



Rational inattention and politics: how parties use fiscal policies to manipulate voters

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Abstract

We model a two-party electoral game with rationally inattentive voters. Parties are endowed with different administrative competencies and announce a fiscal platform to be credibly implemented in case of electoral success. The budgetary impact of each platform depends on the party's competence and on a stochastic implementation shock. Voters rely on the announced platform to infer a party's unobserved competence. In addition, voters receive noisy signals on the impact of each fiscal platform with noise depending ultimately on a voter's cognitive skills. We predict that the interplay between the desire of parties to win the election (the *incentive* to manipulate voters' beliefs) and voters' (lack of) cognitive skills (the *scope* for manipulation) distorts fiscal policies towards excessive budget deficits. The mechanism is that parties attempt to manipulate inferences on their competencies by implementing a loose fiscal policy. The predictions are tested empirically on a sample of advanced economies over years 1999–2008. Our results remain stable after controlling for potentially confounding differences across countries and over time, along with unobserved heterogeneity. Finally, alternative mechanisms potentially driving our results are investigated and ruled out.

Keywords Rational inattention · Government polarization · Asymmetric information · Voter manipulation · Cognitive skills · Fiscal policy

JEL Classification D72 · D83 · E62 · H62

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1 Introduction

The study of how electoral outcomes are influenced by the imperfect information of voters is central to the political economy and political science literature (Ashworth & De Mesquita, 2014; Martinelli, 2001; Xu, 2019). If voters are poorly informed on the competencies of parties and on the quality of policies, office-seeking politicians may strategically implement fiscal measures to manipulate voters' beliefs and gain electoral advantages (Rogoff, 1990; Rogoff & Siebert, 1988). The outcome of such a manipulation is a fiscal policy distorted towards excessive deficit spending and large public debt.¹ However, what does being poorly informed in the era of internet and social media really mean? Does the abundance of available information inevitably lead to more informed voters and more prudent fiscal policy decisions?

In the present paper, we address those questions both theoretically and empirically by relying on two arguments. First, voters are not passive receivers of information; they instead undertake active intellectual efforts to collect and process information on the competencies of parties and on the impact of their policies. That argument rests on the rational inattention literature claiming that what an agent knows about a subject is conceptually distinct from the information potentially available on that subject (Caplin & Dean, 2015; Matějka & Tabellini, 2020; Sims, 2003). In other words, access to many sources of information may be irrelevant to an individual's rational judgment if her information processing ability is poor.²

Second, the costs of collecting and processing information depend on individuals' cognitive abilities; as far as information about the competencies of parties in implementing fiscal policies is concerned, such costs are determined by the voter's command of economic knowledge. That argument is inspired by the financial literacy literature, according to which individuals endowed with knowledge of economic and financial concepts process financial information more cheaply, thus taking better financial decisions (Fornero & Lo Prete, 2019; Lusardi & Mitchell, 2014). Extending the same idea to the case of fiscal policies, we argue that economic knowledge is necessary for voters to process information about public policies properly and the competencies of parties in implementing such policies.

The foregoing arguments carry important implications for the empirical analysis of aggregate data. Indeed, if cognitive abilities matter, simple measures of information diffusion might be poor proxies for voters' informational imperfections. While traditional measures likely detect a vast amount of informational heterogeneity between developing and developed countries (Shi & Svensson, 2006), they may fail to do so within a (more homogeneous) group of advanced economies. Indeed, as we show herein, in developed countries

¹ In the manipulation literature (Rogoff and Siebert, 1988, for instance), excessive public expenditure or excessively low taxation are used to induce uninformed voters to overestimate parties' administrative abilities. Manipulation of imperfectly informed voters, however, does not represent the unique explanation for excessive budget deficits. Alternative mechanisms are based on common resources externalities (see Weingast et al., 1981) and on rent extraction. Rents may come from financing preferred public goods (Alesina and Tabellini, 1990) or in transferring resources to preferred groups (Battaglini and Coate 2008). For a recent survey of those different mechanisms, see Yared (2019).

² In principle, voters' beliefs are less likely be manipulated when voters can access more sources of transparent information freely (Alt and Lassen, 2006; Shi and Svensson, 2006). However, even if many high-quality sources are available at no out-of-pocket expense, information remains costly owing to the time necessary to interpret and process its content.

information is abundant everywhere, whereas cognitive abilities (as proxied by economic literacy) are not.

We propose a theoretical model wherein, on the eve of an election, two parties compete for votes and announce the fiscal policy platforms they promise to implement after a successful electoral outcome. The impact of each platform on the budget depends on both the administrative competence of the party and a stochastic implementation shock, which is unknown by both voters and parties. Voters observe the announced platforms and a noisy signal about their budgetary effects. By contrast, they do not observe the competencies of the two parties, which is inferred from the announced platform.

Given that setting, we show that in equilibrium, parties propose and implement platforms that are more expansionary than would be announced and implemented with fully informed voters. That happens because, observing only a noisy signal about the budget impact of platforms, voters also forecast the effects by relying on their inferences as to the competencies of parties. In turn, parties attempt to manipulate those inferences by announcing excessively loose platforms.

We also assume that the precision of the signal is endogenous because it depends on the time and intellectual efforts devoted by voters to acquiring and processing information useful for forecasting the platforms' fiscal consequences. That crucial assumption implies that voters endowed with superior cognitive abilities observe more precise signals. Accordingly, those voters rely less on their inferences about parties' competencies, leaving parties less scope for manipulation.

In a nutshell, the theoretical model predicts that what distorts fiscal policy towards excessive budget deficits is the interplay between the desires of parties to win elections (the *incentive* to manipulate voters' beliefs) and voters' (lack of) cognitive abilities (the *scope* for manipulation). We test the model's predictions empirically on a sample of advanced economies observed over the 1999–2008 period. We proxy the *incentive* to manipulate voters' beliefs by the ideological polarization of cabinet members. Ideologically polarized cabinets characterize divergent political environments, wherein the incentive to win electoral competitions is intense because the losing party is bound to bear the costs of the winners' implementation of policies that are very distant from its own ideal point (Alesina & Tabellini, 1990; Cukierman et al., 1992; Schultz, 1996). As to the *scope* of manipulation, we proxy voters' cognitive abilities by their economic literacy. As argued above, in a world where sources of policy information are abundant, processing information requires economic knowledge.

The empirical results are consistent with the theoretical predictions. We find that sharper government polarization is associated to worse fiscal balances, and that the association is stronger when the level of economic literacy is weaker among the population. Furthermore, the influence of government polarization on budget balances becomes negligible as literacy increases, suggesting that polarization leads to distorted fiscal policies only when enough room for manipulation is open. Our results remain stable after controlling for potentially confounding differences across countries and over time, several types of falsification tests, and unobserved heterogeneity. Moreover, alternative mechanisms potentially explaining our results are investigated and ruled out.

The present work adds to several streams of research. First, we contribute to the political economy and rational inattention literature. We follow Matějka and Tabellini (2020), who characterize the interplay between information acquisition and electoral competition. However, they consider voters as perfectly informed on parties' attributes, so their beliefs cannot be manipulated. Second, we enrich the "rational voter" literature opened by Rogoff and Sibert (1988) and Rogoff (1990). More recently, Shi and Svensson (2006) find that

the share of informed voters affects a country's fiscal discipline. However, differently from our work, the authors proxy the share of informed voters by introducing two indices of information diffusion and media access, which cannot capture the voters' ability to process information. Third, we contribute to the debate on the effects of government polarization in politics (Lee, 2015; Schultz, 1996; Sørensen, 2014; Sutter, 2003) by showing that political polarization affects the incentive to distort policies for electoral purposes.

