our sample, Sweden is the only country that experienced a coalition government during our sample. The Social Democratic party led a single-party government in the 1994–1998 term while centre-left and centre-right coalitions of multiple parties have been sharing government responsibilities before the 1994 elections and after the 1998 elections. Formally, we interact our model in (17) and (18) with the indicator *Coalition*, which takes the value 1 if at the beginning of the year $y(t)$ a coalition of multiple parties was supporting the incumbent government and 0 otherwise. The results of this exercise, presented in Table 6, do not show any evidence that coalition governments release more accurate forecasts than single-party governments. Specifically, all estimated coefficients are positive and insignificant.

Taken together, the results presented in Table 6 suggest that major and junior coalition partners likely have similar incentives approaching an election. Indeed, coalitions in Sweden used to be rather stable in the period under investigation: the Left party and the Green party only joined centre-left coalitions with the Social Democratic party while the Centre party, the Liberal Party, and the Christian Democratic party only joined centre-right coalitions with the Moderates party. In turn, the only option for a junior partner to keep its position in the government was through the success of the coalition to which the party belonged, including the main party of the coalition itself.

Table 7: Labor Tax Reductions

	Panel A. US		***Panel B. SE***		***Panel C. UK***	
	Current	**Next**	**Current**	**Next**	**Current**	**Next**
	(1)	(2)	(3)	(4)	(5)	(6)
Gov. × *Cam.* × *Tax Red.*	–0.081	0.032	0.089	–	–	–
				0.306***	0.303***	0.634***
	(0.122)	(0.260)	(0.096)	(0.105)	(0.090)	(0.120)
Government × *Campaign*	0.019	0.087	–0.011	0.336***	0.267***	0.150
	(0.146)	(0.257)	(0.046)	(0.051)	(0.084)	(0.166)
Observations	1,125	1,118	822	829	2,585	2,390
R^2	0.643	0.634	0.825	0.931	0.805	0.916
Fixed Effects	✓	✓	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. In Panel A. United States, the fixed effects are replaced with type effects. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year or quarter-by-year) levels are in parentheses. In Panel B. Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level. *,**,*** represent the 10%, 5%, 1% significance levels.

5.5 Electoral Budget Cycles

The theoretical model presented in Section 2 assumes that fiscal policy is exogenously determined by the innate ability of the incumbent politician. This is a simplifying assumption that allows us to show that electoral manipulation of macroeconomic forecasts can be rational also when politicians do not use it as an instrument to perform manipulation of fiscal policy ahead of elections. It is beyond the scope of this paper and open for future research to identify theoretically and empirically under which conditions the two tools in the hand of incumbent governments are independent from each other, or substitutes, or complements. Nevertheless, in what follows, we provide suggestive evidence that electoral cycles in macroeconomic forecasts do exists also in years during which the government does not take significant fiscal policy decisions.

Specifically, for all the countries in our sample, we access data on tax rates on labor (income tax plus payroll tax) released by the OECD since the year 2000 and construct an indicator equal to 1 if the government reduced the tax rate applied to average-income individuals in a given year compared to the previous year (and zero otherwise). Then, we interact (17) with this indicator.

The results are presented in Table 7. For Sweden and for the United Kingdom, we find that governmetns tend to overestimate real GDP growth ahead of elections especially in years in which taxes on labor have not been reduced. For the United States, instead, we do not find any significant difference between years in which tax reductions occurred and other years. The coefficients for the United States are imprecisely estimated since we lose approximately two-thirds of the observations compared to the main specification.

6 Robustness Checks

This section elaborates on some concerns related to our empirical strategy and performs a battery of robustness checks to validate our results. We start by validating our use of private forecasters as a suitable control group for the government's forecasts. Cipullo and Reslow (2021) show that private forecasters with stakes in and influence over the outcome of a referendum release biased forecasts to affect voters' beliefs. In principle, in the case of general elections, forecasters may have either partisan incentives—for instance, forecasters in the financial sector may prefer a conservative government for corporate tax motives—or they may lean in support of the incumbent in light of valuable connections that have been implemented during the term. In what follows, we show that, in a setup of general elections, private forecasts do not have strong electoral incentives and hence represent a suitable control group.

First, to exclude the possibility that forecasters systematically support the incumbent government or the challenger candidate, we estimate (17) for the different types of forecasters in our data sets. The results, presented in Figure A5 in the Appendix, show that, for all countries in our sample and forecasters of all industries, campaign periods are not associated with a change in forecasting behavior. Moreover, in the case of systematic support for the incumbent, we would underestimate the bias. In a case of systematic support for the opponent, we would instead overestimate the bias. However, we find no reasonable explanation as to why there would ever be systematic support for the challenger.

Second, we exclude the possibility of partisan bias by estimating how the forecasts released by different types of institutions evolve during campaigns depending on the party affiliation of the incumbent government.[43] We present the results from this exercise in Figure A6 in the Appendix. The results exclude the possibility that our control group systematically supports or penalizes incumbents approaching an election because of party affiliation.

The results presented in Figure A6 also indicate that both left-wing and right-wing governments tend to overestimate GDP growth. In Sweden, centre-right governments, however, release significantly more biased estimates for current-year GDP growth than centre-left governments. This result may reflect the relative stronger preferences for higher economic growth of right-wing parties and voters compared to left-wing parties and votes.

Third, we replicate our main results for each country by excluding one forecaster at a

[43] For the United States, the label *Left* takes the value 1 if a Democratic president was the incumbent at the beginning of year $y(t)$. For Sweden, the *Left* indicator is equal to 1 if the center-left Social Democratic Party (*Socialdemokraterna*) was part of the governing coalition at the beginning of year $y(t)$. We cannot perform this analysis for the U.K. since the observations included in our sample before the OBR outsourcing refers to years in which the center-left Labour Party was in government.

time from the institutions in the control group. This exercise guarantees that our findings do not depend on the presence of potential outliers among private forecasters. We present the estimated coefficients in Figure A7 in the Appendix. Some individual forecasters are more pessimistic, while others are more optimistic than others. Hence, removing them one at a time moves the estimated coefficients, but not substantially. Therefore, we conclude that our estimated coefficients from Table 1 are not driven by any outliers since they always lie at the center of the distribution.

As described in Section 4, one of our identifying assumptions reflects the standard parallel trends assumption of difference-in-differences models. However, a formal test is not feasible in our context due to the fuzzy definition of campaign periods within the election year and the repetition of the campaign treatment over time. Notwithstanding, we propose three tests to alleviate the concerns about the fulfillment of the parallel trends assumption.

