Competence Matters, But How?
Economic Disinformation and Political Budget Cycles

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Abstract

This paper analyses the interdependence of political and economic manipulations by the government in an opportunistic political business cycle (PBC) model. The government has two instruments to improve re-election chances: (i) debt-financed transfers; and (ii) propaganda (disinformation) to influence the perception of uninformed voters. Our main finding implies that countries with dispersed realisations for government competence (typical in developing countries) can reduce the budget cycle by increasing the share of informed votes. However, in (developed) countries with less variable government competence, increasing the information level of citizens may even exacerbate the problem of political budget cycles.

JEL classification: D72, E32, H62, (E62, D83)

Keywords: political business cycle, deficit bias, fiscal policy, propaganda, near-rationality, behavioural macroeconomics.

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1 Introduction

The recurring coincidence of elections and the business cycle has captivated economists’ minds for at least 35 years. Empirical evidence and theoretical developments led the way from adaptive expectations money-induced political business cycle (PBC) models in the 1970s to rational expectations budget cycle models in the 1990s and thereafter. The idea is always the same: the incumbent government tries to improve its re-election chances by politically motivated short-term economic boosts. Among other explanations, government competence is used to explain why rational agents can be fooled by economic manipulations. Rogoff and Sibert (1988) introduce the concept of competency with an instrumental definition: the more competent a government, the less revenue is needed for providing a given level of public services. In their model, the government can signal higher competence to all voters by its choice of economic policy and can, thereby, improve its re-election chances, because rational agents prefer higher competence. In Shi and Svensson (2006), only the uninformed voters must be convinced of high government competence by an increased level of expenditures. In both model types, voters, even if uninformed as in Shi and Svensson (2006), form rational expectations about (private agents’ perception of) the government’s budgetary policy.

This paper introduces disinformation (or, synonymously, propaganda) as an additional, a political instrument of government policy. It is now disinformation by the government, which is used for explaining private agents’ perception of the government’s budgetary policy.

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1 The PBC literature was spurred by Nordhaus’s (1975) idea that monetary policy could be used to stimulate aggregate demand prior to an election in order to improve re-election chances. Drazen (2001) offers a comprehensive survey of the theoretical and empirical PBC literature. Summary evidence quoted by him does not support the notion of a monetary policy-induced business cycle (confirmed also in studies by Alt and Crystal, 1983, and Faust and Irons, 1999). Instead, the evidence points towards cycles of debt (confirmed also by Alesina et al., 1992 and 1993, and Alesina and Roubini, 1990) and public expenditures and, particularly, transfers (confirmed also by Block, 2002, Schuknecht, 1996 and 2000, Shi and Svensson, 2006, and Vergne, 2009).

2 Disinformation is not just misinformation, i.e. incorrect information. Instead, disinformation can be defined as the deliberate and malicious dissemination of false or misleading information. The term propaganda has a slightly different meaning and is typically preferred when the purpose of influencing a large number of people is stressed. Nonetheless, this paper uses the terms disinformation and propaganda synonymously.
Thus, we replace (and move beyond) the rational expectations assumption by specifying a second government instrument. It seems plausible that a government, which is willing to manipulate the whole economy, would a fortiori also be willing to disseminate false or misleading information.\(^3\) This seems a straightforward assumption for many developing countries where an underdeveloped press culture and censorship go hand in hand with propaganda, but even industrial countries use disinformation about government finances. There is quite a bit of anecdotal evidence in economic history.\(^4\) In a rigorous econometric study, Heinemann (2006) substantiates the claim that governments are particularly keen on manipulating information prior to elections. He finds evidence that Germany’s fiscal forecasts from 1969 to 2003, especially for the deficit, were particularly optimistic in election year’s.

Giving the government a second instrument, i.e. a disinformation technology, affects the politically induced cycle and changes the role of competence relative to results previously obtained. Note that it is throughout assumed in the literature that both voters and the government observe the competence distribution, but not necessarily the actual level of competence. Furthermore, models are based on different forms of informational asymmetries. In Rogoff and Sibert (1988), where the actual competence level is known to the incumbent, but not to voters prior to decision-making, competence has a hump-shaped effect on the cycle. This means that an incumbent government with a low level of competence chooses to manipulate the economy by little, with increasing levels of competence by more, but with high levels, again, by less. In Shi and Svensson (2006), where competence is not known to either the government or to informed or uninformed voters, competence has no effect at

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\(^3\) Nonetheless, disinformation has not received any attention in the PBC literature thus far. This is surprising for three reasons: (i) the economics of information being a well-established branch of economics; (ii) disinformation playing a role in the literature of political games (confer p.5); and (iii) the advances made in political economy, public choice, and behavioural economics, where outcomes often crucially depend on the quality of the information received.

\(^4\) For instance, Porritt (1910) reports “budget propaganda” in early twentieth century England, and Mitchell (1991) claims that the 1990 US budget “relied heavily on accounting gimmicks to make 1990 spending appear lower than it really was.” To fulfill the Maastricht Criteria, some European countries managed to disguise information and falsify deficit figures prior to the start of the European Monetary Union, for instance by using hidden accounts and/or obscuring social security debt.
all on the government’s optimal choice for its manipulations. In their model, capturing the
distribution of government competence is, nonetheless, crucial for the result that a cycle
obtains and that the cycle unambiguously increases with the share of uninformed voters.

This paper supposes that the actual competence level is not known to anybody, thus paralleling the assumption made by Shi and Svensson (2006). Whereas actual competence matters for the government’s optimal policy choice to manipulate voters in Rogoff and Sibert (1988), here the distribution of competence affects the impact of changing the share of uninformed voters on government manipulations. This is so because the competence distribution determines how effective manipulations are in increasing the government’s re-election chances. Note that the purpose of appearing more competent is that private agents will vote for the incumbent, even if she is less competent than her challenger. Consider now the probability mass of realisations for government competence that could make the government appear more competent than the challenger due to manipulations. If the competence probability density function is steeply positive at the equilibrium, this probability mass is small (relative to the case of a flat density function). As shown in this paper, marginally increasing the share of voters who are uninformed about the deficit has a perverse effect on government manipulations, if the density function is sufficiently steep at the equilibrium. Increasing the share of voters who are uninformed about the deficit makes government manipulations more effective, in principle, because more people can be fooled. Nonetheless, manipulations may be reduced, because the marginal advantage for appearing more competent can be smaller (when the density function is steep at the equilibrium) than the marginal costs of the additional manipulations. For a bell-shaped density function, this may happen when most of the probability mass is close to average competence (the density function is compressed).