The paper proceeds as follows. Section 2 describes the theoretical model. Section 3 discusses the empirical strategy and tests the main predictions of the model. Section 4 presents a set of robustness checks. Section 5 is devoted to ruling out alternative mechanisms possibly explaining our findings. Finally, Sect. 6 concludes.

2 The theoretical model

The model studies the interactions between two political parties (A and B) and N nonpartisan voters on the eve of an electoral competition. In the spirit of the Hotelling's (1929) model, our approach resembles a situation wherein individuals are distributed along a unidimensional left–right ideological spectrum with partisan voters at the extremes and decisive nonpartisan voters in the middle.

Each party commits to a fiscal policy platform that will be implemented if it wins election. Voters collect information on the two competing platforms and, conditional on that information, choose the party for which to vote. The events after the election are completely determined by those decisions.³

2.1 Voters

Let \tilde{U}_A represent the utility of the representative voter under party A and \tilde{U}_B her utility under party B. For $j = A, B$, we assume that:

$$\tilde{U}_j = U_j + I_{j=A}z \quad U_j = y_j - \frac{1}{2}(s_j - T)^2 \quad (1)$$

$$s_j = -y_j + e_j \quad (2)$$

The first element of \tilde{U}_j captures the economic welfare of the voter under party j ; y_j indicates the stance of the fiscal platform announced by the party. The platform of party A may well be different from that of party B as to the size and composition of the revenues and expenditures. What we assume in Eq. (1) is that the representative nonpartisan voter is concerned only with the overall fiscal stance. A larger value of y_j represents a more expansionary posture. The public budget surplus following the implementation of the announced platform is s_j . The voter appreciates a more expansionary platform but also is concerned

³ The assumption of binding electoral announcements is pervasive in the literature (see, for instance, Schultz, 1996; Persson and Tabellini, 1999; Martin and Stevenson, 2001; Bellettini and Roberti, 2020). Two contributions, Alesina (1988) and Aragones et al. (2007), have rationalized the assumption by looking at reputational mechanisms. Other studies have argued that the announcements also influence the formation of coalitions and the selection of policies (Austen-Smith and Banks, 1988; Bandyopadhyay and Chatterjee, 2006; Debus, 2009).

with its budgetary consequences. In fact, in the anticipation of a future fiscal consolidation, the voter suffers from a budget balance falling short of some target T . The quadratic form $(s_j - T)^2$ is intended to capture the convexities in the cost of correcting excessive deficits.⁴

The second element of \tilde{U}_j represents the political preference of the representative voter for party A vis-à-vis party B . The term $I_{j=A}$ is an indicator that equals one if the ruling party is A and zero otherwise, while z is a shock that captures factors of preference formation such as the personal appeals (or valences) of candidates. We assume that z is extracted from a uniform distribution over the support $[-\bar{z}/2, \bar{z}/2]$.

Equation (2) states that the budget balance s_j declines with the fiscal policy stance but increases with the efficiency of party j (e_j) in transforming tax revenues into public goods (Schultz, 1996). Efficiency e_j depends on the administrative competence of the party and on a set of exogenous stochastic elements. For instance, the costs of offering more generous social assistance depend on the competencies of those who design the plan but also on contingencies that cannot be fully predicted in advance. Formally, we assume:

$$e_j = \eta_j + x_j \text{ with } x_j \sim N(0, \sigma_x^2) \text{ and } E(x_A x_B) = 0, \quad (3)$$

where η_j represents the administrative competence of party j , while x_j is a zero-mean normally distributed efficiency shock with variance σ_x^2 . The efficiency shocks of the two parties are independent.

2.2 Parties

At the announcement of the platform, the objective of party j is:

$$\rho P(y_j; \eta_j) + W(y_j; \eta_j). \quad (4)$$

$P(y_j; \eta_j)$ represents the expected probability of being supported by the representative voter, while $W(y_j; \eta_j)$ indicates the associated expected social welfare. Owing to the timing of events (see Sect. 2.3), both expectations are formed before the realization of z and x_j and depend only on (y_j, η_j) . The expression in (4) highlights that the party aims at winning the election. The relative weight of that objective depends on the parameter $\rho (\geq 0)$. In equilibrium, party j maximizes the objective in (4) with respect to y_j .

2.3 Information and timing

At the beginning of the game, Nature chooses the two competence levels η_A and η_B . We assume that they are extracted from the same distribution with unbounded support and that η_j is revealed only to party j . After Nature's choice, party j announces its platform y_j , which therefore is conditional on η_j .

Voters support the party that provides the best combination of expected economic welfare and political appeal. Recalling Eqs. (1) and (2), economic welfare under the rule of party j depends on y_j and on its efficiency e_j . At the time of the vote, however, voters do not observe $e_j (= \eta_j + x_j)$ but are aware that y_j is conditional on η_j . Hence, voters rely on y_j to form a belief

⁴ Think, for instance, of the risk premium demanded by lenders, the chance of a debt crisis and the macro-economic costs following abrupt fiscal consolidation. The quadratic form implies a loss of welfare even if the current budget balance is larger than T . In equilibrium, however, that case is ruled out.

$\hat{\eta}(y_j)$ on η_j . Moreover, after the announcement of platforms, voters engage in a costly acquisition of information useful for forecasting e_j . The result of that effort is a noisy signal q_j^i of e_j :

$$q_j^i = e_j + \xi_j^i \text{ with } \xi_j^i \sim N(0, \sigma_{i,j}^2) \text{ and } E\left[\frac{\xi_j^i \xi_j^{i'}}{\xi_j^i \xi_j^{i'}}\right] = 0 \text{ and } E\left[\frac{\xi_j^i \xi_j^{i'}}{\xi_j^i \xi_j^{i'}}\right] = 0 \quad j, j' = A, B \quad (5)$$

The signals about e_j received by two different voters— i and i' —are uncorrelated. Likewise, the signals about e_A and e_B received by the same voter are uncorrelated. The variance $\sigma_{i,j}^2$ is endogenous because it depends on the extent of information acquisition. More information acquisition is costly, but it also brings forth more precise signals. Voters choose $\sigma_{i,j}^2$ optimally by maximizing the difference between the benefits and the costs of acquiring more precise signals (see Sect. 2.6).

To summarize, the timing of events is as follows:

- 1) Nature extracts the competencies of parties (η_A, η_B) and, conditional on their competencies, parties announce platforms (y_A, y_B);
- 2) after observing (y_A, y_B), voters form beliefs ($\hat{\eta}(y_A), \hat{\eta}(y_B)$);
- 3) Nature extracts—but does not reveal—the efficiency shocks that determine (e_A, e_B) while voters are acquiring information;
- 4) Nature extracts the preference shock (z) and reveals the signals (q_A^i, q_B^i) about (e_A, e_B);
- 5) voters cast their votes.