First, we provide in Figure A8 an estimation where we show the government behavior over the entire election cycle.[44] More specifically, we interact the government indicators with a set of dummies capturing all years of the election cycle as well pre-election and post-election indicators for the election year. From the figure, we confirm our main results for the U.S. since we find no significant bias during campaign periods in the current-year forecasts. Furthermore, the bias is the same as for non-government forecasters in off-election years. In the next-year forecasts, we again confirm our main results of a campaign period bias and no significant different behavior in other periods. For Sweden, we gain additional insights compared to our main results. In both the estimation using the current-year forecasts and the estimation using the next-year estimates, we see clear evidence of a phase-out of the electoral cyclicality (see, e.g., Cipullo and Reslow, 2021). The bias is also present in the months after the election, suggesting that the government slowly revises its forecasts to the unbiased reality. In the estimation using the current-year forecasts, we find that the off-election year behavior is the same as non-government forecasters. In the estimation using next-year forecasts, the figure suggests that the government might be slightly more optimistic during the two years following the election and somewhat more pessimistic in the third year.

In light of the insights from Figure A8, we provide a second test. We show in Table A4 that the results are very similar by estimating (17) with an indicator equal to one for all forecasts released during the election year instead of the observations released approaching the election. Compared to (17), the identifying variation in this test suppresses the comparison between forecasts released just before and just after an election within the same year. The rationale behind this test is that it is unclear ex-ante whether observations just after an election are good counterfactuals since they can (as indicated in Figure A8)

[44] We are unable to perform this estimation for the U.K. since it does not have a well-defined election cycle.

reflect a phase-out of the electoral cyclicality. The results presented in Table A4 show that the estimated coefficients using this specification are consistent with a phase-out. For the United States and Sweden, which have elections late in the year, the coefficients are in line with the ones presented in Table 1. The results for the United Kingdom are, as expected, more attenuated with this approach, given that the elections are held much earlier in the year.

In our main specification, the campaign is defined as starting in January during the election year. This choice of starting point is somewhat arbitrary. Therefore, we perform a sensitivity analysis in which we manipulate the starting point of the campaign. In Figure A9 in the Appendix, we plot the estimated coefficients for different campaign-starting months for Sweden and the United Kingdom, ranging from January of the election year to the month before the election date.[45] We do not find any difference between the estimated coefficients in our main specification and the ones reported in Figure A9 for the U.K. and the forecasts for GDP growth in the next year in Sweden. However, for Sweden, the estimated coefficients relative to the forecasts for the current year are slightly more fragile to this test. More specifically, β is significantly different from zero only if the definition of campaign includes either the entire calendar year or only the final month before the election. Nevertheless, the evidence that the largest coefficient is estimated when the focus is restricted to the final month approaching the election is firmly in line with our suggested mechanism.

Our results are obtained by defining each forecaster's forecast error as the difference between the released forecast and the ex-post realization of real GDP growth, as measured according to the latest available information. The results should not be dependent on how ex-post GDP growth is measured, since actual GDP growth is constant across all forecaster for each country-year pair. Nevertheless, in Table A5, we re-define forecast errors to reflect the difference between each forecaster's released forecast and the real-time realization of GDP growth (i.e., the first available figure that becomes available right at the end of the year).[46] As expected, the results in Table A5 are almost identical to the ones in Table 1.

Recent advances in the econometric and applied economics research (Callaway and Sant'Anna, 2021; Cengiz et al., 2019; De Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021; Sant'Anna and Zhao, 2020) highlighted limitations of difference-in-differences models in the cases in which either different units are treated at different points in time or treatment status changes over time from 0 to 1 and viceversa. Specifically, the estimated coefficient from difference-in-differences studies is a weighted average of several

[45] We cannot perform this check for the U.S. since our data is biannual and we only observe one forecast before the election date.

[46] For the U.S., we rely on data from the Federal Reserve Bank of Philadelphia. For Sweden, we rely on data from Statistics Sweden (1994–1998) and the OECD (1999–2018). For the U.K., we rely on data from the OECD.

comparisons between one unit that change treatment status at a given time period and one unit which does not change status at the same period. The aggregation of all these comparisons is worrisome since it is not necessarily the case that all pairs are assigned a positive weight. In the presence of negative weights, the resulting coefficient may in principle be positive even if all the comparisons that contribute to its computation show a negative treatment effect. The empirical setting of this paper is an example of the latter group of studies since the $Government \times Campaign$ indicator takes the value 1 for all forecasts released by the government in the months approaching an election and 0 otherwise. De Chaisemartin and d'Haultfoeuille (2020) propose a method to check whether some comparison units have been assigned a negative weight. Reassuringly, we performed the De Chaisemartin and d'Haultfoeuille (2020) test for all specifications presented in Table 1 and we did not find any case of any individual causal effect which is assigned a negative weight by the standard estimation technique.

7 Concluding Remarks

Voters are perfectly informed about neither the current and future states of the economy nor the ability of the incumbent government. Macroeconomic forecasts are useful to update voters' beliefs about the economy and the ability of the incumbent politician. In this paper, we document the existence of political forecast cycles. Our theoretical framework allows us to study the relationship between voters and the forecasting function of the government. The incumbent politician aims to gain electoral advantages by releasing biased GDP growth forecasts to the public ahead of elections. Rational voters discount the bias and form expectations about the ability of the incumbent. In equilibrium, the incumbent politician does not gain any advantage from the bias yet faces a utility loss due to her estimates' low accuracy. This Pareto inefficiency rests crucially on the assumption of rational voters who expect politicians to bias their releases. Suppose voters instead are naive, as it may be more conservative to think in the absence of previous rigorous evidence about this government behavior. In this case, the bias will be effective and foster the incumbent's equilibrium reelection probability, resulting in an incumbency advantage. The empirical results confirm key model predictions and disclose electoral cycles in government forecasts. Specifically, governments overestimate short-term real GDP growth by up to 13 percent during campaign periods. Furthermore, the bias is larger when the incumbent government is not term-limited or constrained by a parliament led by the opposition. We also find that the election timing and amount of available information determine the size of the bias at different forecast horizons.

Biased forecasts pose a problem if voters fail to account for the electoral incentives. In addition to a potential loss in voter welfare, biased forecasts could also damage the economy in a broader perspective. Firms update their beliefs when presented with in-

formation about forecasts from professionals. In addition, firms' forecasts are associated with their investment and employment decisions. Hence, the bias can result in inefficient firm and household decisions.

Our theoretical model demonstrates how releasing biased forecasts can be optimal for an office-motivated incumbent government who can increase the chances of re-election by providing incorrect information to voters. Fiscal policy is treated as exogenous to highlight that forecasting bias may exist also in the absence of political budget cycles. It is beyond the scope of this paper—and open for future research—to identify under which electoral budget cycles and electoral cycles in macroeconomic forecasts are complements, substitutes, or independent tools in the hands of incumbent governments.

