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The Political Economy of Technocratic Governments

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Abstract

This paper proposes a game theoretical model of technocratic government, i.e. cases where a non political technocrat is put in charge by political parties. We find conditions for the existence of a technocratic government equilibrium, where parties agree to delegate the agenda setting power to technocrats, committed to maximize social welfare. Such an equilibrium exists only if technocrats are more competent than ordinary politicians. Furthermore, we show that unstable parliaments increase the range of parameters where a technocratic government equilibrium exists. Polarization can also increase the likelihood of a technocratic government.

1 Introduction

There is a common factor in the politics of post-2008 economic crisis in several European countries (E.g., Italy, Greece, Czech Republic and Hungary): the presence of technocratic governments. In all those countries the executive power has been controlled, for a certain amount of time, by non-elected officials, who did not belong to any political party. In many cases almost all the most important political parties were supporting those governments, despite not being in control of the head of the cabinet and - in Italy and the Czech Republic - not being able to directly appoint the majority of the ministers. Such arrangements were justified by the need to implement painful structural reforms in order to overcome the crisis.

But what precisely is a technocratic government? Following McDonnell and Valbruzzi (2014, p.656), a non-caretaker technocratic government (TG) is a form of government where:

1. its top positions are not occupied by people "recruited through party";
2. the government is not a caretaker government, i.e. it is able to change the status quo;

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3. "policy is not decided within parties" and all major decisions are not made by elected party officials, but then parties "act cohesively to enact it".

McDonnell and Valbruzzi (2014) finds 13 cases of non-caretaker technocratic-led governments (i.e. either fully technocratic governments or technocrat-led partisan governments, namely those led by a technocrats but with a majority of ministers nominated by parties) in the EU 27. Extending the analysis, Brunclík and Parízek (2019) finds 53 examples of technocratic governments in 36 European countries in the period 1989-2015. Hence, despite being an "exceptional" phenomenon, they are not completely unusual and, more importantly, they can be very consequential, being in charge of important political and economic reforms.

In this paper we consider as technocratic, irrespective of the share of non-partisan ministers, all governments led by a technocrat that takes decisions based on non-partisan considerations. From an economic point of view, it is interesting to note the conditions that led to a technocratic government and the policies they implemented. Following McDonnell and Valbruzzi (2014), if we take five recent examples (Bajnai, 2009-2010, in Hungary, Fischer, 2009-2010, in the Czech Republic, Papademos, 2011-2012, in Greece, Monti, 2011-2013, and, to a certain extent, Draghi, 2021-2022, in Italy), they all appeared when their countries were facing bad economic conditions, and most of them adopted some sort of "anti-crisis" measure, generally painful in the short run, but supposedly able to improve the situation in the long term. Deficit cuts characterised the action of Berov (1992-1994, in Bulgaria) and Dini (1995-1996, in Italy). On top of this, two recent contributions in political science, Brunclík and Parízek (2019) and Wratil and Pastorella (2018), stress the role of economic crises. McDonnell and Valbruzzi (2014) finds two conditions related with the occurrence of technocratic governments: the important role of the head of the state and a party system that can be "either crumbling (such as Italy and Greece) or has not been fully rooted".

Despite their importance, TGs have been studied by few scholars in political science (and never with game theoretical formal models[1]) and - as far as we know - they are essentially absent, as the main focus of a study, in the economics literature. In this paper, we provide a formal model of TG formation, based on the idea that parties must agree to give up power in order to have a TG in place. As pointed out by Wratil and Pastorella (2018), this is a bit of a puzzle. Why should parties be willing to give up power, whose pursuit is their primary interest? When a technocratic government is in power, the "ordinary" way of working of a representative democracy, where political decisions are taken by accountable politicians while technocrats support them on specific, technical issues (i.e. monetary policy, see for example Alesina and Tabellini 2007), is somewhat suspended. While the Parliament is still in charge, the executive power (and its implied agenda setting power) is granted to selected technocrats who - generally - are not accountable from an electoral point of view (Pastorella 2016). But, at the same time, parliaments typically retain their ability to replace the executive.

[1] The closest formal setting is probably (Neto and Strøm 2006): they model a bargaining game between a prime minister and a president, both politically motivated, and derive comparative statics results on cabinet appointment of non-partisan ministers. As the prime minister is always assumed to be a politician, and non-partisan cabinet members do not lead the government, their model does not address the issue of technocratic governments formation.

Overall, we can summarise some stylised facts on TGs as follows:

1. Technocrats seen as “competent” and not politically motivated;
2. Parties give up agenda setting power, but technocrats are not the direct expression of a parliamentary group;
3. TGs are often supported by large majorities in the parliament;
4. TGs occurrence is rare and often associated with (political or economic) crises;

We will use those stylised facts as building blocks for the model. This allows us to study how the occurrence of TGs is influenced by a series of institutional features, spanning from polarization to asymmetries in the status quo policy or institutional constraints.

As far as we know, this paper provides the first model of technocratic government using standard tools of political economic analysis and game theory. We study under what conditions political parties support full delegation of power to a technocratic government that is going to maximize a different objective function from their own. Therefore, parties give up the possibility to implement their own partisan policies. In our model, parties choose the allocation of a pie between two dimensions: common good, that benefits both players, and an ideological stance, that benefits one party and hurts the other. If they choose the policy by themselves, the government can propose a division of the pie. Whether the Government’s proposal is approved or not depends on the behaviour of the opposition: it can either let the proposal pass unopposed or implement obstructionary tactics, that may cause the proposal to fail (and thus the status quo division to remain in place), at the cost of decreasing the size of the pie. Whether the opposition is successful or not depends on the institutional constraints to the executive, that we capture with the probability that the government is able to impose its own will when facing opposition. Alternatively, parties can give up power to technocrats, which are not politically motivated. This, however, requires a unanimous decision, consistently with the stylised facts outlined above.

We use our model to gain insights on how different institutional features affect the emergence of technocratic governments. In particular, we find that technocrats need to be more competent than ordinary politicians, in order to be called into power. Furthermore, countries with more constrained governments are more likely to call the technocrats, irrespective of whether the current government typically tries to impose its own policy or compromises with the opposition. The role of polarization is, instead, more nuanced, as it depends on the governing style. Counterintuitively, polarization can actually increase the chances of a technocratic government: this always happens in places where the government tries to impose its own policies without striking an agreement with the opposition, and this effect is stronger the weaker/more constrained is the government. Finally, we show that conditions in the status quo allocation matters in the expected way: a government that is better off in the default allocation is always less willing to accept a technocratic government, and the opposite holds when the opposition is better off.

The model is quite flexible and can be extended in several directions. In one extension we provide a rationale for the technocrats’ behaviour, assuming that they are reputationally motivated. This allows us to study the agency problem between politicians and technocrats in greater details. We find that politicians are willing to delegate only if technocrats exert costly effort, in equilibrium. But also that an increase in the ex-ante quality of the bureaucrats may reduce the chances of delegation, because they would not be sufficiently motivated to act.

Related literature The definition and the determinants of TGs have been studied by few scholars in political science. See for example (Bertsou and Caramani 2020) and the references therein. Most notably, McDonnell and Valbruzzi (2014) provides a taxonomy of TGs in Europe, while Brunclík and Parízek (2019) and Wratil and Pastorella (2018) study empirically the determinants of their formation, using a similar dataset of European countries. They find a correlation between TGs and political scandals and economic crises (Wratil and Pastorella 2018) and between TGs and distrust, dismissal of previous government and poor economic performance (Brunclík and Parízek 2019). On a more theoretical side, Alexiadou (2018) provides an overview of definitions and policy implications of TGs, while Pastorella (2016) discusses their democratic credentials. None of those contributions provide a formal model of TG formation. Wratil and Pastorella (2018) provides an informal conceptual framework for the formation of TGs. This allows them to make testable hypothesis on the relationship between TGs and a series of potential determinants: political scandals, economic crises, strong head of states, fractionalization and polarization. We share with them the rational choice logic and the interest in crises and polarization. We are different in proposing a fully fledged game theoretical model, based on the post-election partisan policymaking, and able to include fundamentals like the status quo policy, the cost of parliamentary obstructionism and institutional constraints faced by the government. This allows us to derive rich comparative statics results on the parameters of the model, and on their interactions, in affecting the possibility that a TG is selected on the equilibrium path (e.g. on the relationship between polarization and the style of government, on the role of the status quo, on the role of institutional constraints and so on). Wratil and Pastorella (2018) makes the hypothesis that polarization, increasing partisan inability to form a government, increases the chances of a TG formation, but they do not find support for this hypothesis in the data. Our model shows that the effect of polarization is more subtle, as it affects both sides of the bargaining process and does not always make the party holding a majority worse off. Empirically, we measure both polarization and the presence of TGs in different ways[2], finding a positive correlation.

In the economics literature, a couple of recent theoretical papers deal with related, but not overlapping, issues. In Gratton et al. (2021), an exogenous and temporary increase in the share of high quality politicians is labelled as "technocratic government". However, the focus of their paper is on a different dynamics, and indeed it does not deal with the conditions under which a TG is more likely to arise, nor with the delegation of political power from politicians to bureaucrats. Gratton and Lee (2023) considers the idea of "technocracy" as a political regime where bureaucrats are unaccountable to voters and exercise full discretionary power on policymaking. Although one of the elements of a technocratic government is the delegation of policymaking to bureaucrats, we see a technocratic government not as a different political regime, but as an equilibrium outcome of a "standard" democracy that may happen under some

[2] In our case, polarization in society uses yearly V-Dem data, rather than the Comparative Manifesto Project. The presence of a TG is recorded year-by-year, while they measure only when a new government is formed.

conditions. Indeed, the focus of our model is precisely on when, and why, parties may want to fully delegate unconstrained policymaking.

The main contribution of our paper is to provide a simple, tractable model of technocratic governments, that can be used as a "workhorse" for more complex questions. As such, we contribute to the literature on policymaking and obstruction (Patty 2016; Fong and Krehbiel 2018; Invernizzi and Ting 2023), where we add the possibility of technocrats as a social welfare maximizing "outside option" for parties, studying under what conditions it is chosen in a multidimensional policy context. In particular, the idea that the opposition may make it harder for the government to get its policy in place can be related with obstruction techniques studied by Patty (2016). A similar idea of opposition parties being able to influence the outcome the government can obtain is also in Invernizzi and Ting (2023) and Parihar (2023). We are related to Dixit et al. (2000) as they also study how parties divide a surplus. However, they do so in a dynamic environment. Analytically, we adopt a basic Roemer-Rosenthal bargaining protocol (Romer and Rosenthal 1978), with an agenda-setter (the government) making a take-it-or-leave-it offer to another player. Differently from them, however, the government may be able to pass its policy even without the support of the opposition (which is, therefore, not a veto player).[3]

Finally, we contribute to the literature on political versus bureaucratic delegation (Alesina and Tabellini 2007; Besley and Coate 2003; Alesina and Tabellini 2008; Maskin and Tirole 2004), studying what happens when bureaucrats/technocrats replace politicians in the executive power. Among those, the closest paper to ours is Alesina and Tabellini (2008), because they consider also the positive question on whether politicians are willing to delegate tasks to reputationally-concerned bureaucrats. They find that politicians try to maximize the equilibrium rents of being in office, thus delegating tasks that are more costly to be implemented, or less rewarding. This implies that, in their framework, they do not delegate the re-distributive task. We take a complementary approach by asking under what conditions politicians are willing to delegate full executive power, that is precisely a re-distributive task. Furthermore, as we focus on post-election politics, we can study the role played by parliamentary dynamics and hence by things like polarization or parliamentary strength, that are absent from Alesina and Tabellini (2008) framework.