2.4 Behavior

Here, we show the behavior of voters and derive the functions $P(y_j; \eta_j)$ and $W(y_j; \eta_j)$ that appear in the parties' objective functions. For the sake of exposition, we disregard the decisions of voters concerning information acquisition and assume that acquisition is uniform across signals and voters: $\sigma_{i,j}^2 = \sigma_q^2$ for $i = 1 \dots N$ and $j = A, B$. We show later that both hold in equilibrium.

Immediately after the announcement of platforms, voter i relies on y_j to form a belief $\hat{\eta}(y_j)$ on η_j , meaning that, before the arrival of the signal q_j^i , the voter has a normally distributed prior $N[\hat{\eta}(y_j), \sigma_x^2]$ on $e_j (\equiv \eta_j + x_j)$. When the signal arrives, the voter updates her belief of e_j by applying Bayes's rule:

$$E[e_j | y_j, q_j^i] \equiv E[e_j | \hat{\eta}(y_j), q_j^i] = (1 - \lambda)\hat{\eta}(y_j) + \lambda q_j^i \lambda \equiv \frac{\sigma_x^2}{\sigma_x^2 + \sigma_q^2} \quad (6)$$

Subsequently, the voter relies on that forecast to assess her economic welfare under party j :

$$E[U_j | y_j, q_j^i] = y_j - \frac{1}{2} \left(-y_j + (1 - \lambda)\hat{\eta}(y_j) + \lambda q_j^i - T \right)^2 - \frac{1}{2} \lambda \sigma_q^2 \quad (7)$$

Finally, the voter observes Nature's choice of z and votes for the party A if:

$$E[U_A | y_A, q_A^i] + z - E[U_B | y_B, q_B^i] \geq 0. \quad (8)$$

Equation (8) allows party A to derive the expected probability of being favored by the representative voter. Assuming that the support of z is sufficiently large, the probability is (see the Supplementary Material for details):

$$\begin{aligned}
 P(y_A;\eta_A) &= \frac{1}{2} + \frac{1}{\bar{z}} \left[E_{q_A^i} E(U_A|y_A, q_A^i) - E_{y_B, q_B^i} E(U_B|y_B, q_B^i) \right] = \\
 &= \frac{1}{2} + \frac{1}{\bar{z}} \left[y_A - \frac{1}{2} [-y_A + (1 - \lambda)\hat{\eta}(y_A) + \lambda\eta_A - T]^2 - \frac{1}{2}\sigma_x^2 - E_{y_B, q_B^i} E(U_B|y_B, q_B^i) \right] \tag{9}
 \end{aligned}$$

The left-hand side of (9) depends on the expectation of party A about how the representative voter assesses economic welfare after the arrival of signals. If party A expects the voter to assess welfare more highly under A than under B, the probability exceeds 0.5. The impact of the welfare differential on $P(y_A;\eta_A)$ depends negatively on \bar{z} , which is that variable’s range of variation. Intuitively, as that range widens the preference shock z becomes more relevant in determining the vote for any given welfare differential.

The probability of winning for party B— $P(y_B;\eta_B)$ —is formally analogous to that derived for party A. Thus, we hold Eq. (9) to define the generic probability $P(y_j;\eta_j), j = A, B$.

To describe the objective of party j in Eq. (4) fully, we also need to specify the function $W(y_j;\eta_j)$. Doing so requires the computation of the expected welfare of the representative voter:

$$W(y_j;\eta_j) \equiv E_{e_{j\eta_j}} [\tilde{U}_j] = y_j - \frac{1}{2}(-y_j + \eta_j - T)^2 - \frac{1}{2}\sigma_x^2 \tag{10}$$

The socially optimal platform $y^*(\eta)$, i.e., the platform that maximizes $W(y;\eta)$, is:

$$y^*(\eta) = 1 - T + \eta. \tag{11}$$

Intuitively, Eq. (11) implies more spending and/or less taxation when the surplus target T declines or the administrative competence η increases. Note that $y^*(\eta)$ also represents the equilibrium platform under full information because it maximizes the objective function in Eq. (4) with perfectly informative signals ($\sigma_q^2 = 0$ and $\lambda = 1$).

2.5 Equilibrium

We focus on separating perfect Bayesian equilibria. We define an equilibrium as a policy function $y(\eta)$ and a belief function $\hat{\eta}(y)$ such that: (a) $y(\eta_j)$ maximizes party j ’s objective in Eq. (4) given that party j ’ chooses $y(\eta_j)$ and voters hold beliefs $\hat{\eta}(y)$; (b) beliefs are unbiased in the sense that $\hat{\eta}(y(\eta)) = \eta$.

It can be shown that $y(\eta)$ is continuous, monotone, and differentiable (see the Supplementary Material). One thus can apply the inverse function theorem— $\hat{\eta}'(y) = 1/y'(\eta)$ —and compute the necessary condition for maximizing the objective in Eq. (4) with respect to y_j . Concavity implies that the condition also is sufficient:

$$[1 - y(\eta_j) + \eta_j - T]y'(\eta_j) - \frac{\rho(1 - \lambda)}{\rho + \bar{z}} [-y(\eta_j) + \eta_j - T] = 0 \tag{12}$$

In the Supplementary Material, we provide the general solution of the differential Eq. (12) and pin down a particular solution by imposing the condition that $y(\eta_j)$ approaches the full information solution $y^*(\eta_j)$ as η_j approaches the bottom of its support. A party that signals as being of the worst competence *type* cannot be suspected of mimicking the behavior of a better *type*, thereby explaining convergence to full information at the bottom (Mailath, 1987). The unique solution that satisfies that condition is

$$y(\eta; \rho, \lambda) = 1 - T + \eta + D(\rho, \lambda) \quad D(\rho, \lambda) \equiv \rho \frac{1 - \lambda}{\rho\lambda + \bar{z}} \geq 0 \tag{13}$$

Equation (13) emphasizes the two parameters that are crucial for the mechanism highlighted in the model. Recalling that ρ indexes electoral concerns, while $1 - \lambda$ represents the extent of imperfect information, in the absence of electoral concerns ($\rho = 0$), imperfect information ($\lambda = 1$), or both, the equilibrium platform coincides with the platform that maximizes expected social welfare $y^*(\eta)$ [$D(0, \lambda) = D(\rho, 1) = 0$]. By contrast, under asymmetric information and dominant electoral concerns, the equilibrium platform is more expansionary with respect to the social optimum.