The direct implications of our results are twofold. On the one hand, voters should consider that, when releasing forecasts before an election, the government may try to influence its survival probability. On the other hand, outsourcing the government's forecasting function may represent a tool to constrain future governments' behavior. However, according to our empirical findings, the practical implementation of such outsourcing is still far from a perfect commitment device.

The policy implication echoes those from the central bank independence literature. One of the main points of Rogoff's theory of the conservative central banker (Rogoff, 1985) is that independence reduces political induced variability and bias. Separating monetary policy from electoral incentives may serve to shield the economy from political business cycles by removing pre-election manipulation of monetary policy as in the Nordhaus (1975) model or reducing partisan shocks to policy following elections as in the Alesina (1988) model. Likewise, in the case of government forecasts, the public would benefit from receiving forecasts also from independent agencies with the sole purpose of providing unbiased estimates.

While the empirical results presented in this paper are substantially consistent with a theoretical model that shows how forecasting bias may result as an optimal choice of an incumbent politicians who reacts to electoral incentives, readers should be aware that proving intentions is challenging when relying on observational data. In turn, our results should be interpreted with care as they may also reflect other pre-election dynamics such as over-optimism about the outcome of the next election or principal-agent relationships between the political and the bureaucratic staff in the government.

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Appendix

A.1 Model

Politician's economy expectations: weights in equation (4),

$$m_{1,T} = \frac{var(\widetilde{y}_2)cov(y_T, \widetilde{y}_1) - cov(\widetilde{y}_1, \widetilde{y}_2)cov(y_T, \widetilde{y}_2)}{var(\widetilde{y}_1)var(\widetilde{y}_2) - cov(\widetilde{y}_1, \widetilde{y}_2)^2} \tag{A1}$$

$$m_{2,T} = \frac{var(\widetilde{y}_1)cov(y_T, \widetilde{y}_2) - cov(\widetilde{y}_1, \widetilde{y}_2)cov(y_T, \widetilde{y}_1)}{var(\widetilde{y}_1)var(\widetilde{y}_2) - cov(\widetilde{y}_1, \widetilde{y}_2)^2} \tag{A2}$$

$$m_{0,T} = 1 - m_{1,T} - m_{2,T}, \tag{A3}$$

where

$$\begin{aligned} var(\widetilde{y}_T) &= var(y_T) + var(\varepsilon_T) \\ &= \lambda^2\tau_\eta^{-1} + \tau_\nu^{-1} + \tau_{\varepsilon_{T,t}}^{-1} \end{aligned} \tag{A4}$$

$$cov(\widetilde{y}_1, \widetilde{y}_2) = \lambda^2\tau_\eta^{-1} \tag{A5}$$

$$cov(y_T, \widetilde{y}_T) = \lambda^2\tau_\eta^{-1} + \tau_\nu^{-1} \tag{A6}$$

$$cov(y_1, \widetilde{y}_2) = \lambda^2\tau_\eta^{-1} \tag{A7}$$

$$cov(y_2, \widetilde{y}_1) = \lambda^2\tau_\eta^{-1}. \tag{A8}$$

Voters' ability expectations: weights in equation (10),

$$\gamma_1 = \frac{var(\widetilde{F}_2)cov(\widetilde{F}_1, \lambda\eta^I) - cov(\widetilde{F}_1, \widetilde{F}_2)cov(\widetilde{F}_2, \lambda\eta^I)}{var(\widetilde{F}_1)var(\widetilde{F}_2) - cov(\widetilde{F}_1, \widetilde{F}_2)^2} \tag{A9}$$

$$\gamma_2 = \frac{var(\widetilde{F}_1)cov(\widetilde{F}_2, \lambda\eta^I) - cov(\widetilde{F}_1, \widetilde{F}_2)cov(\widetilde{F}_1, \lambda\eta^I)}{var(\widetilde{F}_1)var(\widetilde{F}_2) - cov(\widetilde{F}_1, \widetilde{F}_2)^2} \tag{A10}$$

$$\gamma_0 = 1 - \gamma_1 - \gamma_2, \tag{A11}$$

where

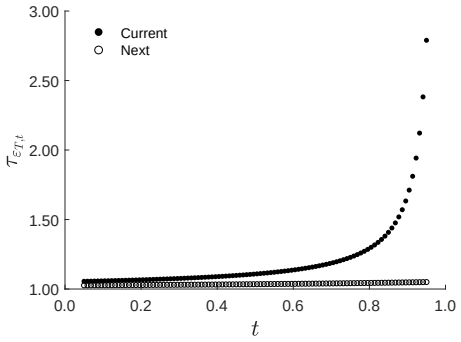
$$
\begin{aligned}
var(\widetilde{F}_T) &= var(m_{1,T}\widetilde{y}_1 + m_{2,T}\widetilde{y}_2 + e_T) \\
&= m_{1,T}^2 var(\widetilde{y}_1) + m_{2,T}^2 var(\widetilde{y}_2) + 2m_{1,T}m_{2,T}cov(\widetilde{y}_1, \widetilde{y}_2) + \tau_e^{-1} \qquad \text{(A12)} \\
cov(\widetilde{F}_1, \widetilde{F}_2) &= cov(m_{1,1}\widetilde{y}_1 + m_{2,1}\widetilde{y}_2 \ , \ m_{1,2}\widetilde{y}_1 + m_{2,2}\widetilde{y}_2) \\
&= m_{1,1}m_{1,2}var(\widetilde{y}_1) + m_{2,1}m_{2,2}var(\widetilde{y}_2) \\
&+ (m_{1,1}m_{2,2} + m_{2,1}m_{1,2})cov(\widetilde{y}_1, \widetilde{y}_2) \qquad \text{(A13)} \\
cov(\widetilde{F}_T, \lambda\eta^I) &= cov(m_{1,T}\widetilde{y}_1 + m_{2,T}\widetilde{y}_2, \lambda\eta^I) \\
&= m_{1,T}cov(\widetilde{y}_1, \lambda\eta^I) + m_{2,T}cov(\widetilde{y}_2, \lambda\eta^I) \\
&= (m_{1,T} + m_{2,T})var(\lambda\eta^I) \\
&= (m_{1,T} + m_{2,T})\lambda^2\tau_\eta^{-1}. \qquad \text{(A14)}
\end{aligned}
$$

Table A1: Calibration of Model Parameters

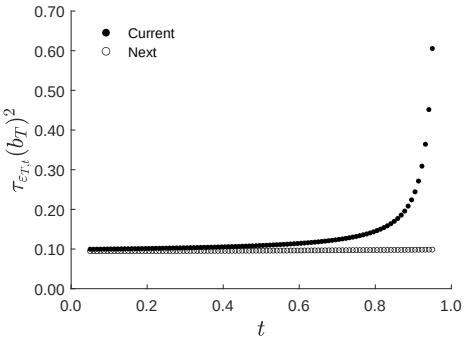
t	λ	R	$\bar{\eta}$	τ	τ_η	τ_ν	τ_e
0.50	0.99	3.00	2.00	1.10	0.20	0.70	0.70

Notes: Calibration of the exogenous parameters in the theoretical model. We set $\bar{\eta} = 2$ and $\lambda = 0.99$ to match a benchmark average annual GDP growth of around 2 percent. Based on this calibration we provide simulated example data in Figures A2 and A3.