Our main result is in clear contrast to the unambiguous result by Shi and Svensson (2006) who find that raising the share of uninformed voters always increases the political budget cycle. In our model, an increase in uninformed voters does not necessarily lead to a larger cycle, if the incumbent knows that her competence level is probably close to average, i.e. potential realisations of government competence are not spread out over a large range of
values. This implies that countries with dispersed realisations for government competence (typical in developing countries) can reduce the budget cycle by increasing the share of informed votes. However, in (developed) countries with less variable government competence, increasing the information level of citizens may even exacerbate the problem of political budget cycles.

Elements of several literatures and methodologies are merged in this paper. First, the groundwork for a theory of the political budget cycle was laid by Rogoff (1990). He also criticises the traditional PBC literature by pointing out that rational voters should not let their expectations about post-election performance be influenced by pre-election budgets. In his paper, the voting outcome is, more plausibly, modelled as a function of voters’ expectations about the candidates’ performance after elections. Our paper (as well as Shi and Svensson, 2006) deviate, however, in assuming that the government does not know for sure its own competence prior to decision taking. We also abandon modelling public goods as in Rogoff (1990) and in Shi and Svensson (2006) and capture government manipulations in terms of transfers (and debt) instead, thus following more closely Drazen’s (2001) empirical findings. Second, there is a (small) literature of disinformation in political economy games: propaganda is used to affect agents’ perception and thus the probability of appropriating a given rent. There and here, a disinformation technology is drawn upon and probabilistic voting is applied to determine the optimal investment in disinformation. In this paper, disinformation is used for explaining the perception of the deficit level by uninformed voters. Third, there is a growing literature of behavioural macroeconomics. We incorporate elements of near-rational behaviour as suggested by Akerlof and Yellen (1985) or Mankiw and Reis (2002). There is no reason why near-rational behaviour should remain confined to the economic realm. Assuming that a share of the electorate is uninformed is interpreted

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5 In Austen-Smith (1987), candidates use campaign expenditures to affect their perceived position. UrspRUNG (1994) models a propaganda campaign by competing interest groups.

6 They define near-rational behaviour as “behavior that is perhaps suboptimal but that nevertheless imposes very small individual losses on its practitioners [i.e. individual agents] relative to the consequences of their first-best policy. ... [It] can nevertheless cause first-order changes in real activity [i.e. in the aggregate].”

7 If some agents take their economic decision in a near-rational way, they should a fortiori take their
as near-rationality on the part of the voters. Individual near-rationality has macroeconomic implications because policymakers count on the mistakes made by individuals. The government will be tempted to manipulate uninformed voters by increasing government spending and, thereby, producing a deficit cycle. However, individual near-rationality also affects the formation of individuals’ expectations. In particular, near-rationality thwarts the rational expectations hypothesis.8

The remainder of the paper is built around 2 stages. The basic model of sections 2 and 3 links this paper to the previous PBC literature and serves as benchmark for the extended model of sections 4 and 5. Section 2 presents a model without disinflation and with the rational expectations assumption preserved. The setup is similar to the one in Shi and Svensson (2006), but much simpler and with the focus on intertemporal transfers rather than public goods.9 Section 3 lays out the results of probabilistic voting. It is shown that the logic of the Shi and Svensson model carries over to this model, which means that transfer (in our model) and deficit cycles emerge. In section 4, we introduce a disinflation technology to explain the perception of voters who are uninformed about the level of deficit manipulations in a non-rational expectations setting. By doing so, we give the government an additional instrument and also consider additional groups of voters (informed and uninformed with respect to the propaganda instrument). Results and the role of the competence distribution are discussed in section 5. Section 6 concludes with a summary of the findings, some notes on policy implications and empirical relevance, and suggestions for future research.

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8 The unease with applying rational expectations to uninformed agents goes back to Grossman (1977) who puts forward his argument in the context of a financial market model. He claims that informed and uninformed agents hold different beliefs in equilibrium, unless there is an observable economic variable, which contains the entire information the uninformed agent could otherwise not have observed. In his model a price may (or may not) fulfill this role, but in our model there is no such variable.

9 In any case, public goods in the Shi and Svensson model only serve as transfers, just as in this model. The main purpose for using public goods is to make the model tractable. Shi and Svensson assume additively-separable utility in private and public goods and constant marginal utility on the public goods. Here, we only model private consumption, but with a similar constant marginal utility assumption.
2 The Basic Political Transfer Model

In this model, the government can improve its re-election chances by increasing debt-financed transfers before elections and cutting transfers to repay the pre-election deficit after elections. Here are the details of the model. Every second period an incumbent politician and a challenger representing different parties run for office. Politicians’ motivation is purely opportunistic. Nonetheless, voters’ utility does not hinge on economic considerations alone, but also on a more or less strong personal predisposition or sympathy for one of the candidates.\textsuperscript{10} The utility function for any voter \(i\) reflects both economic and non-economic components:

\[ U_t^i = \sum_{s=t}^{T} [c_s + \alpha \theta^s z_s]. \] (1)

The economic component \(c_s\) (consumption) and the sympathy component \(\theta^s z_s\) are additively-separable with relative weight \(\alpha\) in each period. Discounting between periods could be added, but does not contribute to substance nor exposition. Utility derived from sympathy is constrained to \(\theta^s z_s \in [-\frac{1}{2}, \frac{1}{2}]\) since \(z_t\) is either \(-\frac{1}{2}\) (when party \(a\) is elected) or \(+\frac{1}{2}\) (when party \(b\) is elected); and the personal sympathy parameter \(\theta^i\) is uniformly distributed over the interval \([-1, 1]\).\textsuperscript{11} The sympathy component represents any attribute of the candidates that does not affect economic policies, be it their stance on societal issues or their good looks. As in Shi and Svensson (2006), there are two kinds of voters. Informed voters (group 1) observe all variables in the economy, uninformed voters\textsuperscript{12} (group 2) can only observe a

\textsuperscript{10} Henceforth the terms voter and individual (agent) are used interchangeably. Similarly, the terms politician and policymaker are also used as synonyms. Furthermore, we associate the incumbent with party \(a\) and the challenger with party \(b\) without limiting the generality of the analysis.