The paper is organized as follows: section 2 presents the set-up of the model, section 3 outlines the main results, section 4 considers three extensions ("caretaker governments", reputationally-motivated technocrats and a social welfare function with different weights); section 5 concludes.

[3] In a broader way, or model is also related to the large literature on post-election politics, bargaining and coalition building (see for example Baron and Ferejohn 1989; Baron and Diermeier 2001; Hughes 2020; Battaglini 2021; Austen-Smith and Banks 1988; Laver and Shepsle 1996; Merlo 1997; Banks and Duggan 2006; Yildirim 2007; Romer and Rosenthal 1979). However, we borrow the simplest possible bargaining protocol, similar to Romer and Rosenthal (1978), and we apply it to our specific environment.

2 The model

2.1 Players and actions

The game has three players: the government, G, the opposition, O (henceforth, "politicians", with generic label $P \in \{G, O\}$) and the technocrats, T. Both the government and the opposition represent a particular electoral constituency or ideological position.

Whoever is in charge of the agenda setting power proposes how to reform the allocation of a pie of size ξ between pork barrel spending (the ideological dimension) and the production of a public good beneficial for the whole country (the common good dimension). By default, the agenda setting power is given to the government, if the technocrats do not participate to the game.

We define the vector $\mathbf{x}$, with components $x_G, x_O \in [0, 1]$, the share of the pie the agenda-setter proposes to allocate to G and O constituencies, while the rest remains for the public good. There is a status quo division of the pie, denoted by $\mathbf{x}^{sq}$, that is implemented if the proposed reform fails.

The opposition then decides whether to accept or reject the proposal. If accepted, the proposal is implemented. If rejected, the opposition implements obstructionary tactics that may, with positive probability, lead to a failure of the reform. In particular, we assume that the probability the government is able to overcome the opposition and get the reform approved is given by $w \in (0, 1)$. This parameter captures the institutional constraints on the decision making ability of the Government in a parsimonious way. w is relatively low in case of minority governments, in cases of unstable parliaments, or where the decision making ability of the government is severely limited by other constraints (legal, institutional and so on). In the model, we describe w as the probability of success in a Parliamentary vote (hence, "Parliament" is basically a randomization device to solve disagreement between G and O). To capture the idea that delays are costly, we assume that the pie shrinks by a rate of $\delta \in (0, 1)$ if the proposed reform is not approved immediately.

In normal times technocrats are not in charge of the agenda and they do not intervene in the decision making process. However, it is possible that both G and O decide to delegate the agenda setting power to T.

2.2 Payoffs

2.2.1 Parties

We assume parties derive utility from the allocation of the pie. Formally,

$$U_P(\mathbf{x}) = \xi[\beta(1 - x_P - x_{-P}) + (1 - \beta)(x_P - \alpha x_{-P})] \tag{1}$$

where ξ is the size of the pie. In the benchmark model, we set $\xi = 1$ (unless technocrats are in power or the pie shrink because of parliamentary obstruction). Intuitively, parties care about the size of the "slice" assigned to their constituency and to a public good, while they derive negative utility from the size of the "slice" assigned to the rival constituency. β represents the importance of the public good. Assumption 1 summarizes the restrictions we impose on it.

Assumption 1 $\beta \in \left(\frac{1-\alpha}{3-\alpha}, \frac{1}{2}\right)$.

We set it below 0.5 because we want parties to focus on their "private" objectives, whenever they can (so they prefer to allocate resources to their own constituency, rather than to the public good). The lower bound, instead, implies that the socially optimal allocation is $x_G = x_O = 0$, as it will be clear below. Its violation means that the socially optimal policy allocates the pie to the ideological dimensions, leaving out the common good one, and we do not see that case as particularly interesting.

Status quo allocations are also a primitive of this model. We assume that x_G^{sq}, x_O^{sq} are such that the status quo payoffs for both G and O are weakly positive.[4] The first set of results, up to Proposition 1 included, imposes no further restrictions, and does not depend on whether the status quo payoff are positive or negative. Then we will fully characterize equilibria assuming that the status quo payoff of the opposition is weakly below β. In this way, we focus on equilibria where the government is in a relatively good position and the compromise policy gives a larger share to G's constituency. We relax this last restriction in Appendix B. Finally, $\alpha \in (0, 1)$ is our proxy for the degree of polarization in society, i.e. how damaging it is, for party P, to see the pie allocated to the other party $-P$.

2.2.2 Technocrats

First we assume that, if T are called, the size of the pie becomes $c > 0$. Note that a large c (i.e. greater than ξ) can be interpreted both as competence of the technocrats once in power or (in its opposite) as the depth of a crisis faced by a country. In this latter case, a pie equal to c would be the economic outcomes during "normal times", while a pie of ξ represents the outcome in the time of crisis. Hence, $\frac{\xi}{c}$ is the depth of a crisis.

Technocrats do not have a political constituency they respond to, hence they do not have preferences on the ideological dimension. We assume that they choose the policy that maximizes a social welfare function given by the sum of U_G and U_O.[5] In other words, the objective function of the technocrats is

$$U_T(x_G, x_O) = c[U_G + U_O] = c[2\beta(1 - x_G - x_O) + (1 - \alpha)(1 - \beta)(x_G + x_O)] \tag{2}$$

[4] Essentially, this implies excluding very unbalanced status quo allocations, as discussed in details in Appendix C. All possible equal splits are included. In this way, we avoid equilibria where the opposition rejects a reform equal to, or even slightly better than, the status-quo payoff, because fighting would decrease the pie and therefore bring a smaller negative payoff. However, this assumption has a bite only in one of the results of Proposition 4 (without it, w may have a positive effect on the chances of observing a TG) and, as a consequence, in Corollary 3, that depends directly on Proposition 4.

[5] The assumption that the social welfare function gives the same weight to both constituencies is not crucial for our results. As discussed in section 4.3, nothing changes as long as the weights are not "too" unbalanced, and technocrats themselves may be interested in committing to maximizing a fairly balanced social welfare function.

subject to $x_G + x_O \leq 1$, so that x_G and x_O are the share of the new pie (now scaled by c) assigned by the technocrats to different constituencies. Using equation (2), it is straightforward to note that, as long as $\beta > \frac{1-\alpha}{3-\alpha}$, the socially optimal policy is $x_G = x_O = 0$, thus technocrats are giving a payoff of βc to each party. Section 4.2 discusses the case of reputationally-motivated technocrats, in line with the literature on bureaucratic motivations (Alesina and Tabellini 2007, 2008); that setting can be seen as a microfoundation of the technocrats' choice and ability to increase the size of the pie.

2.3 Timing and solution concept

The timing is as follows:

1. Both parties decide whether to call the technocrats or not. Define this decision $d_P \in \{T, \emptyset\}\ \forall P \in \{G, O\}$;
2. If both agree to call the technocrats, they delegate them the agenda setting. Otherwise, the government proposes a reform, i.e. a division of the pie;
3. If G proposes a reform, O decides whether to accept or to oppose it;
4. Parliament votes. If G and O agree on a reform, the reform is implemented. If O opposes the proposed reform, the final division will be the proposed one with probability w and the status quo one with probability $1 - w$, but the size of the pie is discounted by a factor δ. Alternatively, if a TG is in power, the policy chosen by the TG is implemented;
5. Payoffs are paid and the game ends.

The solution concept we use is subgame perfect Nash equilibrium (SPNE) in pure strategies. To deal with knife-edge cases, we assume that G proposes the extreme reform when indifferent and that both players prefer to call the technocrats when indifferent.

3 Analysis

We solve the game by backward induction. All the proofs are in Appendix A.

3.1 No technocrats

First, suppose that the technocrats have not been called into power. When facing a generic reform x_G, x_O, O chooses to approve it iff

$$U_O(x_G, x_O) \geq (1 - w)\delta U_O(\mathbf{x}^{sq}) + w\delta U_O(x_G, x_O) \tag{3}$$

This is because, if O obstructs the reform, it will pass with probability w, while the status quo remains in place with complement probability. In both cases, however, the pie is smaller (hence the δ in front). This immediately leads to the following lemma:

Lemma 1 *In any SPNE of the game, a reform is accepted by the opposition iff* $x_G \leq \frac{\beta - kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)} + \frac{1-2\beta}{\beta+\alpha(1-\beta)} x_O$*, where* $k = \frac{\delta(1-w)}{1-w\delta}$.

Note that k is strictly between 0 and 1; it is increasing in δ and decreasing in w. Intuitively, it represents the slope of the relationship between the status quo payoff of the opposition and the payoff given by the minimal acceptable offer. A large w implies that relatively low offers are accepted, because the Government is likely to be able to impose its own will anyway. A large δ implies that obstruction is not very costly, and therefore the acceptable offer needs to be large enough.

We can now define the best proposal, from the point of view of G, that can be accepted.

Lemma 2 *In any SPNE of the game, the best proposal for G that can be immediately approved by the opposition is characterised by* $\tilde{x}_G = max\left[\frac{\beta - kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)}, 0\right]$ *and* $\tilde{x}_O = max\left[\frac{kU_O(\mathbf{x}^{sq})-\beta}{1-2\beta}, 0\right]$*, with* $\tilde{x}_G < 1$ *and* $\tilde{x}_O < 1$.

Intuitively, if k is very small (e.g. because w is close to one) or the status quo is bad for the opposition, G can reach an agreement where $x_O = 0$ and $x_G < 1$, so that there is a share of the pie allocated to the common good. Otherwise, an agreement can be reached only if G keeps nothing of the pie and O gets a positive share, increasing in k. Alternatively, G can always try to get through the best possible reform, proposing $x_G = 1$, $x_O = 0$. This, however, will certainly lead to obstruction from O. As a consequence, in equilibrium G chooses the extreme reform iff

$$U_G(1) := w\delta(1-\beta) + (1-w)\delta U_G(\mathbf{x}^{sq}) \geq \beta + (1-2\beta)\tilde{x}_G - (\beta + \alpha(1-\beta))\tilde{x}_O$$
$$:= U_G(\tilde{\mathbf{x}}) \tag{4}$$

The precise strategy in the unique subgame perfect NE of this subgame depends on the parameters of the model, including the status quo allocation. Proposition 1 characterises it in details.

Proposition 1 *Suppose that parties choose not to call the technocrats. In the unique (up to the tie breaking rules) SPNE of this subgame, players' strategies are as follows:*

- *O accepts a reform* x_G, x_O *iff* $x_G \leq \frac{\beta - kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)} + \frac{1-2\beta}{\beta+\alpha(1-\beta)} x_O$*, where* $k = \frac{\delta(1-w)}{1-w\delta}$ *and fights otherwise;*
- *G proposes:*
  - *a compromise reform* $x_G = \frac{\beta - kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)}, x_O = 0$ *if* $\beta - kU_O(\mathbf{x}^{sq}) \geq 0$ *and* $w\delta(1-\beta) + (1-w)\delta U_G(\mathbf{x}^{sq}) < \beta + (1-2\beta)\frac{\beta - kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)}$*;*
  - *a compromise reform* $x_G = 0, x_O = \frac{kU_O(\mathbf{x}^{sq})-\beta}{1-2\beta}$ *if* $\beta - kU_O(\mathbf{x}^{sq}) < 0$ *and* $w\delta(1-\beta) + (1-w)\delta U_G(\mathbf{x}^{sq}) < \beta - (\beta + \alpha(1-\beta))\frac{kU_O(\mathbf{x}^{sq})-\beta}{1-2\beta}$*;*
  - *an extreme reform* $x_G = 1, x_O = 0$ *otherwise.*

On path, the two compromise reforms are accepted. The extreme reform is rejected by O and the outcome is determined by a lottery with weight w.