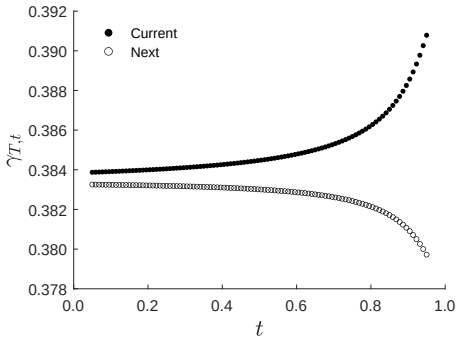
(a) Signal Precision



(b) Cost of Bias



(c) Impact on Voter Beliefs



(d) Bias Ratio

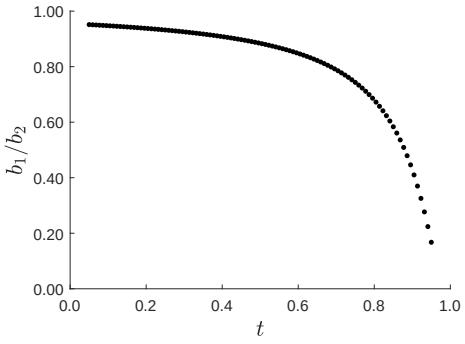


Figure A1: Election Timing and Model Dynamics

Notes: Model predictions based on the calibration presented in Table A1. In graph A1b we assume an arbitrary bias level of $b_1 = b_2 = 0.3$. In graph A1d we show $\frac{b_1}{b_2} = \frac{\gamma_1}{\gamma_2}\frac{\tau_{\varepsilon_{2,t}}}{\tau_{\varepsilon_{1,t}}}$.

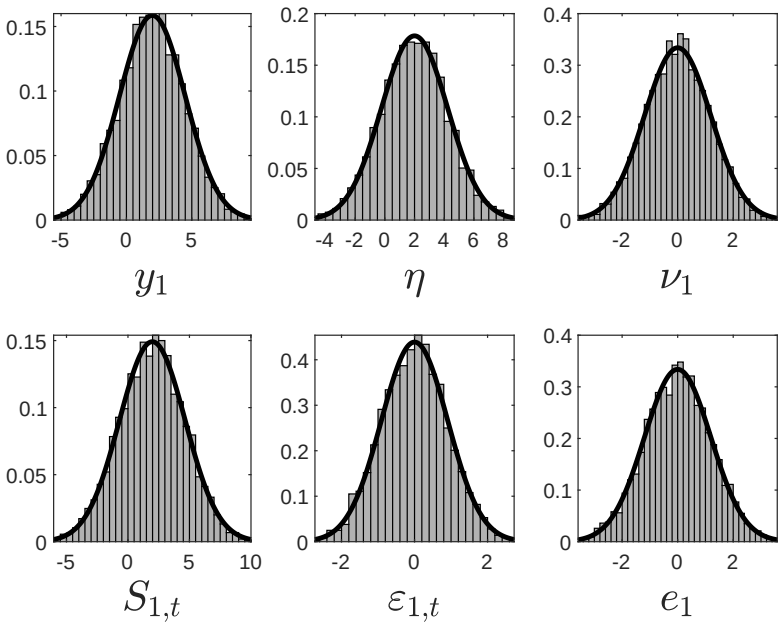


Figure A2: Simulated Data

Notes: The graph is based on the calibration presented in Table A1. Each histogram represent simulated data based on 5,000 repetitions, while each curves represent the underlying probability density function. Bars have been normalized to match the PDF.

(a) Ability Expectations

(b) Reelection Probabilities

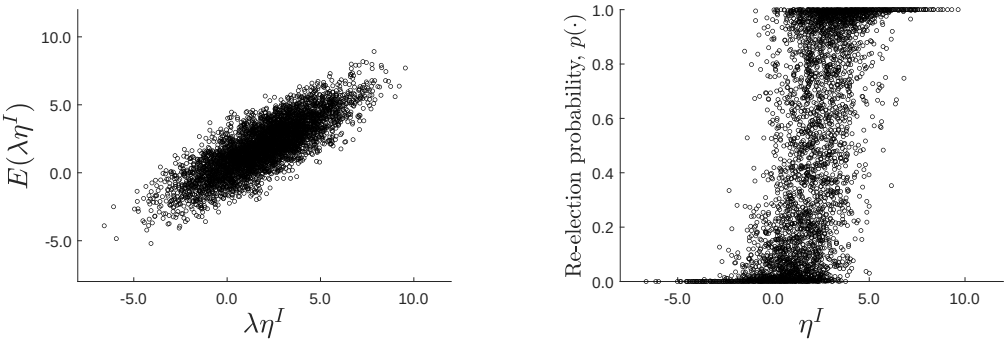


Figure A3: Ability Expectations and Reelection Probabilities

Notes: The graph is based on 5,000 simulations using the calibration presented in Table A1. Graph (a) shows, on the y-axis, voters' expectations about the ability of the incumbent politician following (10), and, on the x-axis, the true innate ability of the incumbent. Graph (b) shows, on the y-axis, the incumbent politician's reelection probability, and, on the x-axis, the politician's true ability.