\textsuperscript{11} If individual \(i\) has somewhat more sympathies for party \(a\), say at \(\theta^i = -\frac{1}{2}\), then her utility derived from sympathy is positive \((\frac{1}{2})\), if party \(a\) is elected \((z_t = -\frac{1}{2})\); but it is negative \((-\frac{1}{4})\), if party \(b\) is elected \((z_t = \frac{1}{2})\).

\textsuperscript{12} It is an implicit assumption in our model that a share of the population shies away from acquiring costly information because the losses from being uninformed are too small for them to be concerned about. In contrast, Shi and Svensson (2006) suggest that voters are uninformed because of restricted access to information.
Both politicians $j = a, b$ face a similar utility function as voters consisting of an economic and a non-economic component. The non-economic component is, however, the political rent $X_t$ that policymakers receive from being in power:

$$V_j^t = \sum_{s=t}^{T} [c_s + X_s].$$

Voters’ and politicians’ consumption alike are constrained by each agent’s exogenous net-of-tax income $y$ and transfers $t_t$:

$$c_t = y + t_t.$$  

The government budget constraint is

$$t_t = D_t - R(D_{t-1}) + \eta_t^j,$$

where $D$ measures deficit, $R$ depicts repayment, and $\eta$ is the incumbent’s competence. Transfers are determined by the policymaker in power. They are intertemporal transfers, not income redistribution. They allow more government subsidies or benefits. Transfers are debt-financed; they depend on deficit minus repayment. (Repayment function $R$ is assumed to be positively sloping and convex with $R(0) = 0$.) However, the total amount of transfers also depends on incumbent politician $j$’s competence in period $t$, $\eta_t^j$. Competence $\eta_t^j$ consists of skills shocks for this period and for last period. Each skills shock is a random

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13 This is explained at the end of this section. Confer the paragraph on the timing of events on page 9. Confer also the different groups in the extended model as distinguished on p.16.

14 Instead of equation (4) a fuller fiscal model could be used, but results are identical. In that case, let variable $y$ be gross income and $t_t$ depict net transfers, i.e. $t_t$ is negative and the absolute value of $t_t$ represents taxes minus transfers. Taxes would be used to finance a fixed amount of public goods. The question would then be: how much can we reduce the tax burden by deficit finance? An example is the discussion about a previously abolished commuter tax relief (Pendlerpauschale) in July 2008 in Germany. For obvious political reasons some politicians, especially from the Bavarian CSU party, which faced an upcoming election, wanted to reintroduce this tax relief at the expense of achieving a balanced budget sooner rather than later.

15 For $\eta_t^j > 0$, (net) transfers $t_t$ would surpass the net deficit, $D_t - R(D_{t-1})$. In a developing country, we could interpret $\eta_t^j$ as the government’s ability to secure foreign aid, which does not have to be repaid. In any country, it may also reflect its ability to seize and exploit profitable investment opportunities.
variable with mean 0, distribution function $F(\bullet)$ and density function $f(\bullet)$. Past shocks are common knowledge, but current or future shocks are unknown to both policymakers and private agents. One-period competence persistence is modeled as an MA(1) process:

$$\eta_t^j = \mu_t^j + \mu_{t-1}^j. \tag{5}$$

The timing of events is as follows. In period $t$, the incumbent sets deficit level $D_t$, thus providing transfers for the public according to equation (4). Voting individuals observe transfer level $t_t$ and past skills shock $\mu_{t-1}^j$. Only informed voters observe $D_t$, uninformed voters do not. Informed voters can deduce current skills $\mu_t^j$, and can, therefore, extract information about the future competence of the incumbent, which the uninformed voters cannot. Then, informed and uninformed voters cast their vote based on their different information sets. What matters is that some voters are imperfectly informed. In period $t + 1$, the winner (incumbent or challenger) takes office. Voters are no longer relevant for policymakers’ decision making because they cannot vote in period $t + 1$. Politicians want to repay the previous period deficit because the deficit is costly and voters cannot sanction the policymaker for reducing transfers, i.e. effectively levying additional taxes, to finance

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16 Limited persistence is a compromise. It allows some persistence while acknowledging that competence also changes over time as new tasks for politicians emerge. For persistence longer than 1 period, the model would not be easily solvable. Rogoff’s suggestion of an MA(1) process is one of two conditions for splitting the model into separate 2-period cycles (each consisting of an election period and an off-election period) as is so common in this literature. Confer the discussion of deficit repayment in the off-election period in the following paragraph.

17 Prima facie, it may seem strange that a fraction of voters should be uninformed about the deficit or, at least, ignore the deficit in their economic considerations. Since the Maastricht criteria at the latest we are used to extensive discussions of deficit levels and deficit reduction strategies, but also to manipulations of deficit numbers prior to the start of the European Monetary Union (as mentioned above). Furthermore, remember that deficit levels were, at least in many industrial countries, of little concern in the 1970s and early 1980s. In developing countries, it is even more obvious that a fraction of society is not informed and/or does not incorporate deficit numbers into their economic calculations.

18 Given that the probability of being pivotal is almost zero, there is no incentive for becoming informed by gathering costly information in order to improve one’s electoral choice.

19 Repayment is guaranteed, technically, because the marginal utility of additional deficit (through its 1-for-1 effect on transfers and, finally, on consumption) is 1 (given that the discount factor is 1), whereas the marginal cost ($R'(D)$) and, therefore, the marginal disutility is greater than 1. The unity marginal utility assumption is also used by Shi and Svensson (2006) for the same purpose as here, albeit with respect to the public goods consumption. – With less restrictive assumptions, we could get a rising trend in debt.
deficit repayment. Given that voters are only concerned about politicians competence after the election it does not matter that individuals anticipate in election period $t$ that politicians will repay the deficit in the off-election period $t+1$.

3 Solution of the Basic Model

The model is solved in three steps. First, we can determine the probability that an individual agent votes for the incumbent, to whom we refer as party $a$, without loss of generality. Second and on this basis, we can derive the probability for the incumbent to win the election for a given level of transfers, which depend on the deficit level and the competence level of the incumbent. Third, we can maximise the incumbent’s expected utility over any 2-period cycle, i.e. period $t$ utility plus period $t+1$ utility in case of winning the election multiplied by the probability of winning (as determined in step 2) plus period $t+1$ utility in case of losing multiplied by the probability of losing. To characterise the optimal level of deficit we derive the first order condition (FOC).