The status quo payoffs play an important role in defining the equilibrium strategies and, as a consequence, the equilibrium outcome. The next corollary considers the simple case of $x_G^{sq} = x_O^{sq} = 0$.

Corollary 1 *Assume $x_G^{sq} = x_O^{sq} = 0$. For every combination of parameters there exists a threshold in δ, strictly between 0 and 1, such that, if δ is sufficiently high, on path G chooses the extreme reform and O obstructs it. Otherwise, G chooses the compromise reform $x_G = \frac{\beta(1-k)}{\beta+\alpha(1-\beta)}$, $x_O = 0$ and O accepts it.*

In this case, we can prove the existence of a threshold in δ that separates the two equilibria. It makes intuitive sense: G tries to impose its own preferred policy as long as obstruction is not too costly. Otherwise, an agreement is a better alternative.

3.2 Technocratic choice

In the first stage of the game, O and G choose whether to call the technocrats. In order to convince both players (and G in particular, as its incentive compatibility condition is stricter), it is necessary for the technocrats to be sufficiently competent, i.e. to increase the size of the pie (a TG guarantees a payoff of $c\beta$ for both parties). Otherwise, there is no point in giving up the agenda setting power, and the bargaining power that it brings.

In order to avoid to deal with several sub-cases and to focus on the interesting part of the model, we assume from now on that the status quo payoff of the opposition is weakly below β. Note that this would be the case if the status quo policy prescribes $x_G = x_O = 0$. One implication of this assumption is that $\beta > kU_O(\mathbf{x}^{sq})$, thus any compromise will imply $\tilde{x}_G > 0$ and $\tilde{x}_O = 0$. Recalling that d_G and d_O are the decision on whether to call the technocrats by G and O respectively, Proposition 2 provides necessary and sufficient conditions for the existence of a SPNE where the technocrats are called into power.

Proposition 2 *A SPNE where $d_G = d_O = T$ exists iff parameters are such that $c \geq \bar{c}(\alpha, \beta, w, \delta, x_G^{sq}, x_O^{sq}) := \frac{1}{\beta} Max\left[U_G(1), U_G(\tilde{\mathbf{x}})\right]$.*

Obviously, $\bar{c}$ is a function of the parameters of the model and it depends on the equilibrium in the other subgame. However, Proposition 2 guarantees that it is always possible to find a sufficiently high c such that a SPNE with a TG on path exists. Furthermore, it shows that the binding constraint is always the one of the government, and therefore $\bar{c}$ is driven exclusively by G's incentives.[6]

Note, however, that $d_G = d_O = T$ is never the unique equilibrium: both parties choosing not to call the technocrats is always (trivially) a NE of this game, as a TG government requires unanimity. Hence, technocrats may not be called even when it would be efficient to do so. Obviously, when the TG equilibrium exists, it dominates the other equilibrium, but it is interesting to point out that, even when a TG equilibrium exists, it is never unique. Corollary 2 states this result more formally.

[6] Note, however, that this is driven by the upper bound assumed to the status quo payoffs of the opposition.

Corollary 2 *There always exists an equilibrium where* $d_G = d_O = \emptyset$. *If parameters are such that* $c > \bar{c}$, *the equilibrium with the technocrats is more efficient than the equilibrium without them.*

The efficiency loss is equal to $2\beta(c-1)+\tilde{x}_G(\beta(3-\alpha)-(1-\alpha))$ *if* $U_G(1) < U_G(\tilde{\mathbf{x}})$ *and* $2\beta(c-(1-w)\delta)-\delta w(1-\alpha)(1-\beta)+(1-w)\delta(\beta(3-\alpha)-(1-\alpha))(x_G^{sq}+x_O^{sq})$ *otherwise.*

The inefficiency result is, basically, a direct consequence of the unanimity requirement for a TG. As a TG equilibrium exists iff both parties are better off by calling the technocrats, it must be more efficient than the alternative.

3.3 Comparative statics

We can now discuss how different features of the institutional setting affect the probability of formation of a TG. As we show in Appendix B, as long as $w \geq 0.5$, only the comparative statics related with the compromise reforms are affected by the relaxation of the assumption on the upper bound to the opposition's status quo payoff.

Proposition 3 *A necessary condition for the existence of a technocratic government equilibrium is* $c > 1$.

Intuitively, G is willing to give up power only if the pie gets sufficiently bigger. This implies that technocrats committed to the policy that maximizes social welfare, but without a competence premium, would never be called into power. Or, in an alternative interpretation, there has to be a crisis of some sort to justify a TG.

Proposition 4 $\bar{c}$ *is increasing in* w. *It is increasing in* α *if* $U_G(1) < U_G(\tilde{\mathbf{x}})$ *and* k *sufficiently large, and decreasing in* α *otherwise.*

The fact that polarization (α) may increase the chances of a TG is perhaps counterintuitive, given that a technocratic government requires both parties to agree. However, note that this agreement is a very particular one, because it implies giving control of the agenda setting power to someone else. Intuitively, the effect of polarization interacts with the equilibrium governing style. For a government unwilling to compromise with the opposition, the cost of polarization materialises when it fails to implement the reform. Hence a government willing to push its policy without agreement (i.e. when parameters are such that the expected payoff of the Government when trying to impose the most extreme favourable division of the pie, $U_G(1)$, is larger than the expected payoff the Government can obtain from an agreement with the Opposition, $U_G(\tilde{\mathbf{x}})$) would more frequently accept a TG, as polarization increases. For a government looking for a compromise (i.e. when parameters are such that $U_G(1) < U_G(\tilde{\mathbf{x}})$), the overall effect of polarization depends on how it influences the final outcome of the deal, and it can go in both directions (the opposition is more damaged by the status quo, but also less willing to accept a large x_G).

Consider first the case where $U_G(1) < U_G(\tilde{\mathbf{x}})$: an increase in polarization has two effects on the profitability of an agreement between parties and without the technocrats, from the point of view of G: $\tilde{x}_G$ increases because α reduces the status quo payoff for the opposition, and decreases because α decreases the payoff the opposition gets from an agreement that implies a positive share of the pie for the government, and so the share of the pie left to the common good has to increase to maintain the agreement acceptable to O. A small k implies that the second effect dominates. Hence, conditional on being willing to strike an agreement with the opposition, polarization is more likely to conduct to a TG when the government is relatively strong (hence k is small), because the agreement becomes relatively more costly. In the opposite case, i.e. when $U_G(1) \geq U_G(\tilde{\mathbf{x}})$, the effect of α is always clear: ceteris paribus, α reduces $U_G(1)$, because the government may fail to pass its preferred reform, thus making the TG more attractive. This effect is stronger the lower is w. For a government almost sure to get through parliament (or, more generally, to get the reform approved), and willing to do so, polarization is not much of a concern.

The fact that polarization may increase the probability of observing a TG on path, especially when the government is not willing to compromise with the opposition, is consistent with observational evidence. For example, Dini (1995) Monti (2011) and Draghi's (2021) governments in Italy were appointed when polarization was quite high, as shown in Appendix D, Figure 3, using V-Dem Political Polarization in society index (Coppedge et al. 2022). However, all those cases happened in the so called "second Republic" (right of the black dashed line, year 1994), characterized by more "majoritarian" electoral laws giving G a stronger control over the Parliament, and thus reducing its interest in a compromise. Polarization, however, was sometimes very high also during the "first republic", when the electoral law was basically PR. In that setup, where parts of the opposition were gradually included in the governing coalition, high polarization never led to a TG. In fact, the only technocratic government of the Italian First Republic is also its last one (Ciampi 1993-1994). That Parliament was elected with a PR system, but the old party system was already crumbling.[7]

Aside from the Italian case study, we can also perform a more detailed, although entirely suggestive, empirical analysis of the correlation between polarization and occurrence of a TG. We combine the V-Dem dataset with the coding of technocratic governments in Europe provided by Brunclík and Parízek (2019). As explained in greater details in Appendix D, we use country-year data and we find a robust, positive correlation between polarization in society and the presence of a Technocratic Government in European countries in the post-Cold War period. Figure 1 plots binned residuals of the regression described in table 2, column (4).

The effect of w is more direct: if the government is in control of parliament, the competence premium required to give up on the agenda setting power must be very high. This is true both in case of conflict and in case of agreement, because an increase in w implies that the government is able to obtain a better agreement, as long as the status quo payoff of the opposition is positive. If $U_O(\mathbf{x}^{sq})$ is negative, we may have the opposite overall effect.

[7] The big corruption scandal "mani pulite" (clean hands), involving may politicians mainly from the Government coalition, started in 1993. The Italian Communist Party changed its name in 1991, while the Christian-Democratic party was no longer on the ballot box in the 1994 general elections.

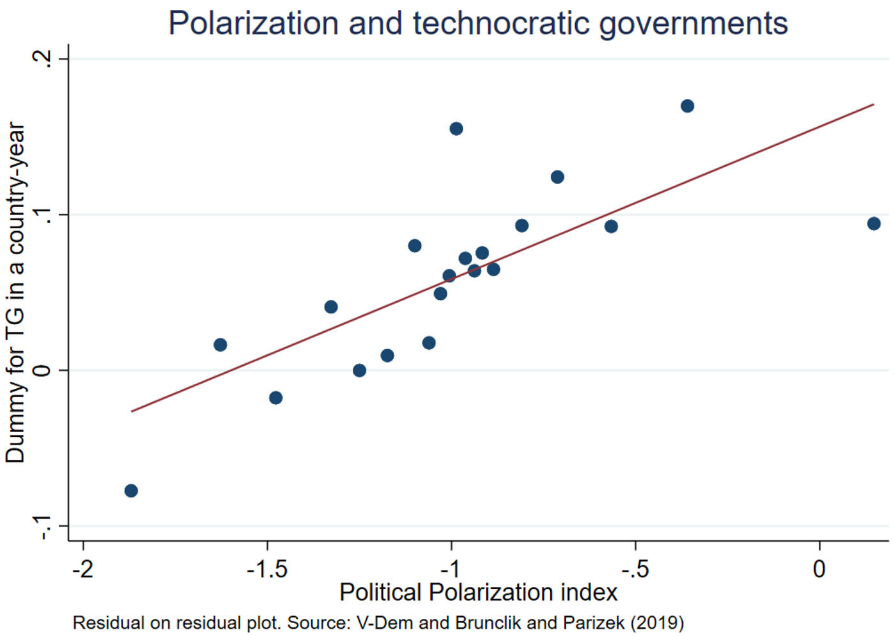

Fig. 1 Polarization and Technocratic Governments in the EU, country-year observations, 1989–2015. Binned residual on residual plot, controlling for public sector corruption, GDP per capita, population, year fixed effects. Country fixed effects are absorbed

Proposition 5 *A better status quo allocation for the government (opposition) always weakly decreases (increases) the likelihood of a technocratic government. Namely,* $\bar{c}$ *is increasing (decreasing) in* x_G^{sq} (x_O^{sq}).