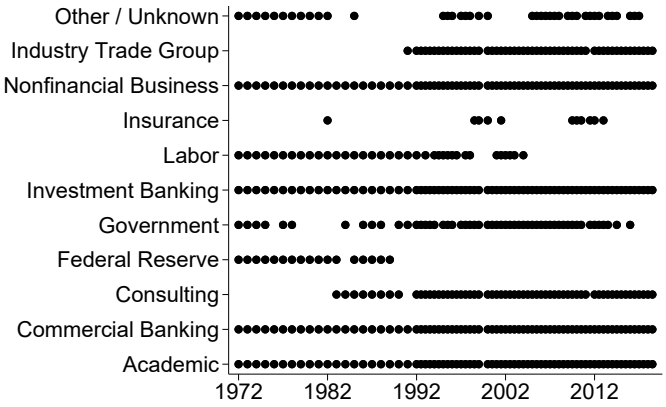
A.2 Data

Table A2: Descriptive Statistics

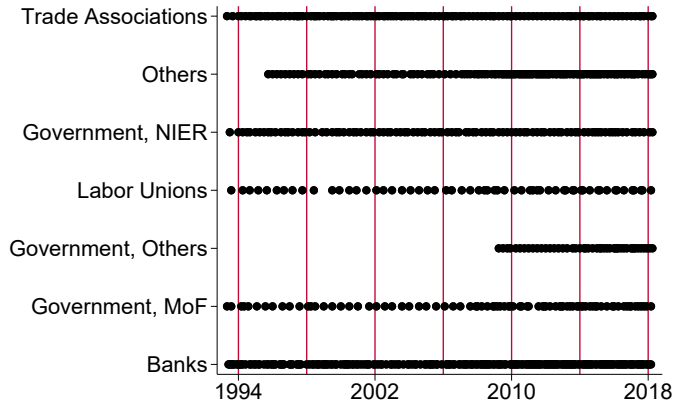
	Obs.	Mean	SD	Min	Max
Panel A. United States					
Forecast Error (Current Year)	3,082	–0.22	1.12	–13.49	9.69
Forecast Error (Next Year)	3,057	0.04	1.91	–7.24	9.84
Government	3,082	0.03	0.17	0	1
Election Year	3,082	0.51	0.50	0	1
Campaign	3,082	0.36	0.48	0	1
Year	3,082	1995.45	12.75	1972	2018
Quarter	3,082	2.61	0.92	2	4
Type	3,082	5.00	3.27	1	11
Panel B. Sweden					
Forecast Error (Current Year)	1,028	–0.18	1.18	–3.68	3.59
Forecast Error (Next Year)	1,034	0.02	1.93	–5.88	7.05
Government	1,042	0.08	0.27	0	1
Election Year	1,042	0.28	0.45	0	1
Campaign	1,042	0.17	0.37	0	1
Year	1,042	2008.05	7.05	1994	2018
Month	1,042	6.97	3.47	1	12
Forecaster	1,042	10.93	5.16	1	20
Panel C. United Kingdom (Pre reform)					
Forecast Error (Current Year)	3,471	–0.19	1.01	–3.49	3.75
Forecast Error (Next Year)	3,271	0.23	1.83	–3.63	6.95
Government	3,477	0.01	0.08	0	1
Election Year	3,477	0.18	0.39	0	1
Campaign	3,477	0.09	0.28	0	1
Year	3,477	2003.73	3.66	1998	2010
Month	3,477	6.32	3.57	1	12
Forecaster	3,477	37.65	21.99	1	79
Panel D. United Kingdom (Post reform)					
Forecast Error (Current Year)	2,080	–0.47	0.56	–2.77	1.64
Forecast Error (Next Year)	1,869	–0.26	0.70	–3.44	1.74
Government	2,080	0.01	0.09	0	1
Election Year	2,080	0.31	0.46	0	1
Campaign	2,080	0.08	0.27	0	1
Year	2,080	2013.84	2.34	2010	2018
Month	2,080	6.49	3.56	1	12
Forecaster	2,080	25.49	13.50	1	50

Notes: See Section 3 for an explanation of the data. For Sweden, the Government indicator refers to the Ministry of Finance, and, for the U.K., the Government indicator refers to H.M. Treasury in the pre-reform periods and the Office for Budget Responsibilities (OBR) in the post-reform periods.

(a) United States



(b) Sweden



(c) United Kingdom

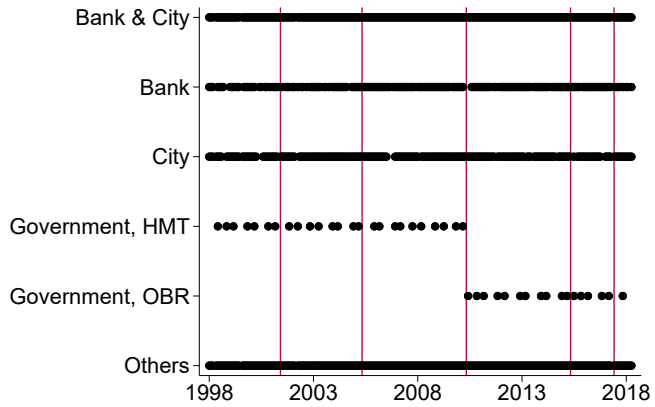


Figure A4: Forecast Frequency by Institution Type

Notes: Each dot shows the existence of at least one forecast at a given survey release date for a specific forecaster or type. For Sweden, our main government definition is the Ministry of Finance (MoF), while Government Others refer to the PES, NDO and NFMA. For Sweden and the U.K., the vertical lines mark the election dates.

A.3 Robustness

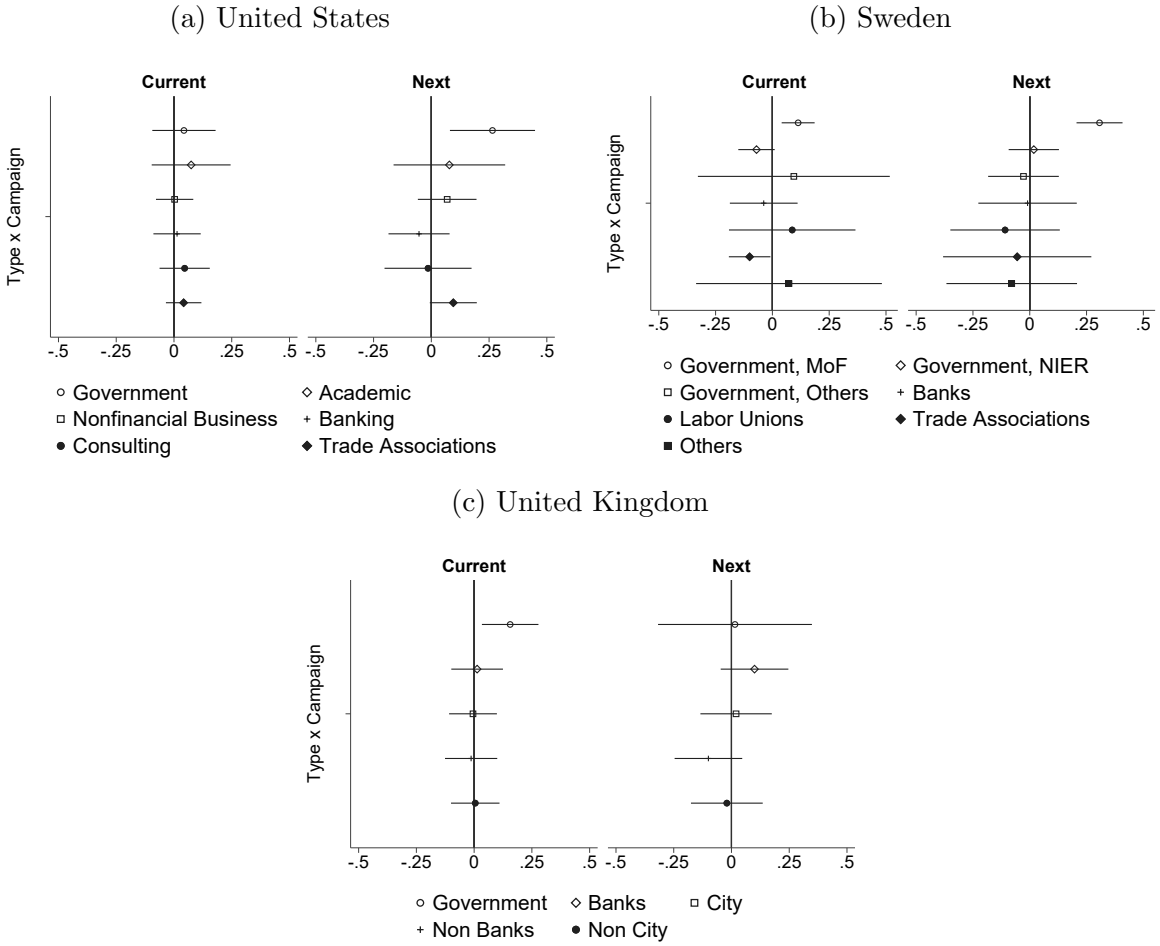
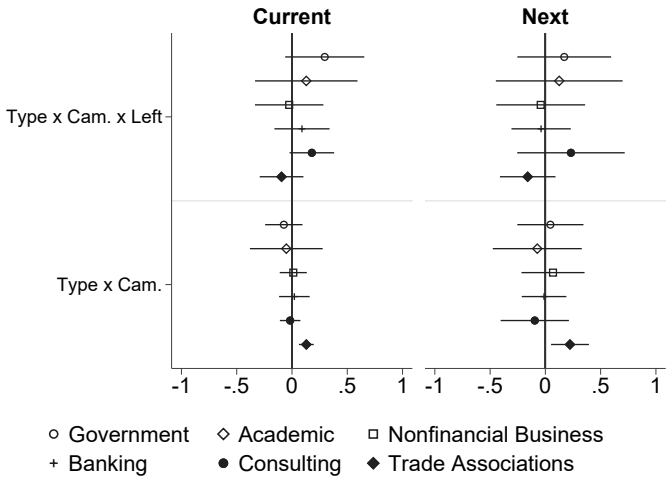