In the first step, we consider an individual voter. She votes for incumbent $a$, if

$$E_t[c^a_{t+1}] + \alpha \theta^i(-\frac{1}{2}) > E_t[c^b_{t+1}] + \alpha \theta^i(+\frac{1}{2})$$

Depending on who is in power, $t+1$ consumption will typically differ because of differences in policymakers’ competence and individuals’ expectations about it:

$$E_t[c^a_{t+1}] = E_t[y] + E_t[t^a_{t+1}]; \quad E_t[c^b_{t+1}] = E_t[y] + E_t[t^b_{t+1}]$$

$$t_{t+1} = -R(D_t) + \eta_{t+1}.$$  

Period $t+1$ government budget constraint (8) says that the period $t$ deficit must be repaid in period $t+1$. As a result, $t+1$ transfers are negative (taxes) corresponding to deficit

\footnote{Remember that policymakers will not borrow in period $t+1$ because there is no election at the end of that period. Confer the discussion in the paragraph on the timing of events on page 9.}
 repayment modulo the effect of the policymaker’s competence. Individuals have no idea about the skills shock of either policymaker in \( t + 1 \). Nor do they know the skills shock of the challenger in period \( t \). However, they can use the incumbent’s period \( t \) deficit policy to draw conclusions about her skills shock in period \( t \).

\[
E_t[p^b_{t+1}] = -E_t[R(D^*_t)]. 
\]

\[
E_t[p^a_{t+1}] = -E_t[R(D^*_t)] + E_t[\mu^a_t].
\]

where \( D^*_t \) denotes the incumbent’s optimal period \( t \) choice for the deficit (to be determined further down). Combining equations (6) to (10) we obtain a condition for an individual to vote for incumbent \( a \):

\[
E_t[\mu^a_t] > \alpha \theta^a. 
\]

Using the distribution of the skills shock we can determine the probability (\( Pr \)) of an individual voter, informed or uninformed, to vote for incumbent \( a \):

\[
Pr[E_t[\mu^a_t] - \alpha \theta^a \geq 0] = \frac{E_t[\mu^a_t] - (-\alpha)}{\alpha - (-\alpha)} = \frac{E_t[\mu^a_t]}{2\alpha} + \frac{1}{2}. 
\]

In step 2, we determine the probability \( Prob \) that incumbent \( a \) obtains 50% of the votes in period \( t \) elections. It is the probability that the number of voters times their individual probability \( Pr \) to vote for incumbent \( a \) (as determined in equation 12) is greater or equal to \( \frac{1}{2} \). However, the individual probability \( Pr \) is different for informed and uninformed voters because their expectations of period \( t \) skills, \( E_t[\mu^a_t] \), are different. Let \( 0 \geq \sigma \geq 1 \) depict the share of informed voters and \( \psi = 1 - \sigma \) represent the share of uninformed voters. In abuse of notation, let us also use \( \sigma \) and \( \psi \) as superscripts to distinguish the respective expectations: \( E^\sigma_t \) for those by informed voters and \( E^\psi_t \) for those by uninformed voters. Then we obtain the probability for the incumbent to win the election:

\[
\text{Prob} \left\{ \sigma \left[ \frac{E^\sigma_t[\mu^a_t]}{2\alpha} + \frac{1}{2} \right] + \psi \left[ \frac{E^\psi_t[\mu^a_t]}{2\alpha} + \frac{1}{2} \right] \geq \frac{1}{2} \right\}. 
\]
So why is there a difference in expectations for informed and uninformed voters? Consider the government budget constraint for period $t$:

$$t_t = D_t + \eta_t$$

(14)

Remember that policymakers will not borrow in off-election periods because higher transfers and appearing more competent does not affect the duration of the incumbent’s time in office. Without deficit in off-election period $t - 1$ there is no repayment in election period $t$. Equation (14) can be rewritten as follows:

$$\eta_t = t_t - D_t$$

$$E_t^\sigma[\mu_t^a] = \mu_t^a = t_t - D_t - \mu_{t-1}^a$$

(15)

The point is that informed voters can determine $E_t^\sigma[\mu_t^a]$ deterministically, because they can observe $D_t$. By contrast, uninformed voters must form an estimate of the incumbent’s skills, $\mu_t^a$, based on their estimate for the deficit level, $\tilde{D}_t$:

$$\tilde{\mu}_t^a = t_t - \tilde{D}_t - \mu_{t-1}^a$$

(16)

or

$$\tilde{D}_t = t_t - \tilde{\mu}_t^a - \mu_{t-1}^a$$

$$\tilde{\mu}_t^a = \frac{t_t - D_t - \mu_{t-1}^a + D_t - \tilde{D}_t}{\mu_t^a \text{ from (15)}}$$

(17)

$$E_t^\psi[\mu_t^a] = \mu_t^a + D_t - \tilde{D}_t$$

(18)

Using equations (15) and (18) we can now determine the probability that incumbent $a$ receives 50% of the votes in period $t$:

$$\text{Prob} \left\{ \sigma \left( \frac{\mu_t^a}{2} + \frac{1}{2} \right) + \psi \left( \frac{\mu_t^a + D_t - \tilde{D}_t}{2} + \frac{1}{2} \right) \geq \frac{1}{2} \right\}$$

$$= \text{Prob} \left\{ \frac{\mu_t^a}{2} + \psi \left( \frac{D_t - \tilde{D}_t}{2} + \frac{1}{2} \right) \geq \frac{1}{2} \right\}$$
where $F(\bullet)$ is the distribution function of the skills shock.