The effect of the status quo option interacts with the equilibrium governing style. An increase in the government's status quo allocation increases $U_G(1)$, thus making the TG less attractive when the government is not willing to compromise. If this happens at the expense of x_O^{sq}, then this also decreases $U_O(\mathbf{x}^{sq})$, hence raising $U_G(\tilde{\mathbf{x}})$ and making G less willing to accept a TG in case of compromise as well. On the other hand, an improvement in the status quo payoffs of the opposition has the opposite effect.

4 Extensions

4.1 Caretaker government

In the main body of the paper, we assume that technocrats are called at the beginning of the political game by unanimous agreement, anticipating how events would unfold otherwise. However, there are instances in which technocrats are called toward the end of the game, if and when parties are unable to pass legislation. In this sense, they are probably closer to the idea of a caretaker government, playing essentially the role of a "default option" if everything else fails. In this extension, we allow the technocrats to play this role as well, studying how this affects the chances they are called by the parties on the equilibrium path, at the beginning of the game.

More formally, we assume that a "caretaker government" lead by technocrats will be in place if the government does not succeed in passing its reform through parliament. As a consequence, if O opposes the reform, the outcome will be a technocratic government (with its pie equal to βc, but discounted by δ) with probability $1 - w$. In order to keep the results comparable, we also assume that $1 - kc > 0$, so that the agreement (if chosen) is a division where $x_O = 0$ and $x_G > 0$.[8]

4.1.1 Analysis

Following the same logic of the model, we first characterize the SPNE in the subgame where technocrats are not called at the beginning.

Proposition 6 *Suppose that parties choose not to call the technocrats. In the unique SPNE of this subgame, players' strategies are as follows:*

- *O accepts a reform x_G, x_O iff $x_G \leq \frac{\beta(1-kc)}{\beta+\alpha(1-\beta)} + \frac{1-2\beta}{\beta+\alpha(1-\beta)} x_O$, where $k = \frac{\delta(1-w)}{1-w\delta}$, and fights otherwise;*
- *G proposes:*
  - *a compromise reform $x_G = \frac{\beta(1-kc)}{\beta+\alpha(1-\beta)}, x_O = 0$ if $w\delta(1-\beta) + (1-w)\delta\beta c < \beta + (1-2\beta)\frac{\beta(1-kc)}{\beta+\alpha(1-\beta)}$;*
  - *an extreme reform $x_G = 1, x_O = 0$ otherwise.*

On path, the compromise reform is accepted. The extreme reform is rejected by O and the outcome is determined by a lottery with weight w.

One important difference is that, now, c plays a double role. It increases the pie whenever technocrats are called into action: at the beginning, but also at the end of the game. It remains true, however, that technocrats need to be better than politicians in order to be called into action. Once again, we can derive a necessary and sufficient condition for the existence of an equilibrium where a TG happens on path as a threshold in c that depends on parameters.

Proposition 7 *It is always possible to find conditions on β, α, δ, w such that there exists a threshold $\bar{c}'$ such that an equilibrium where $d_G = d_O = T$ exists iff $c \geq \bar{c}' > 1$.*

The basic logic is similar to the benchmark model, i.e. technocrats need to be sufficiently capable in order to be called into power. In this case, restrictions on the parameters may be needed to make sure that the relevant threshold on c does not violate the assumption that $1 - kc > 0$.

In terms of comparative statics, $\bar{c}'$ behaves essentially as $\bar{c}$, with the exception that now α has no effect when the threshold is defined on the comparison between βc and $U_G(1)$ (and has a negative effect otherwise), because none of the allocations that may prevail after the obstruction assign any positive share of the pie to O.

[8] The role of this assumption is thus similar to the assumption that $U_O(\mathbf{x}^{sq}) < \beta$.

4.2 Endogenous technocrats' motivation

In this section, we provide a micro-foundation of the technocrats' behaviour, assuming that they are concerned about their reputation, in line with Alesina and Tabellini (2007). This allows us to provide an explicit analysis of the agency relationship between them and the politicians.

Suppose there is a state of the economy $\zeta \in \{A, B\}$, with common prior $Pr(\zeta = A) = \pi$. If $\zeta = B$, the pie is 1. If $\zeta = A$, the pie is 1 unless a high-quality technocrat is in charge and exerts effort (more below). In this case, the pie becomes $c > 1$. This captures the idea that, in some states of the world, technocrats may be able to produce a larger pie than the politicians. The state of the economy is unknown to everyone except the technocrat.

Technocrats have ability $\theta \in \{0, 1\}$, private information of the technocrat, with prior $Pr(\theta = 1) = \tau$. The technocrat maximizes its reputation at the end of the game, hence $Pr(\theta = 1|\xi)$, where $\xi \in \{1, c\}$ is the pie produced by T if in government. The technocrat, if in government, observes ζ and chooses whether to exert effort $e \in \{0, 1\}$. Effort is costly: we assume $C(e) = \kappa e$, with $\kappa \geq 0$. Effort is unobservable, but the final pie allocated to the public good is observable, and it will be used to update on τ. Other than that, the game structure is unchanged, hence we keep the assumption that the technocrats, not having an electoral constituency to serve, maximize a social welfare function giving equal weight to both partisan constituencies. Section 4.3 discusses why this can be also the rational choice of technocrats, as long as they are interested in being called into power. In this section, they are strategic in their effort decision.

θ captures the effectiveness of technocrats. Low quality technocrats are not different from politicians: when they are in charge, the pie is always 1 irrespective of their effort choice. High quality technocrats, instead, produce a pie equal to $c > 1$ if they exert effort in state A.

Given the change in environment, we need to use as a solution concept Perfect Bayesian Nash Equilibrium (PBNE), for this extension. To go back to the benchmark model, it is enough to set $\pi = 1, \kappa = 0, \theta = 1$. As c can be produced only by high quality technocrats, we assume consistent off-path beliefs, therefore $Pr(\theta = 1|\xi = c) = 1$ when $\xi = c$ is off path. Furthermore, we restrict our attention to equilibria where the prior beliefs on the technocrats' quality are always $Pr(\theta = 1) = \tau$, irrespective on whether calling the technocrats is on the equilibrium path or not.[9]

4.2.1 Analysis

If parties choose not to call the technocrats, the game behaves exactly as before, as the pie is always 1. If technocrats are in charge, those of low quality choose $e = 0$, as it has no effect on the final reputation. High quality technocrats instead exert effort in state A when κ is smaller than the change in posterior induced by a bigger pie ($\Delta\tau := \tau(\xi = c) - \tau(\xi = 1)$). Define $\sigma := Pr(e = 1|\theta = 1, \zeta = A)$.

[9] This restriction obviously does not affect the characterization of equilibria where a TG is on path. In equilibria where the TG is off path, however, observing the technocrat acting is a zero probability event. Our restriction simply shows that, when parameters are such that there are no equilibria with a TG on path, we can always find reasonable beliefs such that there are equilibria where the technocrats are not called.

There can be multiple equilibria. We focus on the "general public"'s preferred one, i.e. the equilibria that maximizes the probability that the technocrat chooses $e = 1$. Such an equilibrium exists only if κ is smaller than a threshold, which is a function of τ and π. Otherwise, in every equilibrium we have $e = 0$.

Proposition 8 *Consider the effort decision of the technocrat. If*

$$\kappa \leq \frac{1-\tau}{1-\tau\pi} := \bar{\kappa} \tag{5}$$

there exists a PBNE where $\sigma^* = 1$. Otherwise, in every PBNE we have $\sigma^* = 0$.

Note that $\bar{\kappa}$ is decreasing in τ, thus an increase in τ may move the equilibrium from $e = 1$ to $e = 0$.

Consider now the (new) expected payoff of calling the technocrats. This is:

$$U_G^{TG} = \beta\left[1 - \pi + \pi(\tau(1-\sigma^*) + 1 - \tau)\right] + \beta c \pi \tau \sigma^* \tag{6}$$

where $\pi\tau\sigma^*$ is the equilibrium probability that the pie becomes c. Given the results of the benchmark model, we know that if $\sigma^* = 0$, then $d_G = T$ is never an equilibrium: if the technocrats do not increase size of the pie, the government has no interest in delegating power. If instead $\sigma^* = 1$, then a sufficiently large c guarantees the existence of an equilibrium with a TG.

We can now derive two new comparative statics results.

Proposition 9 *An increase in π increases the likelihood of a TG equilibrium. An increase in τ may reduce the likelihood of a TG equilibrium.*

The result on π is quite intuitive. It captures the probability that technocrats can actually do something better than politicians. An increase in π has two effects: it makes it easier, for a good technocrat, to signal its ability (by producing a c pie), thus relaxing condition (5), and it increases the overall desirability of the technocrats for G, thus increasing (6).

The result on τ is less intuitive. First, an increase in the prior over the quality of the technocrats has the obvious, direct effect of increasing the overall desirability of a TG, i.e. equation (6). As a consequence, as long as high quality technocrats are motivated to act, an increase in τ implies that a TG equilibrium exists for a bigger set of parameter values. However, effort allocation is endogenous, and it also depends on τ. If it is very high, the incentives to exert costly effort are smaller, ceteris paribus, because there is little to gain. Hence, a sufficiently big shift in τ may move the economy from a situation where (5) is verified to a situation where it is violated, thus from an equilibrium with a TG to an equilibrium without a TG.

4.3 Different weights in the social welfare function

In the main body of the paper, we assume that the social welfare function maximized by the technocrats assign equal weight to both constituencies. This does not have to be the case: for example, an utilitaristic TG may weight the social welfare function by the size of each constituency. In this section we discuss what happens if we relax the equal weight assumption. In particular, we modify equation (2) as follows, leaving the rest of the model unchanged:

$$\begin{aligned} U_T(x_G, x_O) &= c\left[\gamma U_G + U_O\right] \\ &= c\left[(1+\gamma)\beta(1 - x_G - x_O) + (1-\beta)((\gamma - \alpha)x_G + (1 - \gamma\alpha)x_O)\right] \end{aligned} \tag{7}$$

where $\gamma \geq 1$ is the relative weight that the social welfare function assigns to the government's constituency, vis-a-vis the opposition's one. We show that equal weights (i.e. $\gamma = 1$) is not necessary for an equilibrium with a TG, but γ cannot be too big.

Proposition 10 *If $\gamma < \frac{(1-\beta)\alpha+\beta}{1-2\beta}$, then an equilibrium with a TG exists at the same conditions stated above.*

Intuitively, conditions for a TG equilibrium can be satisfied as long as γ is such that the overall allocation of the pie proposed by the technocrats points toward the public good. Things are different when γ is sufficiently big so that maximizing social welfare implies giving the entire pie to the government's constituency. This implies that a TG guarantees a payoff of $c(1 - \beta)$ to the government and $-\alpha(1 - \beta)c$ to the opposition. If $c > 1$, as long as a technocratic government requires unanimity, it will never happen on the equilibrium path, because the opposition is always better off in the alternative subgame.[10] This result highlights an important implication in terms of technocrats' preferences: a TG can be reached on path if the technocrats are not perceived as too unbalanced toward one of the constituencies.