Figure A5: Estimated Coefficients for the *Control* Forecasters

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. The markers show the estimated coefficients for β by estimating (17), where the $Government_i$ indicator has been replaced with each of the industry-specific markers reported in the label. The government markers correspond to the results presented in Section 5. 95% confidence intervals are based on standard errors robust to two-way clustering at the forecaster and the survey levels. For Sweden, 95% confidence intervals are based on standard errors robust to two-way clustering at the individual and the time (month-by-year or quarter-by-year) levels based on 999 wild bootstrap repetitions at the individual level.

(a) United States



(b) Sweden

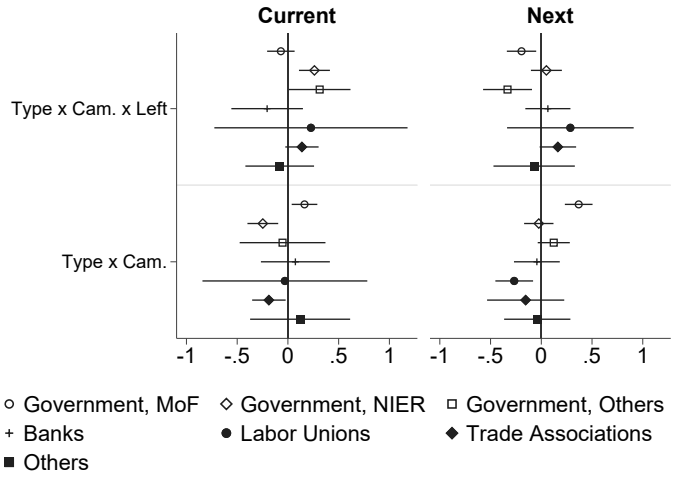


Figure A6: Estimated Coefficients for the Control Forecasters—By Identity of the Ruling Party

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. The estimated equations are versions of equation (17), in which the *Government* indicator has been replaced with each of the industry-specific markers reported in the label, and the *Government* × *Campaign* has been interacted with an indicator for the political affiliation of the government. For the U.S., the label *Left* refers to a Democratic president and the *Government* indicator. For Sweden, the *Left* indicator is equal to 1 if the center-left Social Democratic (*Socialdemokraterna*) party is in the governing coalition. Markers show the estimated coefficients from an interaction between the type of forecaster (defined by the label) with the campaign variable and the Left variable. 95% confidence intervals are based on standard errors robust to two-way clustering at the forecaster and the survey levels. For Sweden, 95% confidence intervals are based on standard errors robust to two-way clustering at the individual and the time (month-by-year or quarter-by-year) levels based on 999 wild bootstrap repetitions at the individual level.