In step 3, we can maximise incumbent $a$’s utility over the entire election cycle, i.e. periods $t$ and $t + 1$. Period $t + 1$ utility is the sum of the utilities for winning and losing the election weighted by the probability determined in step 2:

$$
max_{D_t} E_t\{ y + D_t + \eta_t^a + X \} 
+ E_t\left[ \frac{[1 - F(\psi(\bar{D}_t - D_t))] [y - R(D_t) + \eta_{t+1}^a + X]}{prob. \, incumbent \, wins} \right] 
+ E_t\left[ \frac{F(\psi(\bar{D}_t - D_t)) [y - R(D_t) + \eta_{t+1}^b]}{prob. \, incumbent \, loses} \right] 
$$

Given that the incumbent knows her past, but not her present and future skills (and not the skills shock of the challenger) the maximisation problem looks as follows:

$$
max_{D_t} \quad y + D_t + \mu_{t-1}^a + X 
+ y - R(D_t) 
+ [1 - F(\psi(\bar{D}_t - D_t))] X 
$$

Differentiation with respect to $D_t$ produces a FOC, which allows us to determine the government’s optimal deficit $D_t^*$:

$$
1 - R'(D_t^*) + \psi F'[\psi(\bar{D}_t - D_t^*)]X = 0, 
$$

where $F'(\bullet) = f(\bullet)$ refers to the probability density function. $1 - R'(D_t^*)$ is the marginal direct net effect of deficit, which is negative, because deficit including repayment is costly.
Deficit is optimally chosen by the government, when the negative marginal direct net effect equals the positive marginal effect on the expected ego rent. This is the impact of a marginal change of deficit on competence and, thereby, on the probability of receiving the ego rent, multiplied by the ego rent.

With uninformed voters forming rational expectations (as discussed above) \( D_t^* = \bar{D}_t \) and the FOC becomes

\[
1 + \psi f[0]X = R'(D_t^*)
\]  

(24)

Applying total differentials to the FOC tells us what affects the optimal level of borrowing. The following proposition captures the perturbation results with respect to the political rent \( X \) and the share of uninformed voters \( \psi \).

**Proposition 1 - Ego Rent and Uninformed Voters in the Basic Model.**

*In the basic transfer model with rational expectations by all agents higher political rents and a larger share of uninformed voters increase optimal borrowing at the equilibrium:*

\[
(i) \quad \frac{dD^*}{dX} > 0 \quad (ii) \quad \frac{dD^*}{d\psi} > 0.
\]

Intuitively, if the ego rent of being in power increases, then the incentive to distort the economy also increases. The incumbent is more willing to incur the costs for increasing the deficit in order to appear more competent in the eye of voters. Furthermore, increasing the share of uninformed voters increases the efficiency of electioneering because more voters can be fooled before elections.

### 4 The Extended Political Transfer and Disinformation Model

The government has now got a disinformation instrument to improve re-election chances: it can invest in propaganda and, thereby, influence the perception of those voters who
are uninformed about the level of deficit manipulations. Including such a disinformation technology does not change the basic model setup or the timing of events. However, the government budget constraint for period $t^{21}$ becomes

$$t_t = D_t - C_t + \eta_t,$$

(25)

where $C$ depicts the cost of the propaganda campaign. Disinformation investment $C_t \geq 0$ has a direct effect on the perception of the deficit by those voters who are uninformed about the deficit. We thus relinquish the rational expectations assumption for voters who are uninformed about the deficit and postulate the following function to determine their perceived level of deficit:

$$\widehat{D} := \widehat{D}_t = \widehat{D}(C_t),$$

(26)

with $\widehat{D}'(C_t) < 0$ and $\widehat{D}''(C_t) > 0$, i.e. disinformation is effective and reduces the perceived deficit, but with a decreasing marginal effect. The government has thus full control over $\widehat{D}_t$, the level of deficit as perceived by voters who are uninformed about the deficit in election period $t$. The government’s costs $C_t$ are determined according to disinformation technology (26). We suggest some additional plausible assumptions to obtain unambiguous results. We restrict the possible values of $\widehat{D}(C_t)$: $\widehat{D}(0) < D^*$ (even without disinformation is the perceived level always smaller than the equilibrium level) and $\widehat{D}(\infty) > 0$ (disinformation cannot make uninformed voters believe in a surplus instead of a deficit). In the same vein, we also postulate some minor restrictions on the distribution of the (incumbent’s) skills shock. We want the distribution of competence to be bell-shaped or at least $F''(\mu^*_t \leq 0) > 0$, i.e. competence below average becomes less and less likely the further one moves away from the average ($\mu^*_t = 0$). The limiting case of $F''(\mu^*_t \leq 0) = 0$ (which is more general than assuming an equal distribution throughout) can also be accepted. Having a second instrument raises the question of how well voters are informed about the government’s choice.

---

21 The period $t+1$ constraint does not have to be changed because there are no elections and the government is not concerned about voters and their perception.
of disinformation investment $C_t$. A similar assumption as for the deficit is made (below). Some private agents are informed, some are not informed about government propaganda and have to form expectations thereof. The following four groups of voters are distinguished and their expectations of the incumbent’s skills can be derived in analogy to equations (15) and (18):

- informed about propaganda (group A):
  - and informed about deficit (group A1):
    \[ E_t^\alpha[\mu_t^a] = \mu_t^a - t_t - D_t - \mu_{t-1}^a \]  
    (This corresponds to equation 15 of the basic model.)
  - but uninformed about deficit (group A2):
    \[ E_t^\alpha[\mu_t^a] = \mu_t^a + (D_t - \bar{D}) \]  
    (This corresponds to equation 18 of the basic model.)

- uninformed about propaganda (group B):
  - but informed about deficit (group B1):
    \[ E_t^\alpha[\mu_t^a] = \mu_t^a + (\bar{C}_t - C_t) \]  
  - and uninformed about deficit (group B2):
    \[ E_t^\alpha[\mu_t^a] = \mu_t^a + (D_t - \bar{D}) + (\bar{C}_t - C_t). \]  

It remains to clarify how the perceived level of disinformation costs, $\bar{C}_t$, is determined. Remember that it applies only to those voters who are uninformed about the level of $C_t$. To keep the model simple and still fairly general, we postulate that uninformed voters are typically not fully rational, but have an idea of how much the government manipulates their
perception:\textsuperscript{22,23}

\[ \mathcal{C}_t = kC_t, \quad 0 < k < 1. \] (31)

On this basis, the probability that incumbent \( a \) receives 50\% of the votes in period \( t \) is obtained as

\[
\text{Prob} \left\{ \mu_t^a \geq (\psi + \xi)(\mathcal{D} - D_t) + (\omega + \xi)(C_t - \mathcal{C}_t) \right\} = 1 - F[(\psi + \xi)(\mathcal{D} - D_t) + (\omega + \xi)(C_t - \mathcal{C}_t)]. \] (32) (33)