4.3.1 Relationship between γ and w

On top of affecting the social welfare function, it is possible that γ affects w as well. Intuitively, if G's constituency gets bigger, the share of seats in the Parliament that belongs to G's party is likely to increase, and as a consequence also the probability that it is able to pass its preferred reform. In this subsection, we assume that w is an increasing function of γ, hence we denote it $w(\gamma)$. Furthermore, the social welfare function is still weighted by γ as above. Finally, we assume $c > 1$, so that we are able to make clear-cut predictions. We can show the following.

Corollary 3 *If $\frac{\partial w(\gamma)}{\partial \gamma} > 0$ and $c > 1$, then an increase in γ reduces the chances that a TG is reached on the equilibrium path. For γ sufficiently large, those chances drop to 0.*

[10] The comparison is more ambiguous if γ is big and $c < 1$, as this implies that the technocrats allocate the full pie to G, but also that the pie gets smaller.

5 Discussion and conclusion

This paper provides a first formal model of technocratic government, highlighting conditions under which technocrats may be called to take charge of the executive power. We use the stylised facts presented in the introduction as building blocks for a model able to explain how different institutional environments affect the chances of having a technocratic government. First, TGs need to be sufficiently competent, or the economic conditions sufficiently bad, in order for them to be called into power. The model shows that having the option to implement the socially optimal policy is not enough to obtain it in equilibrium. TGs require a sufficiently big “competence premium”, or a sufficiently credible ability to solve a crisis, in order to be selected by politicians. Then, we show that a weaker control over parliament, or stronger constraints to the executive decision making power, increases the chances of a TG. On top of this, the paper suggests that highly polarised political environments may be relatively more willing to accept a technocratic government. This happens when the governing party is not willing to compromise, but also (under some conditions) when G is willing to compromise, because compromise can become costlier as polarization increases. Finally, the model shows that outside options matter a lot: if the status quo policy is good for the government, TGs are less likely to be equilibria. An extension of the model that allows for reputationally motivated bureaucrats show that an increase in their ex-ante perceived quality does not necessarily implies that a TG is more likely to happen, on the equilibrium path.

We see this model as the first step in a larger research agenda, whose aim is to shed some light on TGs, their policies and their occurrence. On this respect, several further lines of research can be based on the model proposed in this article. First, it would be interesting to study how different institutional arrangements, such as electoral rules or balance of power between executive and legislative roles, make TGs more or less likely. Second, the behaviour of technocrats can be further endogenized. They may not always be motivated to choose the socially optimal policies; they may be subject to capture by special interest groups. Third, there is, potentially, an informational loss implied by TGs: the suspension of “ordinary” parliamentary politics implies that voters loose some opportunities to learn about politicians.

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Declarations

Competing interests none.

A Proofs

Proof of Lemma 1 In every SPNE of the game, for any given offer x_G, x_O, O expects to get $(1-w)\delta U_O(\mathbf{x}^{sq}) + w\delta U_O(x_G, x_O)$ from opposing it and $U_O(x_G, x_O)$ from accepting the proposal. Hence, it will accept any proposal such that

$$U_O(x_G, x_O) \geq \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})$$

Replacing using equation (1) and re-arranging for x_G and x_O this leads to

$$x_G \leq \frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{\beta + \alpha(1-\beta)} + \frac{1-2\beta}{\beta + \alpha(1-\beta)} x_O$$

or, equivalently, to

$$x_O \geq x_G \frac{\beta + \alpha(1-\beta)}{1-2\beta} - \frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{1-2\beta} \tag{A.1}$$

□

Proof of Lemma 2 The platform that maximizes G's utility subject to acceptance is the solution of

$$max_{x_O, x_G} \beta(1 - x_G - x_O) + (1-\beta)(x_G - \alpha x_O) \tag{A.2}$$

subject to $x_O \geq x_G \frac{\beta+\alpha(1-\beta)}{1-2\beta} - \frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)}$, $x_G + x_O \leq 1$ and the non-negativity constraints. As the objective function is strictly decreasing in x_O, we use the first constraint with equality. Moving to the maximization, we note that the indifference curves, for a generic utility level u, of G, have the generic form

$$u = \beta(1 - x_G - x_O) + (1-\beta)(x_G - \alpha x_O)$$
$$x_O = \frac{1-2\beta}{\beta + (1-\beta)\alpha} x_G + \frac{\beta - u}{\beta + (1-\beta)\alpha} \tag{A.3}$$

Representing them in the x_G, x_O space, it is clear that they have positive slope and the utility level increases by moving south-east. Furthermore, their slope is lower the slope of (A.1). To see this, note that

$$\frac{\beta + (1-\beta)\alpha}{1-2\beta} > \frac{1-2\beta}{\beta + (1-\beta)\alpha}$$

$$(\beta + (1-\beta)\alpha)^2 > (1-2\beta)^2$$
$$\beta > \frac{1-\alpha}{3-\alpha}$$

that is always verified because of assumption 1.

As a consequence, if $\frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{1-2\beta} \geq 0$, the optimal offer accepted in equilibrium is the one with the highest possible x_G conditional on x_O being zero and (A.1) being respected with equality. Hence, such that $0 = x_G \frac{\beta+\alpha(1-\beta)}{1-2\beta} - \frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{1-2\beta}$. Solving, we find $\tilde{x}_G = \frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{\beta+(1-\beta)\alpha}$. Note that $\tilde{x}_G < 1$. To see this, note that it trivially holds if the status quo payoff of the opposition is weakly positive. Even if we drop this assumption and we allow it to be negative, it has to be at least $-\alpha(1-\beta)$. In this case,

$$\tilde{x}_G = \frac{\beta + \frac{(1-w)\delta}{1-\delta w}\alpha(1-\beta)}{\beta + (1-\beta)\alpha}$$
$$< \frac{\beta + \alpha(1-\beta)}{\beta + (1-\beta)\alpha} = 1$$

where the inequality follows from the fact that $\frac{(1-w)\delta}{1-\delta w} < 1$. As $\tilde{x}_G$ is decreasing in $U_O(\mathbf{x}^{sq})$, it is always smaller than 1.

If, instead, $\frac{\beta - \frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq})}{1-2\beta} < 0$, the optimal offer accepted in equilibrium is the one with the lowest possible x_O conditional on x_G being zero and (A.1) being respected with equality. Hence, such that $\tilde{x}_O = \frac{\frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq}) - \beta}{1-2\beta}$. Note that $\tilde{x}_O < 1$. To see this, note that the status quo payoff of the opposition can be at most $(1-\beta)$. In this case,

$$\tilde{x}_O = \frac{\frac{(1-w)\delta}{1-\delta w} U_O(\mathbf{x}^{sq}) - \beta}{1-2\beta}$$
$$< \frac{1-\beta-\beta}{\beta + (1-\beta)\alpha}$$
$$< 1$$

where the first inequality follows from the fact that $\frac{(1-w)\delta}{1-\delta w} < 1$ and the second from the assumption that $\beta > \frac{1-\alpha}{3-\alpha}$. As $\tilde{x}_O$ is increasing in $U_O(\mathbf{x}^{sq})$, it is always smaller than 1. □

Proof of Proposition 1 The acceptance rule for O follows directly from Lemma 1.

Moving to the Government's choice, Lemma 2 defines the best reform the government can obtain, conditional on O's acceptance. At its decision node, G compares its expected utility from the acceptable reform with all the available alternatives. For the former, we replace the acceptable shares defined by Lemma 2 in equation (1) finding that G's payoff from compromise reforms is either $\beta + (1-2\beta)\frac{\beta - kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)}$ if $\beta - kU_O(\mathbf{x}^{sq}) \geq 0$ or $\beta - (\beta + \alpha(1-\beta))\frac{kU_O(\mathbf{x}^{sq})-\beta}{1-2\beta}$ if $\beta - kU_O(\mathbf{x}^{sq}) < 0$.

Alternatively, G can push for a reform that will not be accepted by O, hoping to still get it approved. As the expected utility of such choice is strictly increasing in G's payoff from the proposed reform, the government always chooses the most extreme one, namely $x_G = 1, x_O = 0$, with an expected payoff equal to

$$U_G(1) = w\delta(1-\beta) + (1-w)\delta U_G(\mathbf{x}^{sq}) \tag{A.4}$$

Whenever (A.4) is bigger than the payoff from a compromise, the government chooses the extreme reform. Otherwise, the government chooses the best available compromise.

Finally, note that there are no SPNE where G chooses a compromise policy inferior to the one defined in Lemma 2, because it could deviate to a better policy and still get it accepted by O. Furthermore, there are no SPNE where G chooses a not-acceptable reform less extreme than $x_G = 1, x_O = 1$, because this choice would not affect δ or w and it would just reduce (A.4). □

Proof of Corollary 1 Assume $x_G^{sq} = x_O^{sq} = 0$. Then, the status quo payoff is equal to β for both players. Using Proposition 1, it is clear that the best compromise reform is $x_G = \frac{\beta(1-k)}{\beta+\alpha(1-\beta)}$, giving a payoff to the Government equal to

$$U_G(\tilde{\mathbf{x}}) = \beta + (1-2\beta)\frac{\beta(1-k)}{\beta+\alpha(1-\beta)} \tag{A.5}$$

On the other hand, the extreme reform gives a payoff of

$$U_G(1) = w\delta(1-\beta) + (1-w)\delta\beta \tag{A.6}$$

As k is strictly increasing in δ, (A.5) is strictly decreasing in δ. On the other hand, (A.6) is strictly increasing in δ. Furthermore, replacing $\delta = 0$ in both equations we find

$$U_G(1, \delta = 0) = 0 < U_G(\tilde{\mathbf{x}}, \delta = 0) = \beta + (1-2\beta)\frac{\beta}{\beta+\alpha(1-\beta)}$$

Finally, replacing $\delta = 1$ in both equations, we find

$$\begin{aligned} U_G(1, \delta = 1) &> U_G(\tilde{\mathbf{x}}, \delta = 1) \\ w(1-\beta) + (1-w)\beta &> \beta \\ \frac{1}{2} &> \beta \end{aligned}$$

Hence, (A.5) and (A.6) cross only once for some $\delta \in (0, 1)$. Furthermore, (A.5) is higher for small δ (hence, compromise is preferred) and (A.6) is higher for large δ (hence, the extreme reform is preferred). □

Proof of Proposition 2 A TG guarantees a payoff of βc to both parties. First, we show that the binding "incentive compatibility constraint" is always G's one. To see this, note that when G goes for the agreement, the opposition payoffs are $\beta - (\beta + (1-\beta)\alpha)\tilde{x}_G$, hence smaller than G's payoffs. If G tries to impose its will, by construction $U_G(1) \geq \beta + (1-2\beta)\tilde{x}_G > \beta$. Furthermore, $U_O(1) \leq \beta$ because it is a convex combination between $U_O(\mathbf{x}^{sq}) < \beta$ (as assumed above) and $-\alpha(1-\beta) < \beta$, weighted by δ.[11] Hence, G must compare its expected payoff in the two subgames.

If $U_G(1) \geq U_G(\tilde{\mathbf{x}})$, then the government tries to impose its will without technocrats, hence there exists a SPNE where they are called into power iff

$$\beta c \geq U_G(1)$$

i.e. when $c \geq \frac{U_G(1)}{\beta}$.

If $U_G(1) < U_G(\tilde{\mathbf{x}})$ G prefers the technocrats when

$$\beta c \geq \beta(1-\tilde{x}_G) + (1-\beta)\tilde{x}_G$$

i.e. when $c \geq 1 + \frac{1-2\beta}{\beta}\tilde{x}_G$. Hence, if parameters are such that $\beta c \geq Max[U_G(1), U_G(\tilde{\mathbf{x}})]$, there exists a SPNE where a TG is reached on path, as no player has a unilateral profitable deviation from choosing $d_P = T$ at the beginning of the game.