The intuition is the following. Party j is aware that voters rely on their beliefs about a party’s competence to assess the efficiency of the proposed platform. In addition, the party is aware that voters’ beliefs improve with the announcement of more expenditures and/or less taxes. Hence, the party announces an overly expansionary platform in the attempt to manipulate voters’ beliefs and gain more electoral support. The budget distortion $D(\rho, \lambda)$ increases with the temptation to manipulate voters, which, in turn, depends on the electoral concern (ρ), the informational disadvantage of voters ($1 - \lambda$), and their interactions:

$$D_\rho(\rho, \lambda) > 0 \quad D_\lambda(\rho, \lambda) < 0 \quad D_{\rho\lambda}(\rho, \lambda) < 0. \tag{14}$$

2.6 Information acquisition

We follow the rational inattention approach of Matějka and Tabellini (2020) to endogenize the imperfect information of voters. We assume that the representative voter i chooses $(\sigma_{q_A}^2, \sigma_{q_B}^2)$ to solve the following problem:

$$\max_{\sigma_{q_A}^2, \sigma_{q_B}^2} E_{q_A^i, q_B^i, z} \{ \max [E(U_A | y_A, q_A^i) + z, E(U_B | y_B, q_B^i)] \} - C(\sigma_{q_A}^2, \sigma_{q_B}^2) \tag{15}$$

The expectation $E_{q_A^i, q_B^i, z} \{ \max [.] \}$ represents the ex ante value of voting for the best ex post party, with ex ante and ex post referring to the times at which the signals arrive. That expectation represents the benefit of observing more precise signals. It can be shown that it increases as the two signals become more precise. The function $C(.)$ represents the cost associated with the precision of the two signals. Following Sims (2003), we assume that the cost of increasing precision is proportional to the difference between the prior and the posterior entropies of the distribution of e_j :

$$C(\sigma_{q_A}^2, \sigma_{q_B}^2) = \frac{1}{2} \kappa \left[\log \left(1 + \sigma_x^2 / \sigma_{q_A}^2 \right) + \log \left(1 + \sigma_x^2 / \sigma_{q_B}^2 \right) \right] \tag{16}$$

A crucial parameter of the cost function is κ . It captures the costs of acquiring and processing information for a given increase in signal precision. In the real world, κ may depend on the availability of unbiased information. However, when information is abundant, κ is determined primarily by the ability of voters to locate and parse relevant information.

Note that the voter is atomistic. Hence, she makes her decision about $(\sigma_{q_A}^2, \sigma_{q_B}^2)$ while taking as given the aggregate extent of imperfect information (λ) and its distortion $D(\rho, \lambda)$. Problem (15) is stated *as if* the voter knew in advance that she would be pivotal, even if the probability of being pivotal is nearly zero in large elections and no one should bother to become informed (Downs, 1957) and, by extension, to vote. Our interpretation of problem

(15) is that individuals are motivated to vote and, notably, to “cast the right vote” for ethical reasons and civic duties (Blais, 2000; Brennan, 2012; Feddersen & Sandroni, 2006). As a matter of fact, the evidence on the extent of voter’s information is mixed. While Caplan (2007) documents that the average US voter is poorly informed, voters in Europe appear much better informed (see Mattieß, 2020).

2.7 Comparative statics

In the Supplementary Material, we solve problem (15) by replacing $\sigma_{q_j}^2$ with $\lambda_j^i = \sigma_x^2 / (\sigma_x^2 + \sigma_{q_j}^2)$, $j = A, B$. Consistent with the analysis above, we find that the representative voter chooses the same λ^i for both signals. Furthermore, if the optimal λ^i falls in the interval (0,1), it coincides with the largest root of the equation

$$[1 + D(\rho, \lambda)]^2 \sigma_x^2 + \lambda^i \sigma_x^4 = \frac{\kappa \bar{z}}{1 - \lambda^i} \tag{17}$$

Relying on (17), it can be proved that the optimal acquisition of information (λ^i) shrinks if the preference shock becomes more relevant (\bar{z}) and, crucially, if the voter is less able to process information (κ). By contrast, optimal information acquisition increases with the extent of the distortion $D(\rho, \lambda)$ because informative signals become more valuable when platforms are more distorted.

Imposing general equilibrium by replacing λ^i with λ in Eq. (17), Eqs. (13) and (17) form a nonlinear system that solves for the endogenous $[D, \lambda]$ in terms of the parameters $[\sigma_x^2, \kappa, \rho, \bar{z}]$. We compute numerically the solution of the system and plot the comparative statics of the distortion D with respect to ρ and κ in Fig. 1.

Regardless of the size of σ_x^2 , the comparative statics in Fig. 1 match with the ones described in Eq. (14) after replacing the informational disadvantage of voters ($1 - \lambda$) with the cost of information (κ). The distortion increases with respect to the electoral concerns of the parties and with the cost of information acquisition. In addition, the cross-effect is positive: the slope of the distortion with respect to the information cost increases with the intensity of the electoral concerns. Those effects decline with σ_x^2 because with larger

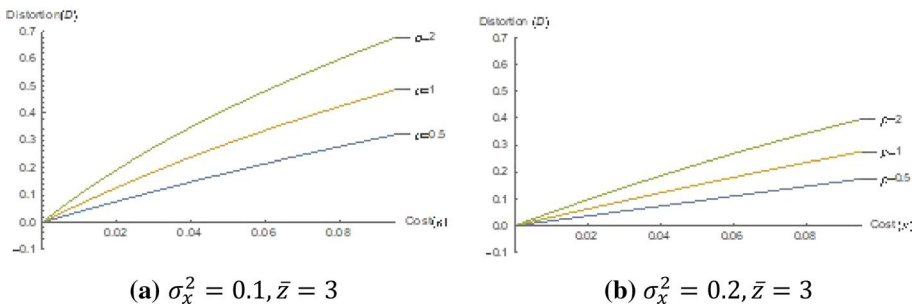


Fig. 1 Comparative statics

exogenous uncertainty, voters assign less weight to party competence and, accordingly, parties have less incentive to distort their platforms.⁵

Let $\hat{D}(\rho, \kappa)$ indicate distortion as a function of ρ and κ . The comparative statics shown in Fig. 1 can be summarized as follows:

$$\hat{D}_\rho(\rho, \kappa) > 0 \quad \hat{D}_\kappa(\rho, \kappa) > 0 \quad \hat{D}_{\rho\kappa}(\rho, \kappa) > 0. \quad (18)$$

To highlight the impact of (ρ, κ) on the budget surplus, we define the *structural* surplus $s(\rho, \kappa)$ as the surplus expected before the start of the electoral game for some party j winning the election. Using Eqs. (2) and (13), we obtain:

$$s(\rho, \kappa) = -1 + T - \hat{D}(\rho, \kappa) \quad (19)$$

The comparative statics of $\hat{D}(\rho, \kappa)$ translate immediately into the comparative statics of $s(\rho, \kappa)$ as described in Proposition 1.

Proposition 1: If parties set a platform with distortion $\hat{D}(\rho, \kappa)$, the structural budget surplus $s(\rho, \kappa)$ arising from their platforms exhibits the following comparative statics:

$$i) s_\rho(\rho, \kappa) < 0 \quad ii) s_\kappa(\rho, \kappa) < 0 \quad iii) s_{\rho\kappa}(\rho, \kappa) < 0 \quad (20)$$

In the rest of the paper, we refer to ρ as the parameter that captures the *incentive* to manipulate voters' beliefs and to κ as the one that captures the *scope* of manipulation. Equation (20) states that the fiscal balance worsens with respect to the incentives for manipulation, the scope of manipulation, and their interaction.

3 The empirical analysis

3.1 Testable implications

A preliminary step to test the above predictions is the definition of the empirical counterparts for the key parameters ρ and κ . The *incentive* to manipulate voters' beliefs (ρ) is measured by a variable that captures *government polarization*, that is, whether cabinet members are ideologically cohesive. In a polarized political environment, parties are likely to have very different preferences regarding the types of public goods to be provided and, more generally, regarding the nature of the policies to be implemented (Alesina & Tabellini, 1990; Cukierman et al., 1992). Hence, they propose platforms that diverge mainly in the composition of the expenditure side and compete fiercely to win the election because the losing party is bound to bear the cost of implementing expenditures that are very distant from its own ideal point.⁶

⁵ In Fig. 1a and 1b, the values assigned to σ_x^2 entail substantial uncertainty about the budgetary effects of fiscal platforms. Under full information ($\lambda=1$) and with $T=0$, the variance $\sigma_x^2 = 0.1$ ($\sigma_x = 0.2$) implies that the balance deviates by more than 20% (30%) from its expected value with a probability larger than 0.5.