Figure 1: Bell-shaped competence density function

The marked area (dark grey or red [if in colour]) towards the right of the density function depicted in figure 1 corresponds to the probability described by equation (32) and by the distribution function representation in equation (33). For illustration purposes, assume \( C_t = \mathcal{C}_t \), i.e. \( k = 1 \), for the moment (confer the discussion in footnote 22 and the assumptions specified in footnote 24). In that case, the expected competence overall (combine equations 27 to 30) is always greater than the actual competence given that \( \mathcal{D} < D_t \) (according to optimisation). \textsuperscript{22} Many complications are feasible, but none of them contributes to the main thrust of this paper or the understanding of its qualitative results. It is no problem to include the rational expectations case, i.e. to impose the equilibrium condition \( \mathcal{C}_t = C_t^* \) after optimisation (which is conceptually different to setting \( k = 1 \) in equation 31). It would also be possible to discuss a society, which is overly sceptical towards propaganda by its leaders, i.e. \( k > 1 \). As a result, the perturbation result \( \frac{dP_t^*}{dL} \) in proposition 7 would become ambiguous, i.e. could potentially change signs. More complex, but also no real problem would be to consider some interaction term for voters who are uninformed with respect to both deficit and disinformation.

\textsuperscript{23} Note also that there is a real world difference in the magnitude of (rather large) actual and perceived deficit on the one hand and (rather small) actual and perceived costs of disinformation. This allows us to make the assumption \( (D_t - \mathcal{D}) + (\mathcal{C}_t - C_t) > 0 \), although \( D_t - \mathcal{D} > 0 \), but \( \mathcal{C}_t - C_t < 0 \).
to the assumptions about the effect of disinformation on the deficit perception made for equation 26). By implication, the probability (confer equation (33) or the dark grey [or red] area under the density function) is always greater than $\frac{1}{2}$. We can see that producing or increasing a deficit (or reducing $\tilde{D}$, the perception thereof) increases the government’s chance to be re-elected. This was not so in the basic model of section 2 because $D_t$ and $\tilde{D}$ are always linked and identical in equilibrium. In that model, the incumbent would produce a deficit cycle for political reasons (due to the existence of uninformed voters), but she would be unable to improve her re-election chances in equilibrium because the critical competence value remains at 0 when applying the rational expectations assumption.

In the extended political transfer and disinformation model the incumbent’s maximisation problem looks as follows:

$$
\max_{D_t, C_t} y + D_t - C_t + \mu_{t-1} + X
+ y - R(D_t)
+ \left[1 - F[(\psi + \xi)(\tilde{D} - D_t) + (\omega + \xi)(C_t - \tilde{C}_t)]\right]X
$$

(34)

Having verified the second order conditions for a well-behaved maximisation problem we can focus on the now two FOCs:

$$
1 - R'(D_t^*) + (\psi + \xi) F'[(\psi + \xi)(\tilde{D} - D_t) + (\omega + \xi)(C_t - \tilde{C}_t)]X = 0,
$$

(35)

$$
-1 - [(\omega + \xi) + (\psi + \xi)\tilde{D}']F'[(\psi + \xi)(\tilde{D} - D_t) + (\omega + \xi)(C_t - \tilde{C}_t)]X = 0.
$$

(36)

The interpretation of the first FOC is unchanged to the FOC of the basic model: the negative marginal direct net effect equals the positive marginal effect (through competence) on the expected ego rent. The second FOC is similar with two differences: (i), the negative

---

24 We only need three not very restrictive assumptions for this and for all propositions. The assumptions have to do with the relative size of propaganda investment and the much larger deficit as well as deficit and propaganda perceptions: (i) $(\psi + \xi)(\tilde{D} - D_t) + (\omega + \xi)(C_t - \tilde{C}_t) < 0$; (ii) $(\tilde{D} - D_t) + (C_t - \tilde{C}_t) < 0$; and (iii) $\tilde{D}' < -1$ (a $\$1$ investment reduces the perception of the deficit by more than $\$1$).
marginal direct effect equals minus unity and relates to the costs incurred in the pre-election period only; and (ii), the positive indirect effect through competence now depends on $A := (\omega + \xi) + (\psi + \xi)\tilde{D}'$. From the second FOC we can determine that $A$ must be negative: a marginal increase in $C$ increases the critical value of the density function by $\omega + \xi$, but the effect is more than outweighed by the decrease of the critical value through its effect on perceived deficit, $(\psi + \xi)\tilde{D}'$. One other thing we can learn from FOC (36): it is always optimal for the government to use disinformation for reducing the perceived level of deficit (as long as $\psi > 0$), even if the public is fully aware of the investment in propaganda, i.e. nobody is uninformed about propaganda ($\omega = \xi = 0$).

5 Results and Discussion

For obtaining perturbation results the Implicit Function Theorem is used. We are interested in marginal effects either of changes in the political rent $X$ or of shifts between groups of voters on the government’s optimal choice both of the deficit $D_t$ and of its investment in propaganda $C_t$.

Proposition 2 - Ego Rent.

Higher political rents increase optimal borrowing and disinformation investment at the equilibrium:

\[
\begin{align*}
(i) \quad \frac{dD^*}{dX} &> 0 \\
(ii) \quad \frac{dC^*}{dX} &> 0.
\end{align*}
\]

This confirms and straightforwardly extends proposition 1 (i): a higher ego rent increases the incentive to distort the economy by raising the deficit, but also by stepping up propaganda in order to reduce the deficit perception of voters who are uninformed about the deficit. As the ego rent increases, both instruments are used by the incumbent to appear more competent in the eye of voters.
In principle, the comparison of the extended model to the basic model becomes slightly more complicated when considering shifts between groups because we are comparing a model with 2 groups of voters to one with 4 groups of voters.\(^{25}\) Increasing the share of one group does not imply the reduction of a particular other group. Instead, we have to specify which group size is reduced. Nonetheless, for propositions 3 to 5, it only matters, if voters shift from being informed (group A1 or B1) to being uninformed about the deficit (group A2 or B2), irrespective of whether they are informed about disinformation costs or not.