We prove the "only if" part by contradiction. Suppose that parameters are such that $\beta c < Max[U_G(1), U_G(\tilde{\mathbf{x}})]$ and there is a SPNE where $d_G = d_O = T$. Then, G could unilaterally deviate to $d_G = \emptyset$ and obtain a payoff equal to $Max[U_G(1), U_G(\tilde{\mathbf{x}})] > \beta c$. But this contradicts the existence of a SPNE where $d_G = d_O = T$. □

Proof of Corollary 2 Suppose both players chooses $d_P = \emptyset$. Then, as a TG requires unanimity, there is no unilateral profitable deviation for any of them, for any value of the parameters. Hence, $d_G = d_O = \emptyset$ is always a SPNE.

The efficiency result follows from the fact that, when parameters are such that $c > \bar{c}$, both players are better off under a TG than without the technocrats, and calling the technocrats exists as an equilibrium.

Finally, we can compute the exact measure of the efficiency loss. Note that, with a TG, the aggregate payoff is $2\beta c$. The aggregate payoff in the subgame without technocrates depends on the equilibrium strategies plaied in that subgame.

First, if the government goes for a compromise reform, the aggregate payoff is $\beta + (1-2\beta)\tilde{x}_G + \beta - (\beta + (1-\beta)\alpha)\tilde{x}_G$. Re-arranging, this is equal to $2\beta - \tilde{x}_G(\beta(3-\alpha) - (1-\alpha))$. Hence, the difference between the aggregate payoff under a TG and the aggregate payoff under a compromise reform is $2\beta(c-1) + \tilde{x}_G(\beta(3-\alpha) - (1-\alpha))$.

Second, if the government chooses the extreme reform, the outcome is the result of a lottery. With probability w, $x_G = 1, x_O = 0$ and so the aggregate payoff is $\delta(1-\beta)(1-\alpha)$. Otherwise, the aggregate payoff is the status quo one, discounted by δ, i.e. $\delta[2\beta(1 - x_G^{sq} - x_O^{sq}) + (1-\beta)(1-\alpha)(x_G^{sq} + x_O^{sq})]$. Re-arranging, this is

[11] Alternatively, note that $U_O(1)$ is already below β when $w = 0.5$, and it is decreasing in w. Thus, if $w \geq 0.5$ this is true even without assumptions on the status quo payoff of the opposition.

equal to $\delta[2\beta-(\beta(3-\alpha)-(1-\alpha))(x_G^{sq}+x_O^{sq})]$. Hence, the difference between the aggregate payoff under a TG and the aggregate payoff under an extreme reform is $2\beta(c-(1-w)\delta)-\delta w(1-\alpha)(1-\beta)+(1-w)\delta(\beta(3-\alpha)-(1-\alpha))(x_G^{sq}+x_O^{sq})$. □

Proof of Proposition 3 First, note that $\bar{c}>1$ is always true for $U_G(1)<U_G(\tilde{\mathbf{x}})$, because in that case $\bar{c}\geq 1+\frac{1-2\beta}{\beta}\tilde{x}_G$. Second, note that, when $U_G(1)\geq U_G(\tilde{\mathbf{x}})$, $U_G(1)>\beta$ because $U_G(\tilde{\mathbf{x}})>\beta$, hence $\bar{c}$ has to be greater then 1 in this case as well. □

Proof of Proposition 4 Recall that, in any SPNE, $\bar{c}=\frac{1}{\beta}max\left[U_G(1),U_G(\tilde{\mathbf{x}})\right]$, where

$$U_G(1)=w\delta(1-\beta)+(1-w)\delta U_G(\mathbf{x}^{sq}) \tag{A.7}$$

and

$$\begin{aligned}U_G(\tilde{\mathbf{x}})&=\beta+(1-2\beta)\tilde{x}_G\\&=\beta+(1-2\beta)\frac{\beta-kU_O(\mathbf{x}^{sq})}{\beta+\alpha(1-\beta)}\end{aligned} \tag{A.8}$$

Finally,

$$U_G(\mathbf{x}^{sq})=\beta(1-x_G^{sq}-x_O^{sq})+(1-\beta)(x_G^{sq}-\alpha x_O^{sq})$$

and

$$U_O(\mathbf{x}^{sq})=\beta(1-x_O^{sq}-x_G^{sq})+(1-\beta)(x_O^{sq}-\alpha x_G^{sq})$$

To prove that $\bar{c}$ is (weakly) increasing in w we differentiate both (A.7) and (A.8) with respect to w.

$$\frac{\partial U_G(1)}{\partial w}=\delta(1-\beta)-\delta U_G(\mathbf{x}^{sq})\geq 0$$

where the last inequality follows from the fact that $U_G(\mathbf{x}^{sq})$ is (weakly) below $1-\beta$. Furthermore,

$$\begin{aligned}sign\left(\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial w}\right)&=sign\left(-\frac{\partial k}{\partial w}U_O(\mathbf{x}^{sq})\right)\\&=sign\left(\frac{\delta(1-\delta)}{(1-\delta w)^2}U_O(\mathbf{x}^{sq})\right)\end{aligned}$$

The overall sign is positive, as long as $U_O(\mathbf{x}^{sq})>0$.

To study the effect of polarization, we differentiate both (A.7) and (A.8) with respect to α.

$$\frac{\partial U_G(1)}{\partial\alpha}=\delta(1-w)(-(1-\beta)x_O^{sq})$$

which is negative unless $x_O^{sq}=0$ and decreasing (in absolute value) in w. Furthermore,

$$sign\left(\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial\alpha}\right)=sign\left(\frac{\partial\tilde{x}_G}{\partial\alpha}\right)$$

$$= sign\left(kx_G^{sq}(\beta+\alpha(1-\beta)) - (\beta - kU_O(\mathbf{x}^{sq}))\right)$$

Note that the sign is positive iff

$$kx_G^{sq}(\beta+\alpha(1-\beta)) \geq \beta + k\beta x_G^{sq} - k\beta(1-x_O^{sq}) - k(1-\beta)x_O^{sq} + (1-\beta)k\alpha x_G^{sq}$$
$$0 \geq \beta - k\beta(1-x_O^{sq}) - k(1-\beta)x_O^{sq} \tag{A.9}$$

Note that the RHS of (A.9) is decreasing in k. Furthermore, the condition is violated when $k = 0$, meaning that, for low k, $\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial \alpha} \leq 0$. When $k = 1$ condition (A.9) becomes $0 \geq -(1-2\beta)x_O^{sq}$, which is always verified. Therefore, there exists a level of k strictly between 0 and 1, defined as $\bar{k}$, such that $\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial \alpha} < 0$ for $k < \bar{k}$ and $\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial \alpha} > 0$ for $k > \bar{k}$. □

Proof of Proposition 5 To study the effect of a better status quo allocation for G, we differentiate both (A.7) and (A.8) with respect to x_G^{sq}.

$$\frac{\partial U_G(1)}{\partial x_G^{sq}} = \delta(1-w)(1-2\beta) > 0$$

Furthermore,

$$sign\left(\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial x_G^{sq}}\right) = sign\left(\frac{\partial \tilde{x}_G}{\partial x_O^{sq}}\right)$$
$$= sign\left(-k(-\beta-(1-\beta)\alpha)\right)$$

which is always positive.

To study the effect of a better status quo allocation for O, we differentiate both (A.7) and (A.8) with respect to x_O^{sq}.

$$\frac{\partial U_G(1)}{\partial x_O^{sq}} = \delta(1-w)(-\beta-(1-\beta)\alpha) < 0$$

Furthermore,

$$sign\left(\frac{\partial U_G(\tilde{\mathbf{x}})}{\partial x_O^{sq}}\right) = sign\left(\frac{\partial \tilde{x}_G}{\partial x_O^{sq}}\right)$$
$$= sign\left(-k(1-2\beta)\right)$$

which is always negative. □

Proof of Proposition 6 The proof of this proposition follows the exact same steps of the proof of Proposition 1. Hence, we just highlight the few differences. First, the status quo payoff for both G and O is now replaced by βc, because a caretaker government is in charge if G cannot pass its proposed reform. Second, the assumption $1 - kc > 0$ insures that the compromise reform is such that $x_G > 0, x_O = 0$. Finally, note that it is still true that the "binding" constraint is the Government. In case of an agreement, G's payoff are higher than O's payoffs. And even in case of a parliamentary confrontation the expected payoff for G is now $U_G(1) = \delta[w(1-\beta) + (1-w)\beta c]$, higher than $U_O(1) = \delta[w(-\alpha(1-\beta)) + (1-w)\beta c]$. □

Proof of Proposition 7 Suppose that parameters are such that the SPNE of the game without technocrats, at the level of c where G is indifferent between calling the technocrats or not, ends up in an agreement. Then, a TG is preferred by both players iff

$$\beta c \geq \beta + (1-2\beta)\frac{\beta(1-kc)}{\beta + \alpha(1-\beta)}$$

Re-arranging the parameters, we find that this is equivalent to

$$c \geq \frac{(1-\beta)(\alpha+1)}{\beta + \alpha(1-\beta) + k(1-2\beta)} \tag{A.10}$$

Note that the RHS of (A.10) is smaller than 1 if $1 < \frac{\delta(1-w)}{1-w\delta}$, which is never true. Moreover, $\frac{(1-\beta)(\alpha+1)}{\beta+\alpha(1-\beta)+k(1-2\beta)} < \frac{1}{k}$, therefore the assumption that $1 - ck > 0$ is not violated. To see this:

$$\begin{aligned}
&\frac{(1-\beta)(\alpha+1)}{\beta + \alpha(1-\beta) + k(1-2\beta)} < \frac{1}{k} \\
&k(1-\beta)(\alpha+1) < \beta + \alpha(1-\beta) + k(1-2\beta) \\
&k((1-\beta)(\alpha+1) - (1-2\beta)) < \beta + \alpha(1-\beta) \\
&k < 1
\end{aligned}$$

Suppose parameters are such that the SPNE of the game without technocrats, at the level of c where G is indifferent between calling the technocrats or not, ends up with the extreme reform, rejected by O. Then, a TG is preferred by both players iff

$$\beta c \geq \delta[(1-\beta)w + (1-w)\beta c]$$

Re-arranging the parameters, we find that this is equivalent to

$$c \geq \frac{\delta w(1-\beta)}{\beta(1-\delta(1-w))} \tag{A.11}$$

To see that the relevant threshold is bigger than 1 in this case as well, note that the second comparison becomes relevant when $U_G(1) > U_G(\tilde{\mathbf{x}}) > \beta$, thus once again a

TG requires $c > 1$. However, in order not to violate the assumption $1 - kc > 0$, we may need a sufficiently large β. To see this, note that

$$\frac{\delta w(1-\beta)}{\beta(1-\delta(1-w))} < \frac{1}{k}$$
$$\frac{\delta w(1-\beta)}{\beta(1-\delta(1-w))} < \frac{1-w\delta}{\delta(1-w)}$$
$$\delta^2(1-w)w(1-\beta) < (1-w\delta)\beta(1-\delta(1-w))$$
$$\beta(1-w\delta-\delta(1-w)(1-\delta w)+\delta^2 w(1-w)) > \delta^2(1-w)w$$
$$\beta(1-\delta+2\delta^2 w(1-w)) > \delta^2(1-w)w$$
$$\beta > \frac{\delta^2(1-w)w}{1-\delta+2\delta^2 w(1-w)}$$