⁶ The relationship between party polarization and the intensity of political competition also is emphasized in the political science literature. McCarty et al. (2006) link increasing campaign expenditures in US elections to the greater polarization of candidates. It is worth noting that the notion of government polarization is associated neither with the divide between majoritarian and proportional electoral systems nor with voter polarization. Regarding the former, one may have a polarized cabinet within a coalition, and a non-

The United States supplies a clear example of the link between the concept of government polarization incorporated in the empirical model and the theoretical model's concept of electoral competition. Democrats and Republicans adopt very divergent policy preferences leading to vigorous electoral campaigns, and party polarization often, but not always, translates into unified control of governing institutions (Lee, 2015). Thus, it is reasonable to assume that, everything else being equal, strong polarization before an electoral competition likely will be correlated with a cohesive government after the election.

As to the *scope* of manipulation, we measure the cost borne by the voter in acquiring and processing information on policy proposals by her level of *economic literacy*. We posit that those costs (κ) are smaller in those countries where individuals are more economically literate.

Henceforth, building upon Proposition 1, the testable implications of the model are:

Hypothesis H1: Government polarization worsens the fiscal balance.

Hypothesis H2: Voters' economic literacy improves the fiscal balance.

Hypothesis H3: Economic literacy mitigates H1 (government polarization strengthens H2).

3.2 The baseline specification

To test the three hypotheses above, we rely on a balanced panel dataset of 23 OECD countries that are observed over the 1999–2008 period. The sample coverage depends on the availability of observations on economic literacy and political variables.⁷ Following the literature on the determinants of budget balance and fiscal performance (e.g., Lane, 2003; Mauro et al., 2015), we estimate the following baseline specification:

$$\begin{aligned}
 BUDGET_{it} = & \alpha + \beta \cdot LITERACY_{it-1} + \delta \cdot POLARIZATION_{it-1} + \\
 & + \gamma \cdot (POLARIZATION_{it-1} \cdot LITERACY_{it-1}) + \sum_{j=1}^N \theta_j \cdot CONTROLS_{it-1} + \omega_i + \tau_t + \varepsilon_{it}
 \end{aligned}
 \tag{21}$$

Equation (21) is an empirical counterpart of the linear approximation of $s(\rho, \kappa)$ around the sample averages of ρ and κ , augmented with the interaction term, and aimed at testing predictions H1–H3. Index i denotes the country, t the year, and *CONTROLS* is the vector of independent variables. We estimate Eq. (21) by means of panel fixed-effects (FE) regressions with country-level clustered, heteroscedasticity-robust standard errors. We enter lagged values of the explanatory variables because the budget balance at time t normally

Footnote 6 (continued)

polarized cabinet under a majoritarian system. Hence, our measure of polarization is unlikely to capture the common pool externality that affects fiscal policies under coalition governments. With respect to the latter, an influential political science scholar (Fiorina 1999) enlists voter polarization as only one of seven possible sources of party polarization.

⁷ The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

is based on the previous year's decisions and socioeconomic conditions. Moreover, lagged explanatory variables alleviate potential reverse causality issues (Bellemare et al., 2017; Reed, 2015). Those concerns are less true for perceived measures (like our economic literacy variable) than for their real values. In addition, even if perceived literacy is likely to be correlated with "true" literacy and the latter is likely to be affected by public spending on education, the mechanism through which such education programs influence literacy intrinsically are long-termed. Therefore, they ought to be absorbed by country fixed effects.

The dependent variable *BUDGET* is the general government's primary balance as a percentage of GDP. It does not include the cost of servicing the public debt and, thus, represents a more direct measure of fiscal policy stances.

The variable *LITERACY* is a survey-based indicator of the opinions of experts and business leaders who are interviewed annually by the International Institute for Management Development (IMD) and whose responses are collected in the *World Competitiveness Yearbook*. Participants are asked to evaluate on a 0–10 scale the sentence "Economic literacy among the population is generally high." Responses are aggregated at the country level to provide an overall economic literacy score for the population (Jappelli, 2010). While the countries covered by the index are very homogeneous in terms of information access and diffusion, quite high heterogeneity exists across countries (and over time) in the displayed levels of economic literacy (Fornero & Lo Prete, 2019).

Being derived from interviews of senior business leaders, a relevant feature of the IMD indicator is that it measures *perceived* rather than *real* economic literacy. Far from being a nuisance, that feature fits closely with our theoretical arguments. Indeed, what matters for the *scope* of manipulation are the beliefs of politicians concerning voters' economic literacy, not actual literacy per se. Even though voters with very high levels of economic literacy are less vulnerable to manipulation, the actual economic literacy of voters is somewhat difficult to observe for politicians, who must ground their decisions on their own perceptions or cues.

Previous studies dealing with the determinants and consequences of economic literacy have used more direct and objective methods for eliciting the literacy of individuals (Lusardi, 2008). We have opted for IMD's subjective measure not only because of a better fit with our theoretical model, but also because objective measures until now are confined to a few countries, short time intervals, and, more important, computed with different methods, thus undermining cross-country comparability.

While the *real* country-level economic literacy likely is stable over a decade, persistence is less likely for the *perceived* level of literacy. As shown in Fig. 2, our measure of *perceived* literacy exhibits quite large variation across countries and over time; values range from 3.01 (Spain in 2008) to 8.16 (Finland in 2003 and Iceland in 2004). By contrast, since our sample is composed of advanced economies only, measures of information diffusion are likely to exhibit little variation, as depicted in Fig. 3, which shows the evolution of internet usage.

The variable *POLARIZATION* is a dummy that equals one if cabinet members are ideologically homogeneous—regardless of both the number of parties within the coalition and their right-wing, left-wing, or centrist ideologies (for a similar application, see Sørensen, 2014).⁸ In detail, the variable is computed from an index that measures the ideological

⁸ As explained in the theoretical section, we follow some influential previous literature (Alesina, 1988; Aragonés et al., 2007; Martin and Stevenson, 2001; Persson and Tabellini, 1999; Schultz, 1996) and assume binding electoral announcements (for details, see footnote 3). Accordingly, a polarized pre-electoral environment is conducive to an ideologically polarized government; thus, a post-election variable can capture pre-election concerns.