**Proposition 3** - Deficit When Uninformed About the Deficit.

*A larger share of voters who are uninformed about the deficit increases optimal borrowing at the equilibrium only, if the density function is (relatively) flat (i.e. \(F''\) close or equal to 0) at the equilibrium:*

\[
\begin{align*}
(i) \quad & \frac{dD^*}{d\psi} > 0 \\
(ii) \quad & \frac{dD^*}{d\xi} > 0.
\end{align*}
\]

Proposition 1 (\(ii\)) is not guaranteed to carry over to the extended model, only if the density function is (relatively) flat. In the basic model, the argument was that more voters can be fooled before elections. Now, increasing the share of uninformed voters does not necessarily increase the efficiency of electioneering.\(^{26}\) Prima facie, this result appears puzzling and is, therefore, discussed after the next proposition, which presents a similar result for disinformation:

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\(^{25}\) To conceptualise what is going on it helps to envisage a 50-50 split between informed (group 1) and uninformed (group 2) voters in the basic model. When we move to the extended model, we could postulate that half of those voters who are uninformed about the deficit are informed about the incumbent’s disinformation (25% overall), the others not (25%). We could do the same for the voters who are informed about the deficit. As a result, we would compare the basic model with 2 equal groups (1 and 2) to the extended model with 4 equal groups (A1, A2, B1, B2).

\(^{26}\) This result actually applies to all four possible marginal changes between groups. To be precise, proposition 3 (\(i\)) represents a marginal change from group A1 to A2 and is captured by \(\frac{dD^*}{d\psi} - \frac{dD^*}{d\sigma}\), which equals \(\frac{dD^*}{d\psi}\) because \(\frac{dD^*}{d\sigma} = 0\). Proposition 3 (\(ii\)) depicts the marginal change from group A1 to B2. We could add the marginal changes from groups B1 to A2 (\(\frac{dD^*}{d\psi} - \frac{dD^*}{d\sigma}\)) or B1 to B2 (\(\frac{dD^*}{d\xi} - \frac{dD^*}{d\sigma}\)), but in each case we obtain the same qualitative result.
Proposition 4 - Disinformation When Uninformed About the Deficit.

A larger share of voters who are uninformed about the deficit increases optimal investment in disinformation at the equilibrium, if the density function is (relatively) flat (i.e. \( F'' \) close or equal to 0) at the equilibrium:

\[
(i) \quad \frac{dC^*}{d\psi} > 0 \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \q
Raising $D_t$ is costly because $R(D_t) > D_t$ must be repaid in the off-election period. Lowering $\bar{D}$ can only be achieved by increasing the propaganda cost $C_t$, which lowers the probability of winning according to equation (32). When the density function is relatively flat (as in figure 2), the additional probability mass to be gained from raising $D_t$ or reducing $\bar{D}$ as a response to the increase in $\psi$ (or $\xi$) is rather large. However, it can be smaller when the slope is greater at the equilibrium as illustrated by figure 3. Then the utility gain for the incumbent caused by a further increase in probability to win (due to higher $D_t$ or lower $\bar{D}$) might be offset by the aforementioned countervailing effects.

![Figure 3](image_url)

Figure 3: Deficit and propaganda may or may not further raise probability to win

In the latter case, a marginal increase of $\psi$ or $\xi$ (share of voters who are uninformed about the deficit) may produce the opposite result for deficit as described by

**Proposition 5 - Deficit When Uninformed About the Deficit - The Other Case.**

_A larger share of voters who are uninformed about the deficit decreases optimal borrowing at the equilibrium, if the density function is sufficiently steep at the equilibrium:_

\[
(i) \quad \frac{dD^*}{d\psi} < 0 \\
(ii) \quad \frac{dD^*}{d\xi} < 0.
\]

27 Note that proposition 5 only applies for a sufficiently large slope of the density function _at the equilibrium_. The slope is, of course, determined endogenously.

28 Again, what matters is that the shift is to a group, which is uninformed about the deficit. This includes not only shifts from A1 to A2 and A1 to B2, but also B1 to A2 and B1 to B2. In contrast, the results for propaganda costs are not so clear-cut. Conditions for optimal disinformation to be reduced in response to an increase in the number of voters who are uninformed about the deficit are very restrictive.
To understand the results on a more intuitive level, consider, once again, the difference of the density functions depicted in figures 2 and 3.\textsuperscript{29} If the actual competence distribution corresponds to the density function depicted in figure 3, the incumbent knows that her competence is probably pretty close to the average (even though she does, of course, not know the exact level of her competence according to the basic assumption made in section 2). In this case, the incumbent does not gain a great deal from appearing more competent since the probability of winning cannot be increased much by shifting the critical value to the left. With $\psi$ or $\xi$ marginally increased, marginally raising the deficit or reducing the perceived deficit are potentially more effective according to equation (32), but it need not be beneficial overall. Instead, the incumbent may be better off reducing the costly disinformation and/or deficit manipulations. Hence proposition 5 (if the slope is steep enough at the equilibrium). If the density function is, however, relatively flat as in figure 2, the incumbent’s competence distribution has a fat tail and there is a good chance that the incumbent is relatively far away from average competence. (The extreme case would be an equal distribution of competence, at least on the side of below-average competence.) In this situation, the incumbent tries to exploit any possibility for appearing more competent despite the countervailing costs. Hence propositions 3 and 4.

Compared to the basic model, proposition 5 is the major finding of this paper. It results from extending the model to disinformation and, thereby, avoiding the rational expectations assumption for voters who are uninformed about the deficit. The share of voters who are uninformed about disinformation does not seem to matter. However, proposition 6 states that the negative result of proposition 5 is strengthened with the number of voters who are uninformed about government propaganda.

**Proposition 6 - Deficit When Uninformed About the Deficit - More On the Other Case.**

*Given the situation of proposition 5 (sufficiently steep density function), the decrease of optimal borrowing (caused by an increased share of voters who are uninformed about the*}

\textsuperscript{29} Over a large range, the slopes on the left branch of the density function of figure 3 are greater than at any point of the left branch of the figure 2 density function.
deficit) is augmented when the share of voters who are uninformed about disinformation increases at the equilibrium:

\[ (i) \quad \frac{dD^*}{d\omega} > 0 \quad \text{and} \quad (ii) \quad \frac{dD^*}{d\xi} < 0 \quad \text{for} \quad x = \omega, \xi. \]

How can we explain proposition 6? Voters who are uninformed about disinformation costs do not know how much the government invests in propaganda and underestimate the government’s costs for it. Ignoring an additional burden on the budget means that they expect higher transfers than realistically possible. They are disappointed about low levels of transfers and conclude that the government must be less competent than it actually is. This reduces the government’s probability to win the elections. With more voters who are uninformed about disinformation costs, it is costlier for the government to invest in propaganda in order to reduce the perceived deficit. Now, let us look at proposition 6 again. The potential gain from increasing the deficit (caused by an increased share of voters who are uninformed about the deficit) faces larger countervailing costs. Hence the government will not only not increase (when the density function is sufficiently steep), but decrease optimal deficit more vigorously.