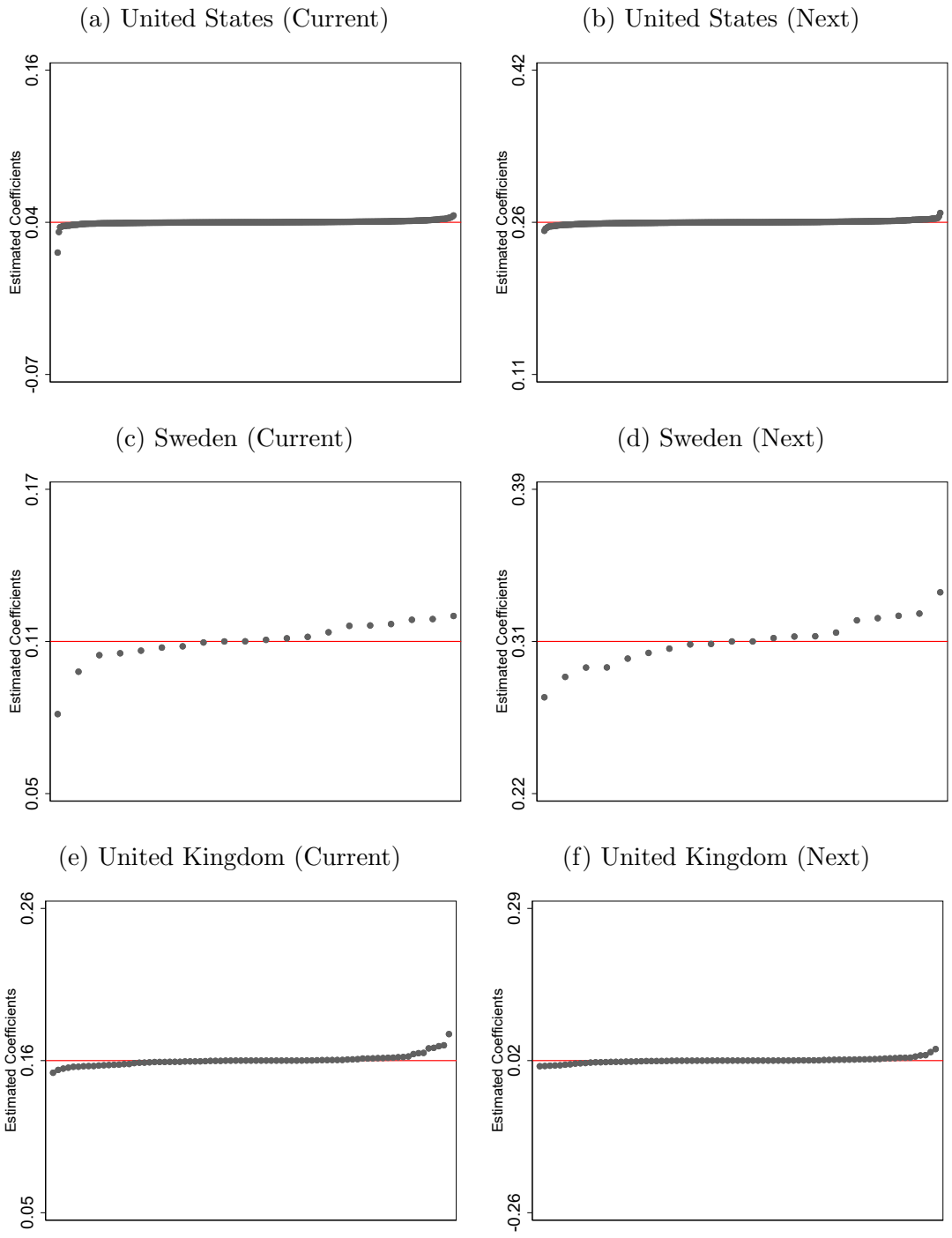


Figure A7: Removing One Forecaster at a Time from the Control Group

Notes: Each dot represents an estimation of equation (17) by removing one forecaster at a time from the group of control forecasters. The estimations have been sorted from lowest to highest. Solid lines correspond to the main results presented in columns (2) and (4) of Table 1. The upper limit on the y-axis of each graph represents the estimated coefficient from Table 1 plus the estimated standard error. Likewise, the lower limit represents the estimated coefficient from Table 1 minus the estimated standard error.

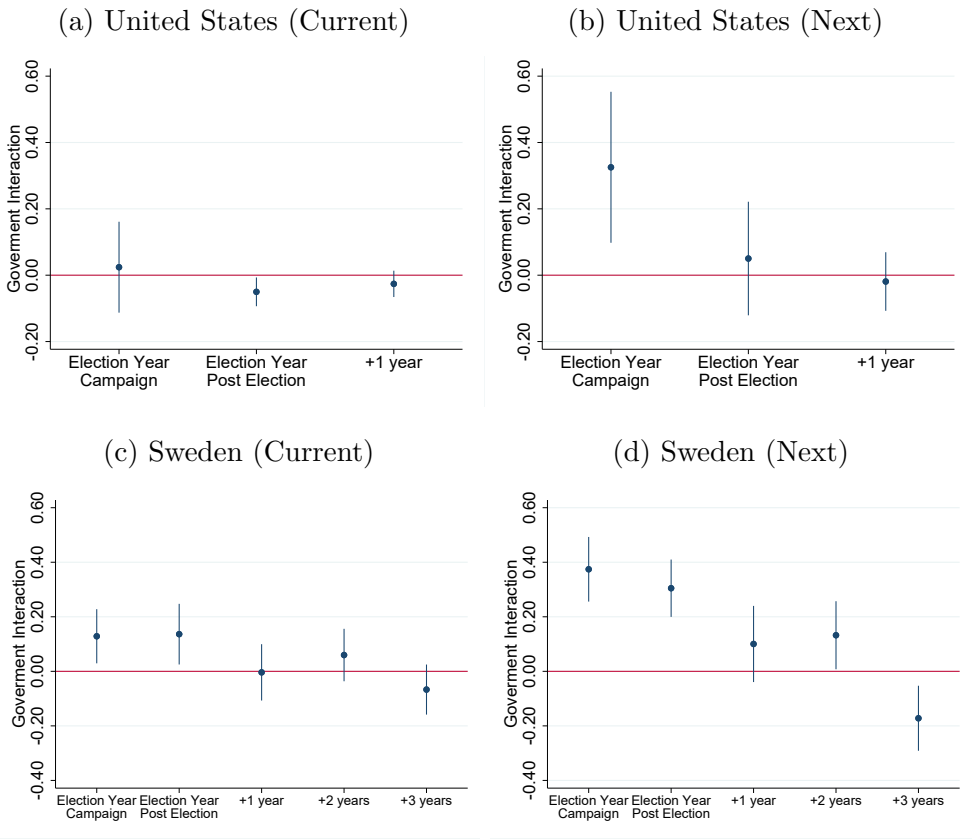


Figure A8: Estimation of Election Cycle

Notes: The horizontal axis refers to the election cycle where the election year has been split into pre- (campaign) and post-election. The "+1 year" then refers to the year after the election year. The horizontal axis refers to the origin for when the forecast was released, while the graph titles provide the forecast target (current or next year). We are unable to perform the same estimation for the U.K. since it does not have a well-defined election cycle. The coefficients displayed in the graphs correspond to the β coefficients in the estimated equation. Standard errors robust to two-way clustering at the forecaster and the survey levels are reported at the 5% significance level. In the case for Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level.