As $\frac{\delta^2(1-w)w}{1-\delta+2\delta^2 w(1-w)} < \frac{1}{2}$, it is always possible to find a sufficiently high β where $\bar{c}'$ exists and the assumption $1-kc > 0$ is not violated. Finally, note that this condition is not redundant. It is possible to find conditions on the parameters such that the subgame without technocrats ends up in an extreme policy proposal for every c and TG is an equilibrium for a $1 < \bar{c}' < \frac{1}{k}$. To see this, note that G chooses the extreme reform for every $c < \frac{1}{k}$, therefore including $c = 0$, when

$$\delta w(1-\beta) \geq \beta + (1-2\beta)\frac{\beta}{\beta+\alpha(1-\beta)}$$
$$\delta w \geq \frac{\beta(\alpha+1)}{\beta+(1-\beta)\alpha}$$
$$\beta \leq \frac{\alpha\delta w}{1+\alpha-\delta w(1-\alpha)}$$

Therefore, we need to show that we can find parameters such that

$$\frac{\delta^2(1-w)w}{1-\delta+2\delta^2 w(1-w)} < \frac{\alpha\delta w}{1+\alpha-\delta w(1-\alpha)}$$

This simplifies to

$$\delta(1-w)(1-\delta w) < \alpha(1-2\delta) + \alpha\delta w + \alpha\delta^2 w(1-w)$$

As long as $\delta < \frac{1}{2}$, the RHS is surely increasing in α. Its limit for $\alpha \to 1$ tends to $1-2\delta+\delta w+\delta^2 w(1-w)$, which is bigger than the LHS if $\delta < \frac{1}{3}$. Therefore, for sufficiently high α and $\delta < \frac{1}{3}$ the condition is satisfied. Finally, note that a sufficiently high α also implies $\frac{\alpha\delta w}{1+\alpha-\delta w(1-\alpha)} > \frac{1-\alpha}{3-\alpha}$. As a consequence, for sufficiently big α and $\delta < \frac{1}{3}$, we can always find values of β such that $\beta \in \left(Max\left[\frac{\delta^2(1-w)w}{1-\delta+2\delta^2 w(1-w)}, \frac{1-\alpha}{3-\alpha}\right], Min\left[\frac{\alpha\delta w}{1+\alpha-\delta w(1-\alpha)}, \frac{1}{2}\right]\right)$ and such that the extreme policy is chosen for every c in the subgame without technocrats and a TG can be on the equilibrium path for $c \geq \bar{c}^{'}$ with $1 < \bar{c}^{'} < \frac{1}{k}$. □

Proof of Proposition 8 Consider the continuation game starting with the technocrat's action. Note that this part of the game is entirely off path in every equilibrium where technocrats are not called into power. However, we focus on equilibria where prior beliefs on the type of the technocrat do not change off-path (it seems reasonable, as the decision not to call the technocrats does not convey any information). Therefore, we can use Bayes' rule with the same prior probability distribution, irrespective of whether this continuation game is on path or not. Irrespective of our focus on specific off-path beliefs, the strategies below are obviously part of every equilibrium where the TG appears on path.

In every equilibrium, low quality technocrats never exert effort, because it is costly and has no returns in terms of pie size (or of reputation). Define σ^c the conjectured (by the "general public") probability that a high quality technocrat exerts effort when the state is A. Using Bayes' rule, in any PBNE with strictly positive σ (and prior beliefs described by τ) it must be that:

$$\tau(\xi = c) = \frac{\sigma^c \pi \tau}{\sigma^c \pi \tau} = 1$$

$$\tau(\xi = 1) = \frac{\tau(1 - \pi + \pi(1 - \sigma^c))}{\tau(1 - \pi + \pi(1 - \sigma^c)) + 1 - \tau}$$

$$\Delta\tau(\sigma^c) = \frac{1 - \tau}{1 - \tau\pi + \tau\pi(1 - \sigma^c)} \tag{A.12}$$

Of course, $\tau(\xi = c)$ is not well defined when $\sigma = 0$, but we assume that those posterior beliefs remain the same, consistently with the idea that only high-quality bureaucrats may be willing to exert effort and increase the pie. Finally, note that, in any PBNE, the high quality technocrat is willing to exert effort iff $\kappa \leq \Delta\tau$. In any PBNE, the conjectured level of σ must coincide with the chosen one. Thus, an equilibrium with $\sigma^* = 1$ requires

$$\kappa \leq \Delta\tau(\sigma = 1) = \frac{1 - \tau}{1 - \tau\pi} := \bar{\kappa}$$

Note, however, that there can be other equilibria, sometimes insisting on the same range of parameters. Assuming off-path beliefs such that $\tau(\xi = c) = 1$ when $\sigma = 0$, there exists a PBNE where $\sigma^* = 0$ iff $\kappa \geq 1 - \tau$. To see this, we just impose the equilibrium condition on $\Delta\tau$. Hence, using equation (A.12), in such an equilibrium it must be that

$$\kappa \geq \Delta\tau(\sigma = 0) = 1 - \tau := \underline{\kappa}$$

This implies that, if $\kappa \geq 1 - \tau$, then an equilibrium with $\sigma^* = 0$ exists, because choosing no effort is the best response to the updating strategy of the general public, and the conjecture of the general public is correct. Furthermore, if an equilibrium with $\sigma^* = 0$ exists, it must be that $\kappa \geq 1 - \tau$ to insure that no deviation is profitable (with smaller κ, the technocrat would prefer to choose to exert effort with positive probability, given the general public updating). Importantly, $\underline{\kappa} < \bar{\kappa}$.

Finally, there can be mixed strategy PBNE where the equilibrium σ is the unique solution of

$$\kappa = \frac{1-\tau}{1-\tau\pi + \tau\pi(1-\sigma)}$$

To see that there is a unique fixed point, note that the RHS is strictly increasing in σ. Moreover, note that a solution exists as long as $\kappa \in [\underline{\kappa}, \bar{\kappa}]$. As a consequence, as long as $\kappa \leq \bar{\kappa}$ we may have PBNE with different effort strategies, but the "general public" preferred one is $\sigma^* = 1$. If $\kappa > \bar{\kappa}$, then there are only equilibria with $\sigma^* = 0$. □

Proof of Proposition 9 First, the effect of π. Using equation (5), note that

$$\frac{\partial \bar{\kappa}}{\partial \pi} > 0$$

so an increase in π increases the range of parameters where an equilibrium with $\sigma^* = 1$ exists. Second, using equation (6), note that U_G^{TG} is strictly increasing in π when $\sigma^* = 1$ and it is flat in π when $\sigma^* = 0$. Thus, an increase in π weakly increases the chances of a TG.

Second, the effect of τ. Using equation (6), note that it is strictly increasing in τ whenever $\sigma^* = 1$, because we are assuming $c > 1$. However, using equation (5), it is easy to see that

$$\frac{\partial \bar{\kappa}}{\partial \tau} = -\frac{1-\pi}{(1-\tau\pi)^2} < 0$$

As a consequence, consider a set of parameters such that $U_G^{TG}(\sigma^* = 1) > Max[U_G(1), U_G(\tilde{\mathbf{x}})]$ and $\kappa < \bar{\kappa}(\tau)$. We can always increase τ to $\tau' > \tau$ such that $\kappa > \bar{\kappa}(\tau')$ and as a consequence $U_G^{TG}(\sigma^* = 0) < Max[U_G(1), U_G(\tilde{\mathbf{x}})]$, hence the TG is not reached on path. □

Proof of Proposition 10 In every SPNE, the technocrat in power maximizes equation (7) subject to $x_G + x_O \leq 1$ and the non negativity constraints. Taking the first order conditions, we find:

$$\frac{\partial U_T}{\partial x_O} = -\beta(\gamma+1) + (1-\beta)(1-\gamma\alpha) \tag{A.13}$$

$$\frac{\partial U_T}{\partial x_G} = -\beta(\gamma+1) + (1-\beta)(\gamma-\alpha) \tag{A.14}$$

To see that (A.13) is negative, note that it is already below 0 when $\gamma = 1$, as $\beta > \frac{1-\alpha}{3-\alpha}$, and the RHS is strictly decreasing in γ. Hence, it is negative for every $\gamma \geq 1$. As a consequence, the technocrat does not allocate any pie to the O's constituency. The sign of (A.14) depends on γ. Few algebraic step allows us to show that

$$\frac{\partial U_T}{\partial x_O} < 0 \Leftrightarrow \gamma < \frac{(1-\beta)\alpha + \beta}{1-2\beta}$$

Finally, note that $\frac{(1-\beta)\alpha+\beta}{1-2\beta} > 1$. As a consequence, if γ is sufficiently small, the technocrats assign the whole pie to the public good and nothing changes in terms of equilibrium calculations by G and O. □

Proof of Corollary 3 This proofs relies on Propositions 4 and 10. By proposition 10, if γ is sufficiently small the technocrats assign the whole pie to the public good. In that case, by proposition 4, $\bar{c}$ is increasing in w, which is increasing in γ, and this reduces the chances of a TG on the equilibrium path. Finally, by Proposition 10, when γ is sufficiently big and $c > 1$, G never accepts a TG, hence its chances on the equilibrium path are zero. □

B Higher O's status quo payoff

In the main body of the paper, we assume that the status quo payoff for the opposition is weakly below β. One consequence of this assumption is that, irrespective of whether G proposes an extreme or a compromise reform, it is always G who has the highest payoff and hence it is its constraint that is binding for the existence of an equilibrium with the technocrats. In this appendix we explore the consequences of relaxing this assumption.

First, we show that, as long as the government is more likely than not to win a parliamentary confrontation, then its payoff from that choice is always higher than O's payoff.

Lemma B1 *If* $w \geq \frac{1}{2}$, $U_G(1) > U_O(1)$

Proof of Lemma B1 If G chooses to go for an extreme proposal, it will always choose $x_G = 1, x_O = 0$. Hence, we have that

$$U_G(1) = \delta[w(1-\beta) + (1-w)U_G(\mathbf{x}^{sq})]$$

$$U_O(1) = \delta[-w(1-\beta)\alpha + (1-w)U_O(\mathbf{x}^{sq})]$$

As a consequence,

$$\begin{aligned} U_O(1) &\geq U_G(1) \\ (1-w)\left(U_O(\mathbf{x}^{sq}) - U_G(\mathbf{x}^{sq})\right) &\geq w(1-\beta)(\alpha+1) \\ (1-\beta)(1-\alpha)(x_O^{sq} - x_G^{sq}) &\geq \frac{w}{1-w}(1-\beta)(\alpha+1) \end{aligned}$$

$$x_O^{sq} - x_G^{sq} \geq \frac{w}{1-w}\frac{\alpha+1}{1-\alpha}$$

Note however that the RHS is minimized when $\alpha = 0$, and it is above 1 if $w \geq 0.5$. On the other hand, the LHS can be at most 1. Hence, we have a contradiction. □

A direct consequence is that, if $w \geq 0.5$, all the comparative statics on the likelihood of a TG in equilibrium are unchanged, as long as parameters are such that $U_G(1) \geq U_G(\tilde{\mathbf{x}})$.