The last proposition looks at the direct effect of the share of voters who are uninformed about disinformation costs:

**Proposition 7 - When Uninformed About Disinformation.**

A larger share of voters who are uninformed about disinformation costs increases the optimal deficit, but decreases the optimal investment in disinformation at the equilibrium:

\[ (i) \quad \frac{dD^*}{d\omega} > 0 \quad \text{and} \quad (ii) \quad \frac{dC^*}{d\omega} < 0. \]

Proposition 7 (ii) can be explained along the lines of our explanation for proposition 6. More voters (who are uninformed about disinformation costs) conclude that the government is less competent. Disinformation becomes costlier and is reduced by the government in the
optimum. However, less disinformation means higher perceived deficit. To counterbalance part of the effect, the government finds it optimal to increase the deficit. Hence proposition 7 (i).

6 Conclusion

This paper argues that governments, which engage in economic manipulations do a fortiori engage in political manipulations. In particular, there is evidence that governments will try to obscure their fiscal manipulations. We consider a disinformation technology within a political budget cycle model: transfer and deficit manipulations are complemented by government disinformation policies on the deficit. The less informed part of society will perceive the deficit level and/or the costs for disinformation below the level chosen by a utility maximising government. Although the government does not know its own competence, it will try to raise its re-election chance by appearing more competent. This can be achieved by increasing deficit-financed transfers and/or by reducing the perceived deficit through increased propaganda. As a result, budget and deficit cycles emerge. Cycles increase with politicians’ exogenous ego rents, but may increase or decrease with the share of voters who are uninformed about the level of deficit.

Prima facie, it would seem more intuitive, if an increase of the share of uninformed voters unambiguously increased a government’s optimal level of deficit. This is the result we do actually obtain, if we do not consider disinformation, but assume rational expectations of the deficit level by uninformed voters instead. This result is confirmed by Shi and Svensson (2006). With disinformation included, this seemingly intuitive result does no longer hold unambiguously. It is still a possible outcome, but only if potential realisations of government competence are very dispersed. In this case, increasing propaganda and debt-financed transfers allow an incumbent to appear competent for many more realisations of low competence. The government will then forego the costs of manipulations: higher repayment costs for increasing deficit or higher propaganda costs for lowering the perceived deficit.
In contrast, if the competence distribution is more compressed towards the average, fewer realisations of low competence can be affected by appearing more competent. In this case, the incumbent may use the improvement of re-election chances (due to the increase of the share of voters who are uninformed about the deficit) for reducing costly manipulations.

Moreover, it can be shown that the deficit reduction (in case of dispersed competence) is more substantial, if the share of voters who are uninformed about disinformation costs is increased. Voters who are uninformed about disinformation costs do not know how much the government invests in propaganda. They observe a relatively low level of transfers and conclude that the government must be less competent than it actually is. Increasing the deficit would still be more effective (due to the increased share of voters who are uninformed about the deficit), but it faces even larger countervailing costs. Hence the government will decrease optimal deficit even more vigorously. A different result is obtained, if we study the direct effect of a change of the share of voters who are uninformed about the disinformation (when there is no change in the share of voters who are uninformed about the deficit). These voters will also conclude that the government must be less competent, but here the situation is much simpler. The government finds it optimal to shift the emphasis from disinformation to deficit (with deficit and perceived deficit jointly increasing).

The main finding of this paper is that the straightforward link between more voters, who are uninformed about the deficit, and increased budget and deficit cycles is too straightforward and does no longer hold in a broader model. The existence of this link hinges on the government’s incentive to appear competent, which is shown in this paper to depend on the distribution of competence. This is relevant for policy and for empirical research. A stereotype developing country has typically got governments exhibiting very diverse skills and abilities. Such a country can be characterised by a dispersed competence distribution. In this case, reducing the share of uninformed voters would help alleviate the budget cycle. In a stereotype industrial country the situation is different. Government competence is typically less dispersed. In this case, increasing information need not lead to a reduction of the budget cycle. Reducing the share of uninformed voters may actually exacerbate the
problem of political budget cycles. Conversely, a large share of uninformed voters in a developed country may concur with smaller budget cycles. This has empirical implications. For instance, if we believe that in industrial countries the share of voters who are informed about the deficit is actually not so high, this may explain why the budget cycle is found by Block (2002), Schuknecht (1996 and 2000), Shi and Svensson (2006), and Vergne (2009) to be more relevant in developing countries. Shi and Svensson’s (theoretical) explanation is that the larger share of uninformed voters in developing countries produces larger budget cycles. Thus we offer an alternative explanation for the same phenomenon. Even if the share of voters who are uninformed about the deficit were the same, developing countries could still exhibit larger budget cycles because of more dispersed government competence.

This paper evokes at least two possible extensions. First, an effort could be made to test our empirical predictions. If competence is really dispersed in developing countries, third world countries with a higher share of voters who are uninformed about the deficit should exhibit larger budget cycles compared to other developing countries. Conversely for (industrial) countries with less dispersed competence, if such a (developed) country has a large share of informed voters, it may experience larger cycles than a comparable country with less informed voters. The difficulty would be to find good proxies or instruments. Maybe, the dispersion of government competence, the government skills shocks, could be instrumented with capital flight or another financial variable; the share of informed voters might be captured by literacy, economic freedom or a freedom of the press variable. Second, disinformation and uninformed voters could be included in a signalling model of the Rogoff and Sibert (1988) and Rogoff (2000) type, where the government observes the competence prior to private agents. The interaction (“lying”) between informed and uninformed agents captured in models of strategic communication (such as Kartik, 2009) could be applied to the interaction between the government and uninformed private agents. It would be interesting to see, if our ambiguous result about the effect of the share of uninformed voters on the deficit cycle obtains when disinformation is incorporated in such a signalling model of the political budget cycle.
References