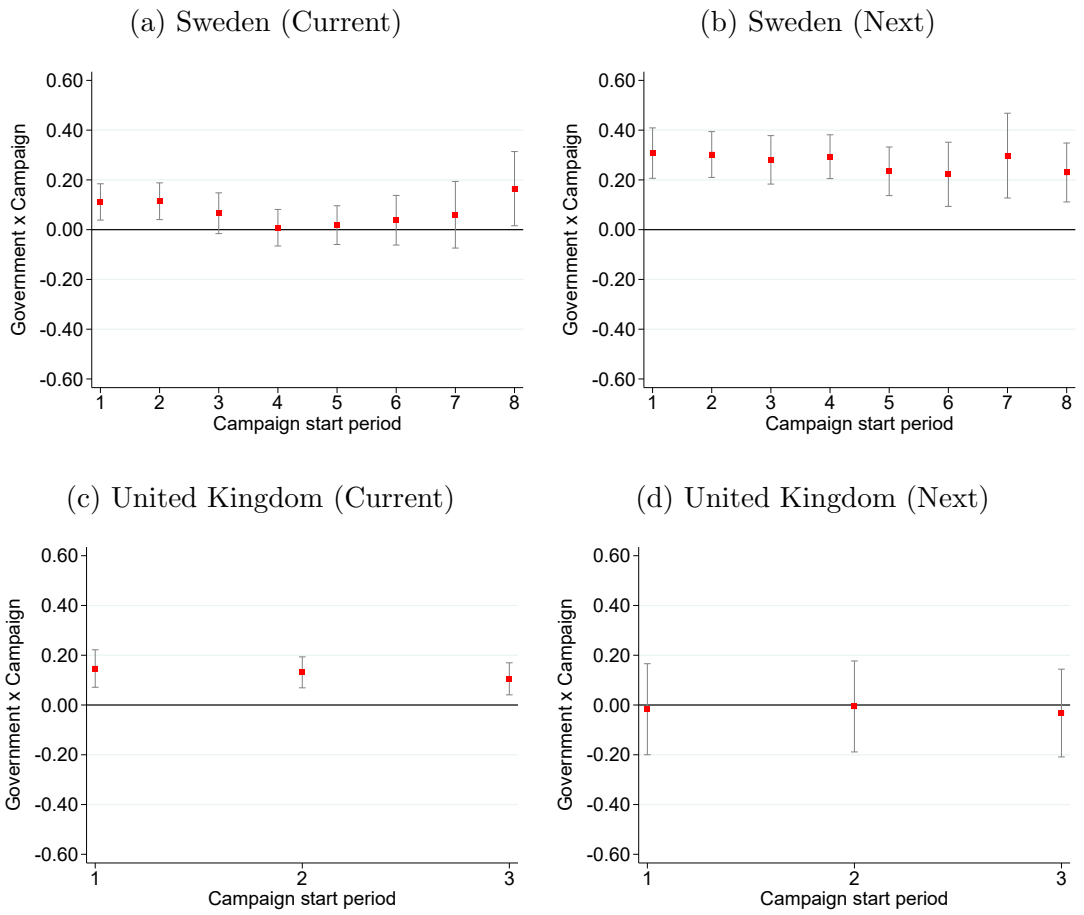


Figure A9: Sensitivity of the Estimates to the Definition of the Campaign Period

Notes: The graphs plot the estimated coefficients and 95% confidence intervals from estimating equation (17) by alternating the definition of the *Campaign* indicator to include only the months between each marker on the x-axis and the election date. Coefficients at period 1 replicate the results presented in Columns (2) and (4) of Table 1. 95% confidence intervals are based on standard errors robust to two-way clustering at the forecaster and the survey levels. For Sweden, 95% confidence intervals are based on standard errors robust to two-way clustering at the individual and the time (month-by-year) levels based on 999 wild bootstrap repetitions at the individual level.

Table A3: Estimated Election Cycle Bias in Central Banks forecasts

	Panel A. United States		***Panel B. Sweden***	
	Current	**Next**	**Current**	**Next**
	(1)	(2)	(3)	(4)
Central Bank × *Campaign*	0.040	–0.315	–0.140***	0.127**
	(0.116)	(0.308)	(0.053)	(0.054)
Observations	2,994	2,969	945	950
R^2	0.661	0.750	0.826	0.927
Fixed Effects	✓	✓	✓	✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. In Panel A. United States, the fixed effects are replaced with type effects and the sample is restricted to years 1976–1989 due to data limitations. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year or quarter-by-year) levels are in parentheses. In Panel B. Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level. *,**,*** represent the 10%, 5%, 1% significance levels.

Table A4: Estimated Election Cycle Bias: Election Year Definition

	Current		**Next**	
	(1)	(2)	(3)	(4)
Panel A. United States				
Government × *Election Year*	0.026	0.024	0.255***	0.254***
	(0.046)	(0.047)	(0.062)	(0.063)
Government	–0.026		–0.019	
	(0.022)		(0.051)	
Observations	3,082	3,082	3,057	3,057
R^2	0.662	0.665	0.750	0.752
Panel B. Sweden				
Government × *Election Year*	0.122***	0.131***	0.337***	0.346***
	(0.027)	(0.027)	(0.049)	(0.042)
Government	0.000		0.019	
	(0.038)		(0.055)	
Observations	1,028	1,028	1,034	1,034
R^2	0.817	0.828	0.921	0.927
Panel C. United Kingdom				
Government × *Election Year*	0.039	0.033	–0.073	–0.076
	(0.050)	(0.061)	(0.090)	(0.115)
Government	0.113***		0.472***	
	(0.028)		(0.051)	
Observations	3,471	3,471	3,271	3,271
R^2	0.813	0.839	0.863	0.906
Fixed Effects		✓		✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. In columns (1) and (3) the estimated equation is (18), while in columns (2) and (4) the estimated equation is (17), with, in both cases, the *Campaign* indicator is replaced with an *Election Year* indicator equal to 1 for each forecast released during an election year in all estimations. In Panel A. United States, the fixed effects are replaced with type effects. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year or quarter-by-year) levels are in parentheses. In Panel B. Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level. *,**,*** represent the 10%, 5%, 1% significance levels.

Table A5: Estimated Election Cycle Bias: Real-time GDP growth

	Current		**Next**	
	(1)	(2)	(3)	(4)
Panel A. United States				
Government × *Campaign*	0.049	0.043	0.274***	0.265***
	(0.069)	(0.070)	(0.095)	(0.094)
Government	–0.030*		0.017	
	(0.018)		(0.045)	
Observations	3,082	3,082	3,057	3,057
R^2	0.454	0.460	0.748	0.750
Panel B. Sweden				
Government × *Campaign*	0.113***	0.113***	0.315***	0.307***
	(0.035)	(0.037)	(0.055)	(0.052)
Government	0.017		0.062	
	(0.035)		(0.053)	
Observations	1,028	1,028	1,034	1,034
R^2	0.663	0.683	0.907	0.915
Panel C. United Kingdom				
Government × *Campaign*	0.172***	0.156**	0.039	0.015
	(0.036)	(0.062)	(0.148)	(0.170)
Government	0.101***		0.453***	
	(0.026)		(0.055)	
Observations	3,471	3,471	3,271	3,271
R^2	0.590	0.649	0.855	0.901
Fixed Effects		✓		✓
Year Effects	✓	✓	✓	✓
Horizon Effects	✓	✓	✓	✓

Notes: The dependent variable is the real GDP growth rate forecast error, where the error is defined as the difference between the forecast and the outcome. In columns (1) and (3) the estimated equation is (18), while in columns (2) and (4) the estimated equation is (17). In Panel A. United States, the fixed effects are replaced with type effects. Standard errors robust to two-way clustering at the forecaster and the time (month-by-year or quarter-by-year) levels are in parentheses. In Panel B. Sweden, the standard errors are based on 999 wild bootstrap repetitions at the individual level. *,**,*** represent the 10%, 5%, 1% significance levels.