In case of a compromise reform, nothing changes in terms of comparative statics as long as the equilibrium offer is such that $x_G \geq 0$ and $x_O = 0$, hence as long as $\beta - kU_O(\mathbf{x}^{sq}) \geq 0$ or, equivalently, as long as $U_O(\mathbf{x}^{sq}) \leq \frac{\beta}{k}$. Note that of course $\frac{\beta}{k} \geq \beta$. We now consider the opposite case.

Lemma B2 *Suppose parameters are such that $U_O(\boldsymbol{x}^{sq}) > \frac{\beta}{k}$. Then, in every SPNE of the game without technocrats, $U_O(\tilde{\boldsymbol{x}}) > U_G(\tilde{\boldsymbol{x}})$.*

Proof of Lemma B2 Using Proposition 1, the equilibrium compromise proposal in any SPNE of the game, that is then accepted on path, is $\tilde{x}_G = 0$, $\tilde{x}_O = \frac{kU_O(\mathbf{x}^{sq})-\beta}{1-2\beta}$. As a consequence,

$$U_G(\tilde{\mathbf{x}}) = \beta - (\beta + \alpha(1-\beta))\tilde{x}_O < \beta$$

$$U_O(\tilde{\mathbf{x}}) = \beta + (1-2\beta)\tilde{x}_O > \beta$$

□

Lemma B2 shows that, when the compromise proposal assigns a positive share of the pie to O, then O is always better off than G, in the subgame that follows that proposal. This implies that, in this case, a TG is reached on path if βc is higher than $U_O(\tilde{\mathbf{x}})$. It remains true that $c > 1$ is necessary for a TG on path, but some of the comparative statics results are different with respect to those highlighted in Propositions 4 and 5.

Proposition B1 *Suppose parameters are such that $U_O(\boldsymbol{x}^{sq}) > \frac{\beta}{k}$ and $U_G(1) < U_G(\tilde{\boldsymbol{x}})$. There exists a SPNE where a TG is reached on path iff $c\beta \geq U_O(\tilde{\boldsymbol{x}}) > \beta$. The range of parameters where this equilibrium exists is increasing in w, α and x_G^{sq}, and decreasing in δ and x_O^{sq}.*

Proof of Proposition B1 The conditions for the existence of a SPNE where a TG is reached on path follow from the text. In terms of comparative statics results, first note that we look only at changes that affect the condition $c\beta \geq U_O(\tilde{\mathbf{x}})$, assuming that the other conditions remain satisfied. Since the parameters affect the RHS only of the condition, a TG is more likely when the RHS is decreasing on a certain parameter.

$$sign\left(\frac{\partial U_O(\tilde{\mathbf{x}})}{\partial w}\right) = sign\left(\frac{\partial k}{\partial w}\right) = sign\left(-1+\delta\right) < 0$$

$$sign\left(\frac{\partial U_O(\tilde{\mathbf{x}})}{\partial \alpha}\right) = sign\left(\frac{\partial U_O(\mathbf{x}^{sq})}{\partial \alpha}\right) = sign(-(1-\beta)x_G^{sq}) \leq 0$$

$$sign\left(\frac{\partial U_O(\tilde{\mathbf{x}})}{\partial x_G^{sq}}\right) = sign\left(\frac{\partial U_O(\mathbf{x}^{sq})}{\partial x_G^{sq}}\right) = sign(-\beta - \alpha(1-\beta)) < 0$$

$$sign\left(\frac{\partial U_O(\tilde{\mathbf{x}})}{\partial \delta}\right) = sign\left(\frac{\partial k}{\partial \delta}\right) = sign\,(1-w) > 0$$

$$sign\left(\frac{\partial U_O(\tilde{\mathbf{x}})}{\partial x_O^{sq}}\right) = sign\left(\frac{\partial U_O(\mathbf{x}^{sq})}{\partial x_O^{sq}}\right) = sign(1-2\beta) > 0$$

□

C Positive status quo payoff

In this section, we discuss the implication of the assumption of positive status-quo payoffs for both players. This boils down to two conditions on the status-quo share of the pie.

$$\begin{aligned} U_O(\mathbf{x}^{sq}) &\geq 0 \\ \beta(1 - x_O^{sq} - x_G^{sq}) + (1-\beta)(x_O^{sq} - \alpha x_G^{sq}) &\geq 0 \\ x_O^{sq} &\geq \frac{\beta + (1-\beta)\alpha}{1-2\beta} x_G^{sq} - \frac{\beta}{1-2\beta} \end{aligned} \tag{C.15}$$

$$\begin{aligned} U_G(\mathbf{x}^{sq}) &\geq 0 \\ \beta(1 - x_O^{sq} - x_G^{sq}) + (1-\beta)(x_G^{sq} - \alpha x_O^{sq}) &\geq 0 \\ x_O^{sq} &\leq \frac{1-2\beta}{\beta + (1-\beta)\alpha} x_G^{sq} + \frac{\beta}{\beta + (1-\beta)\alpha} \end{aligned} \tag{C.16}$$

Furthermore, allocations must be feasible, i.e. such that

$$x_G^{sq} + x_O^{sq} \leq 1 \tag{C.17}$$

We plot those conditions, with respect to x_G^{sq} and x_O^{sq}, in figure 2. The bottom left area is the region of status quo allocation that allows for positive payoffs for both players. Every status quo division where $x_G^{sq} = x_O^{sq}$ is included.

D Data Appendix

We study the country-level correlation between polarization and the presence of a TG combing data from V-Dem V.12 Coppedge et al. (2022) and Brunclík and Parízek (2019). In particular, we use the latter in order to code the presence of a TG in a given country-year (our dependent variable), and the former for the main explanatory variable (the polarization in society index, i.e. v2cacamps) and the controls we use. The

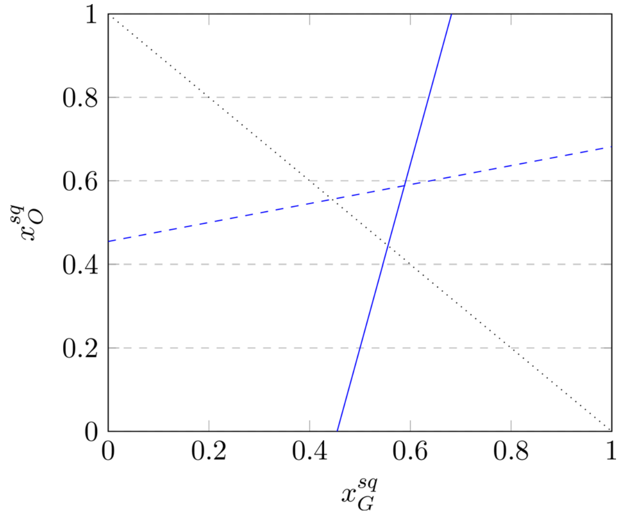

Fig. 2 Conditions (C.15) (blue, solid), (C.16) (blue, dashed), and (C.17) (black, dotted) plotted over the interval from 0 to 1 of status quo allocations. The bottom left area indicates the region where status quo payoffs are positive for both players players. Parameters: $\beta = 0.4$, $\alpha = 0.8$

Table 1 Summary statistics

	Mean	sd	min	max	count
Technocratic Government	0.059	0.236	0.000	1.000	747
Political polarization	−0.997	1.383	−3.761	2.476	747
Public sector corruption index	0.144	0.164	0.001	0.912	747
GDP per capita	27.633	12.826	6.114	81.662	747
Population	1894.804	2369.388	37.954	8764.697	747

Table 2 Polarization and Technocratic Governments

	(1)	(2)	(3)	(4)
Political polarization	0.027** [0.013]	0.096*** [0.028]	0.093*** [0.023]	0.098*** [0.023]
Controls	N	N	N	Y
Country FE	N	Y	Y	Y
Year FE	N	N	Y	Y
Observations	747	747	747	747

Dependent variable: dummy for the presence of a TG. Country-year observations. S.e. clustered at country level. Controls: Political corruption index, GDP per capita, population.

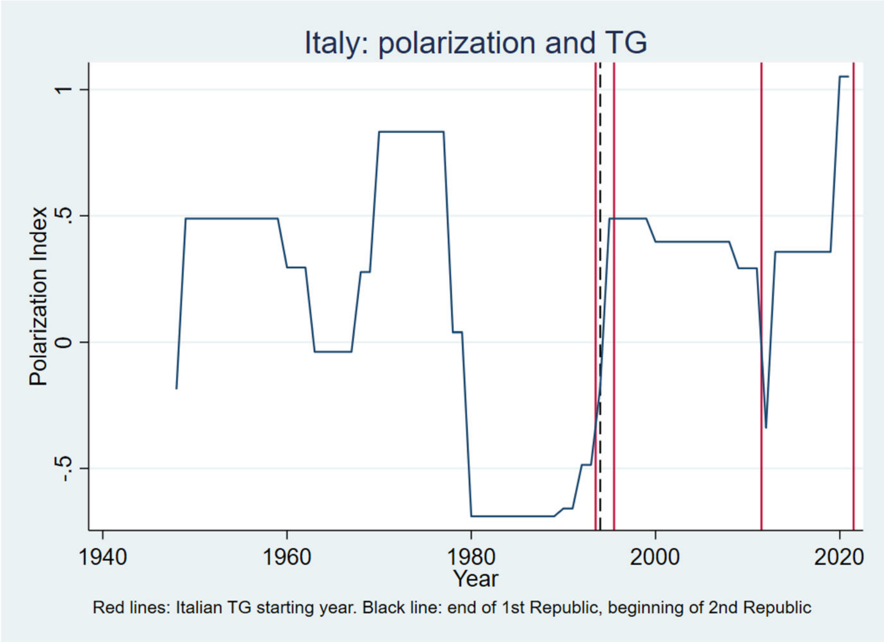

Fig. 3 Polarization and Technocratic Governments (red lines) in Italy. The black dashed line marks the end of the "first republic" and the beginning of the second one

total number of observations is smaller than 756 (27 years times 28 countries) because for some of them data are available only later than 1989. In particular, the dataset for Lithuania, Latvia and Estonia starts in 1990, for Croatia in 1991, for Slovakia in 1993.

More in details, "Technocratic Government" is a dummy equal to 1 if a certain country experiences a TG in at least a fraction of a certain year (for example, it is 1 for Italy in 1993 and 1994 (Ciampi), 1995 and 1996 (Dini), 2011, 2012 and 2013 (Monti)). As we follow Table 1 in Brunclík and Parízek (2019), we limit our sample to 1989-2015. Furthermore, we focus on the 28 countries that were members of the European Union in 2015.

The main explanatory variable is the political polarization index by V-Dem, measuring the level of polarization of society in different political camps. From the same source, we use also the public sector corruption index (v2x_pubcorr), GDP per capita (e_gdppc) and population (e_pop) as controls. Table 1 provides the summary statistics for our final sample, that uses country-year observations.

We estimate via OLS the following regression, where ρ_1 is the coefficient of interest, capturing the correlation between polarization in society and the presence of a TG. $\eta_{i,t}$ is the error term. We report the results in Table 2:

$$TG_{i,t} = \rho_0 + \rho_1 Polarization_{i,t} + \eta_{i,t}$$

In column (2) and (3) we add country and then country and year fixed effects, and in column (4) we add the controls as well.

Results are consistent with the comparative statics of the model. A one standard deviation increase in polarization is correlated with a 13 percentage points increase in the probability of observing a TG.

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