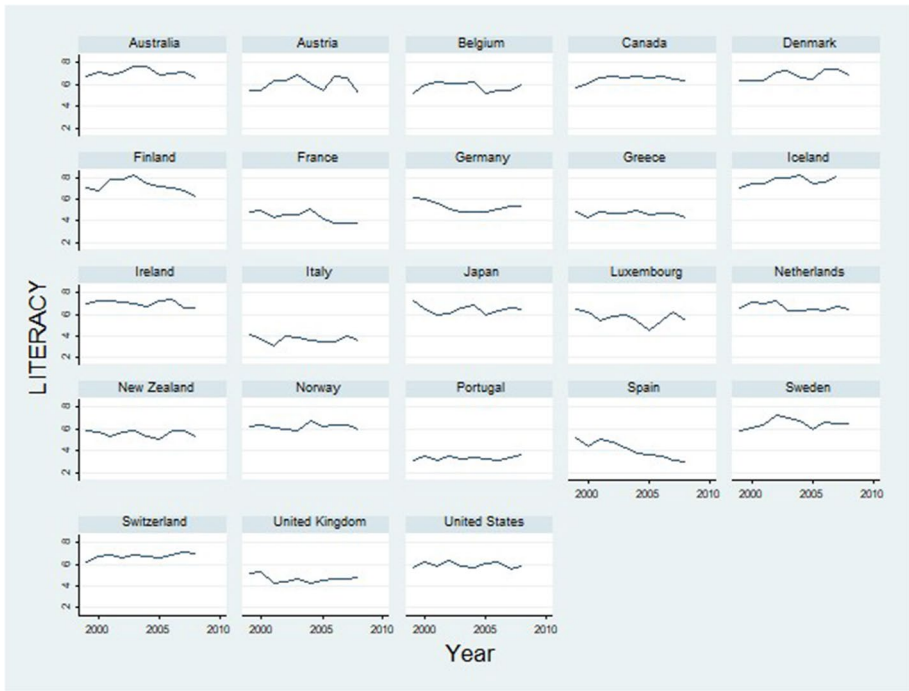


Fig. 2 Perceived economic literacy by country (average values, 1999–2008). Authors’ elaboration on World Competitiveness Yearbook

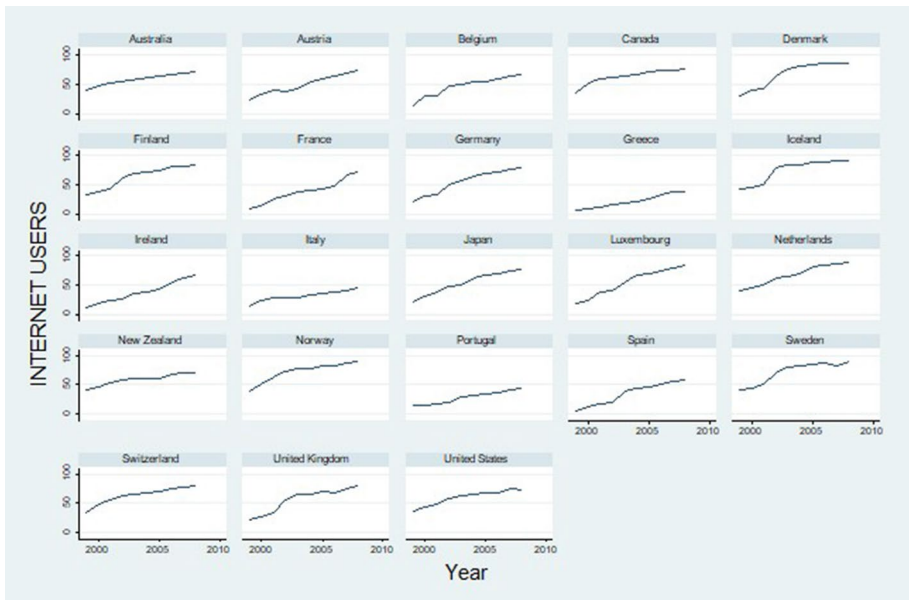


Fig. 3 Internet users per 100 people by country (average values, 1999–2008). Authors’ elaboration on World Development Indicators (Source: World Bank)

homogeneity of the cabinet along a three-level scale (Schmidt, 1992): hegemony (level 1), dominance (level 2), and balance (level 3). Within a cabinet, an ideology is hegemonic if all cabinet members adhere to it. An ideology is dominant if less than one-third of cabinet members do not adhere to it. Otherwise, a cabinet is termed “ideologically balanced.” Our dummy *POLARIZATION* equals one if an ideology is hegemonic within the cabinet (i.e., level 1).

Beyond manipulation issues, fiscal policies are driven by a set of “fundamentals.” In our theoretical model, such fundamentals are embedded in preferences as well as in the parameter T (i.e., the ideal budget balance from the perspective of financial markets, rating agencies, or both). Drawing on the interpretation of the parameter T , we insert the debt-to-GDP ratio (*DEBT*) and the long-term interest rate on the stock of public debt (*INTEREST*) as the main determinants of debt sustainability.

To capture the impact of the business cycle, we enter the unemployment rate (*UNEMP*), the annual growth rate of real per-capita GDP (*GDP GROWTH*), and the inflation rate—measured as the annual growth rate of the consumer price index. We also account for (i) the extent of trade openness, as measured by the sum of imports and exports over GDP (*OPEN*), to capture changes in fiscal aggregates induced by external trade shocks, and (ii) the possible effects on fiscal variables related to, for instance, migration inflows and outflows, by entering total population (*POP*) on the right-hand side.

Finally, even if economic literacy and general education are conceptually distinct and individuals differ widely as to their economic literacies at any given education level (Lusardi & Mitchell, 2014), the cognitive skills that potentially drive voters’ behavior might be related to the level of general education. In our model, we control for the average number of years of education for individuals aged 25 and older (*EDUCATION*).⁹ Additionally, we run robustness checks (in Sect. 5.2) by replacing *LITERACY* with *EDUCATION*.

Variable definitions and summary statistics are reported in Table A1 in the Supplementary Material.

3.3 Main results

Table 1 reports our empirical results. In column (1), we enter only the variables related to the incentive and scope for manipulating voters’ beliefs (*LITERACY* and *POLARIZATION*, respectively) and their interaction. In column (2) we extend the model’s specification to account for the main fundamentals of fiscal policy. In column (3) we enter the variables related to the economic cycle. Finally, in the last two columns we add *OPEN* and *POP*, and *EDUCATION* sequentially.

Across the different specifications, the estimated coefficients of the variables related to the incentive and scope for manipulation are consistent with our theoretical predictions. In line with H1, the estimated coefficient on *POLARIZATION* ($\hat{\delta}$) ranges between -2.51% (significant at 5%) in column (5) and -6.07% (significant at 10%) in column (1). Note that $\hat{\delta}$ refers to a situation when *LITERACY* equals zero [$\hat{\delta} = (\partial BUDGET / \partial POLARIZATION)_{LIT=0}$], which is a level not observed in our sample:

⁹ We also rely on two other measures to control for the education level as further robustness checks. Specifically, we consider the education component of the Human Development Index provided by the United Nations (measured as the average of years of schooling of adults and children) and the tertiary education enrollment rate provided by UNESCO. All conclusions hold.

the smallest value of *LITERACY* is 3.01. We then compute the budget effect of *POLARIZATION* at minimum *LITERACY* [$\hat{\delta} + \hat{\gamma} \cdot 3.01$] and find that it remains statistically significant (at 10%) and negative but with a smaller magnitude—ranging from -1.03% in column (5) to -2.55% in column (1). In line with H3, for increasing values of *LITERACY* (i.e., beyond the 83rd percentile) the overall effect of *POLARIZATION* on *BUDGET* becomes negligible (i.e., the term $\hat{\delta} + \hat{\gamma} \cdot LITERACY_i$ is not statistically significant at conventional confidence levels).

To sum up, polarized governments are associated with worse fiscal performances in countries with low levels of economic literacy. For increasing levels of economic literacy, such a negative effect gradually becomes smaller. Our evidence thus is consistent with the view that polarization tends to loosen fiscal policy if and only if enough room is open for manipulating voters' beliefs.

In the same vein, economic literacy seems to impose fiscal discipline only in countries where the political environment is polarized and, therefore, where strong incentives exist

Table 1 Primary balance, government polarization, and economic literacy

	(1)	(2)	(3)	(4)	(5)
Dependent variable			<i>PRIMARY BALANCE</i>		
<i>LITERACY</i> _{<i>t</i>-1}	-0.29 (0.71)	-0.20 (0.68)	-0.26 (0.71)	-0.24 (0.71)	0.40 (0.53)
<i>POLARIZATION</i> _{<i>t</i>}	-6.07* (3.23)	-5.85* (2.96)	-5.60* (2.84)	-5.35* (2.78)	-2.51** (1.17)
<i>(POLARIZATION*LITERACY)</i> _{<i>t</i>-1}	1.17* (0.65)	1.16* (0.60)	1.13* (0.58)	1.08* (0.57)	0.49** (0.23)
<i>DEBT</i> _{<i>t</i>-1}		0.07* (0.04)	0.06 (0.04)	0.07* (0.04)	0.07* (0.04)
<i>INTEREST</i> _{<i>t</i>-1}		-0.10 (0.66)	0.21 (0.81)	-0.22 (0.79)	0.29 (1.14)
<i>UNEMP</i> _{<i>t</i>-1}			-0.18 (0.28)	-0.30 (0.27)	-0.22 (0.28)
<i>GDP GROWTH</i> _{<i>t</i>-1}			0.60*** (0.16)	0.50** (0.19)	0.38** (0.16)
<i>INFLATION</i> _{<i>t</i>-1}			-0.03 (0.30)	-0.10 (0.34)	-0.16 (0.39)
<i>OPEN</i> _{<i>t</i>-1}				0.05** (0.02)	0.05** (0.02)
<i>POP</i> _{<i>t</i>-1}				-0.17** (0.07)	-0.15* (0.09)
<i>EDUCATION</i> _{<i>t</i>-1}					0.78 (1.13)
Observations	207	207	207	207	198
R-squared	0.331	0.366	0.433	0.460	0.476
Number of countries	23	23	23	23	22

The table reports FE regression coefficients and country-level clustered robust standard errors (in brackets). Time and country dummies are included in the estimates (coefficients are omitted in the table). All regressions are estimated with an intercept term. The values of *EDUCATION* are not available for Iceland [column (5)]. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

for manipulating voters' beliefs. More in detail, since *POLARIZATION* is a dummy, $\hat{\beta}$ conveys the effect of *LITERACY* with no polarization, while $\hat{\beta} + \hat{\gamma}$ conveys the same effect with polarization. The results imply that while $\hat{\beta}$ itself consistently is not significant across specifications, $\hat{\beta} + \hat{\gamma}$ is statistically positive at conventional significance levels in all regressions (H2 and H3 are both supported). The results are confirmed when we enter the overall budget instead of the primary budget balance as the dependent variable (available upon request).

Having checked the empirical consistency of the model, we investigate whether manipulation is more likely to occur through the expenditure or the revenue side of the budget, given that both enter determining the fiscal policy stance. Accordingly, in Table 2, we split the budget balance into its two components—total public expenditures and total tax and non-tax receipts as percentages of GDP—and run separate regressions based on the most comprehensive specification reported in Table 1.

We find that the coefficients on *POLARIZATION* and on its interaction with *LITERACY* are not statistically significant in the regressions based on public expenditures. By contrast, in the public revenue regressions, the coefficient on *POLARIZATION* is significant and negative, i.e., -1.44% in column (4), while that on its interaction with *LITERACY* is significant and positive. Those results suggest that government polarization is not associated with significant changes in public expenditures whatever the level of voters' economic literacy. Conversely, polarization is negatively associated with tax and non-tax revenues in countries with low levels of economic literacy, suggesting that voters are more sensitive to tax reductions than to expenditure expansions (see also Brender & Drazen, 2008; Katsimi & Sarantides, 2012).

More generally, the explanation of the findings reported in Table 2 could be threefold. First, public expenditures usually reflect past political decisions and tend to be stickier than tax revenues; thus, spending programs are more difficult to change than tax receipts. Second, reductions in taxes are “more visible” and immediately perceived by voters than are

Table 2 Total expenditures, total revenues, government polarization, and economic literacy

	(1)	(2)	(3)	(4)
Dependent variable	<i>TOTAL EXPENDITURES</i>		<i>TOTAL TAX & NON-TAX RECEIPTS</i>	
<i>LITERACY</i> _{<i>t</i>-1}	0.05 (0.76)	-0.44 (0.46)	-0.072 (0.29)	0.08 (0.28)
<i>POLARIZATION</i> _{<i>t</i>-1}	3.71 (3.05)	0.72 (1.08)	-1.22 (0.77)	-1.44* (0.76)
(<i>POLARIZATION</i> * <i>LITER</i> <i>ACY</i>) _{<i>t</i>-1}	-0.74 (0.61)	-0.11 (0.21)	0.27* (0.14)	0.33** (0.15)
Controls	Yes	Yes	Yes	Yes
Observations	207	198	207	198
R-squared	0.397	0.444	0.285	0.449
Number of countries	23	22	23	22

The table reports FE regression coefficients and country-level clustered robust standard errors (in brackets). The dependent variables are total outlays over GDP (first two columns) and total tax and non-tax receipts over GDP (last two columns). Time and country dummies are included in the estimates (coefficients are omitted in the table). All regressions are estimated with an intercept term. Controls are the same used in Table 1 in columns (4) and (5). The values of *EDUCATION* are not available for Iceland [columns (2) and (4)]. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

more generous in-kind transfers or producing more public goods. Allegedly, the monetary nature of tax reductions translates into an immediate benefit for the voter, and thus generates more salient effects on voters' utility functions. Third, announced tax changes are easier for voters to monitor than changes in governmental expenditures, even for economically literate voters.¹⁰

4 Robustness checks

4.1 Cyclically adjusted fiscal balance

We test the robustness of our results when the primary budget balance is cyclically adjusted to account for the sensitivity of fiscal outcomes to the aggregate economic cycle. The results are reported in Table A2 in the Supplementary Material and confirm the main findings.

4.2 Unobserved heterogeneity and spurious correlation

We test whether our results are driven by potential unobserved heterogeneity between the incentives and the scope for manipulating voters' beliefs and omitted variables potentially being correlated with the fiscal balance. A natural test of the identifying assumption is to augment the model specification with a variable that initially is omitted but potentially correlated with fiscal balance (Altonji et al., 2005).

We choose a time-varying continuous indicator (ranging 0–1) of the quality of governments sourced from the International Country Risk Guide. We implement two tests proposed by Chetty et al. (2011) that are suitable for our research setting and find that our baseline results do not seem to be driven by unobserved correlation between public budgets and governmental quality (see column 1 in Table A3). Details are provided in the Supplementary Material. Moreover, the extent of bias due to potential unobserved heterogeneity in our baseline models is likely to be small, as shown in column (2) of Table A3 in the Supplementary Material.

Finally, we check for potentially spurious correlation between voters' economic literacies and fiscal balances. We rely on three falsification tests and randomize the variable *LITERACY*. As expected, our main results vanish, thus excluding a spurious correlation between our key variables (for details, see Table A4 in the Supplementary Material).

5 Ruling out alternative explanations

We here investigate alternative mechanisms potentially explaining or confounding our empirical results.¹¹

¹⁰ The conclusion follows from the complexities of the public budgets of advanced economies and from the difficulties in assessing the full welfare effects of an expenditure shock (Alesina and Perotti 1996).

¹¹ For the sake of brevity, results are not shown and are available upon request.

5.1 Incentive for manipulation: institutional systems, corruption, and political budget cycles

First, we remove presidential democracies from our sample.¹² In presidential systems, cabinets in office are led by the President (who is directly elected by voters), and thus, differently from parliamentary systems, the executive branch is separated by the legislature branch. Hence, we expect that cabinets are more polarized in those institutional settings. However, it turns out that results are fully in line with the main ones. Second, we remove majoritarian democracies¹³ that, as opposed to proportional ones, could be more effective in administering public budgets. Estimations confirm our main findings.

Third, corruption and rent extraction once in office might determine the incentive to manipulate voters. We replace *POLARIZATION* with an index of perceived corruption in the public sector (i.e. the Corruption Perceptions Index, CPI).¹⁴ The results suggest that, in our sample of advanced economies, corruption does not strengthen the incentive for manipulation.

Fourth, even though ideological polarization does not necessarily mean the presence of a single party in the cabinet, we test whether our measure of polarization is “only” a proxy for the number of parties that compose the cabinet. We consider governmental fractionalization,¹⁵ instead of *POLARIZATION*, and our main results vanish.

Finally, we check whether our results are consistent with the political budget cycle hypothesis. We augment Eq. (21) with a dummy variable that equals one in election years and find that our baseline results hold.¹⁶

5.2 Scope for manipulation: education, voter turnout, and information diffusion

In Table 3 we substitute *LITERACY* with *EDUCATION* to test whether the former is only a proxy of the latter. However, our main results do not hold. The coefficients on *POLARIZATION* and on its interaction with *EDUCATION* are not statistically significant across specifications. This confirms that *LITERACY* and *EDUCATION* capture different aspects of voters’ skills and competencies. A further proof of this argument is that substantial individual heterogeneity in economic competencies remains at each level of education (Lusardi and Mitchel, 2014), suggesting that our main results are not driven by country-level educational achievements. This is consistent with the core assumption of our argument: asymmetric

¹² Sampled presidential democracies are France, Switzerland, and the United States. Switzerland is a special case of presidential democracy because the president enjoys no formal powers, and the post rotates every year. Our results hold when excluding France and the United States from and keeping Switzerland in the sample.

¹³ In detail: Australia, Canada, France, New Zealand, the United Kingdom, and the United States.

¹⁴ The CPI is computed by Transparency International based on perceptions of corruption by businesspeople, risk analysts, and the general public. The index ranges between 10 (highly clean) and 0 (highly corrupt). The 0–10 scale has been adopted from 1995 to 2011. In 2012, Transparency International revised the methodology applied in building the index, also widening its range from 0 to 100. It is worth noting that we rely on the CPI because it is the most widely accepted indicator of corruption worldwide (e.g., Donchev and Ujhelyi 2014; Qu et al., 2019).

¹⁵ It is measured by the probability that two randomly picked government deputies belong to different parties.

¹⁶ Alternatively, we augment the equation with a dummy that equals one in the year before elections and, again, the baseline results remain unchanged.

Table 3 Primary balance, government polarization, and education

	(1)	(2)	(3)	(4)	(5)
Dependent variable	<i>PRIMARY BALANCE</i>				
<i>EDUCATION</i> _{<i>t</i>-1}	- 0.21 (1.30)	0.15 (1.37)	0.78 (1.22)	- 0.20 (1.01)	0.69 (1.12)
<i>POLARIZATION</i> _{<i>t</i>-1}	0.55 (3.47)	0.08 (3.21)	-0.42 (3.32)	- 1.07 (3.21)	- 0.98 (3.10)
<i>(POLARIZATION*EDUCATION)</i> _{<i>t</i>-1}	- 0.03 (0.17)	0.00 (0.16)	0.03 (0.16)	0.06 (0.16)	0.06 (0.15)
<i>LITERACY</i> _{<i>t</i>-1}					0.74 (0.49)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes
Observations	198	198	198	198	198
<i>R</i> -squared	0.305	0.354	0.409	0.451	0.466
Number of countries	22	22	22	22	22

The table reports FE regression coefficients and country-level clustered robust standard errors (in brackets). Time and country dummies are included in the estimates (coefficients are omitted in the table). All regressions are estimated with an intercept term. Controls are the same used in Table 1. The values of *EDUCATION* are not available for Iceland. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

information between voters and politicians depends on the voters' *specific* knowledge—i.e. on economic issues—rather than on their *general* knowledge.¹⁷

We also test whether *LITERACY* is “only” a proxy for voter turnout. However, the correlation between *LITERACY* and voter turnout (as proportion of registered voters) is +0.24 and is not statistically significant. Additionally, if we measure voter turnout as percentage of the voting-age population, the correlation with *LITERACY* is -0.2023 and remains statistically insignificant.¹⁸

Moreover, we replace *LITERACY* with a measure of internet diffusion among the population because potential variation in information circulation may bias our results. We find that internet diffusion and its interaction with *POLARIZATION* are not statistically significant, confirming the soundness of our argument.

¹⁷ The same conclusion can be reached with other measures from different sources, such as those described in footnote 9.

¹⁸ It is worth noting that when voter turnout is defined as percentage of the voting-age population, the denominator leaves out those that have not yet reached the age at which one is legally allowed to vote, i.e., 18 years old in most Western countries (see Geys, 2006). This may explain the different sign of the correlation, even being not statistically significant. This is consistent with the above argument that *LITERACY* captures different voters' skills than general education, which is usually found to elevate electoral participation.

6 Concluding remarks

In this paper, we argued that what makes fiscal policies excessively loose is the interaction between the electoral concerns of politicians and the economic illiteracy of voters. We tested that argument empirically on a panel of advanced economies over the 1999–2008 period. We found that the electoral concern is associated with worse fiscal balances, and that that association is stronger when voters display low levels of economic literacy. By contrast, literate voters give narrow political parties room for distorting fiscal policies.

Our study could be extended in some important directions. First, in the model, we assume that the process that generates the competencies of politicians is independent of the economic literacies of voters. Hence, we have ruled out by assumption any possible structural link between those two possible determinants of public budget balances. Second, our evidence likewise might be consistent with a moral hazard mechanism distinct from voters' manipulation. Economically literate voters might exert more effective control on the discretion of politicians being already in power and, arguably, restrain their tendency to implement pork-barrel measures. Third, even though our finding that voters' manipulation occurs mostly through taxes is also consistent with the fiscal illusion hypothesis (Dollery & Worthington, 1996; Wagner, 1976), the relative importance of single tax items needs to be investigated further. Indeed, our evidence may conceal important heterogeneous effects. Recent works on the salience of different tax instruments (Bracco et al., 2019; Goldin, 2015) provide guidance along that line of inquiry.

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