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ORIGINAL ARTICLE

When are technocratic cabinets formed?

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Abstract This article provides first systematic quantitative insights into the patterns of the occurrence of technocratic cabinets (TCs) in all European countries. Using an original dataset, we identify the broad structural factors and the immediate political conditions that increase the probability that TCs, as opposed to partisan cabinets, are formed. The dataset covers all the 53 TCs in 36 European countries in years 1989–2015 and a random sample of 104 political cabinets in the same period. We find that TCs are more likely to occur in political systems not trusted by the citizens and in systems with poor economic performance. TCs are also systematically more likely to occur when the previous cabinet was dismissed by the president or when it fell due to a political scandal. Contrary to our initial expectations, TCs appear to be more likely in countries with institutionally weaker presidents, other things equal.

Keywords Technocratic cabinets · Cabinet formation · Corruption · Economic performance · Party system fractionalization · Presidents

Introduction

Over the last few years, attentive observers could notice a significant number of technocratic cabinets (TCs) in several European countries: Monti (2011–2013) in

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Italy, Bliznashki (2014) in Bulgaria, Rusnok (2013–2014) in the Czech Republic, Thanou-Christophilou (2015) in Greece, or Ciolos (2015–2017) in Romania. TCs were quite common in the early 1990s too, as exemplified by the cabinets Berov (1992–1994) in Bulgaria, Vähi (1992) in Estonia, Vagnorius (1992–1993) in Lithuania, among others. Yet, surprisingly little scholarly research has so far addressed this peculiarity of comparative politics (cf. Brunclík 2015; McDonnell and Valbruzzi 2014: 666). Perhaps the most obvious question related to TCs, so far not addressed systematically in the literature, concerns the conditions under which they occur. In other words, what are the factors that increase the chances that when a new cabinet is formed, it is technocratic rather than partisan?

To answer this question, we have created a new dataset of all the 53 cases of TCs which were appointed in 36 European countries, both EU and non-EU, in the years 1989–2015. In this dataset, we provide a categorization of the specific political constellations that gave rise to the TCs, as well as data on a series of factors that we hypothesize to be conducive to TCs' occurrence. This information is further complemented with identical information about a randomly drawn sample of 104 partisan cabinets formed in Europe in the same period, allowing for a quantitative analysis of the factors explaining the TCs' occurrence. According to our best knowledge, this amounts to a first systematic mapping of TCs in all European countries so far.[1]

Using logistic regression, we show, first, that TCs tend to be associated with systems that lack their citizens' trust. This is the case whether we measure trust more narrowly, as lack of trust in political parties, or more broadly as corruption prevalence in the system. In line with this, TCs are also significantly more likely to occur in situations where the previous cabinet fell due to a political scandal, typically corruption. Second, higher probability of TCs is also associated with countries' poor economic performance. Third, and contrary to initial expectations, we find some evidence that systems with stronger presidents tend to have fewer TCs, other things equal. On the other hand, TCs happen more frequently in situations when the previous government was dismissed by the president, and the president had this unique competence at disposal. A number of other tested variables, including the level of democracy, the lack of government alternation, and other party system characteristics, show no systematic association with the occurrence of TCs.

The structure of the article is as follows. We start with an overview of scholarship on TCs, which also serves us as a source of hypotheses on the independent variables that may explain their occurrence. The subsequent section discusses briefly the dataset and reviews the core descriptive findings. The following section presents the results of our explanatory analysis. Finally, we conclude with the identification of avenues for further research.

[1] After the acceptance of this article for publication in *CEP*, we were made aware of a recent article by Wratil and Pastorella (2018) with a very similar research question and quantitative empirical design. The texts differ to some extent in several regards. Theoretically, Wratil and Pastorella's text is explicitly constructed around a model of the behaviour of a potential government 'formateur' and focuses on crisis moments as the key explanatory driver of TC formation. In terms of data coverage, Wratil and Pastorella study 29 EU countries (without Croatia, plus Norway and Iceland) in period 1977–2013, identifying in total 25 TCs. The texts also differently operationalize the explanatory factors. In spite of that, they reach, in our perspective, compatible and mutually supportive conclusions.

Understanding TCs: the literature review and hypotheses

TCs are commonly understood as the exact opposite of partisan cabinets (see, e.g. McDonnell and Valbruzzi 2014; Brunclík 2015). We define TCs as cabinets headed by a non-partisan prime minister, irrespective of the share of partisan ministers in the cabinets. Our understanding of TCs is in line with McDonnell and Valbruzzi (2014) who use the term 'technocrat-led governments' to refer generally to cabinets which are led by non-partisan technocrats. The authors go on to distinguish four sub-types of technocrat-led cabinets in their typology based on composition and remit (McDonnell and Valbruzzi 2014: 662–6). Yet, for the sake of brevity we call all types of 'technocrat-led governments' simply technocratic cabinets in accordance with our definition above.

As stated above, TCs have so far attracted relatively little scholarly attention. Indeed, TCs are usually treated as exceptional cases (e.g. Herman and Pope 1973). For example, as Strøm et al. put it, 'non-partisan cabinets are exceptional with respect to incidence, duration, and relevance' (Strøm et al. 2008: 7). In addition, TCs are often excluded from comparative analyses on cabinets (e.g. Bergman et al. 2015). It is only very recently that several texts explicitly devoted to TCs have been published. First, some scholars analyse TCs in connection with accountability, legitimacy, constitutionality, political neutrality and representation (Pastorella 2016; Schudson 2006). Second, there are empirical articles focused on TCs in particular countries. Notably, several case studies on Italian TCs have been published recently (e.g. Marangoni 2012; Marangoni and Verzichelli 2015; Pasquino and Valbruzzi 2012; Verzichelli and Cota 2012; Zulianello 2013). In the Czech Republic too, several scholars analyse TCs, and these are far from being a mere deviation in the Czech cabinet politics (Brunclík 2016; Hloušek and Kopeček 2014; Tucker et al. 2000). Third, some scholars offered a conceptual approach to TCs and attempted to define and classify them (Brunclík 2015; McDonnell and Valbruzzi 2014).

Our study is motivated by the identification of two significant gaps in the existing scholarship. First, the number of case studies concerning TCs is still very low, perhaps except for the Italian scholarship. As we show in the descriptive section of the article, there is a large number of European countries which experienced one or more TCs in the past quarter a century, but only a small minority of them is covered in the available literature. By providing a systematic descriptive overview of all TCs in Europe in the given period, we hope to motivate further case study research on this topic, especially in the polities so far evading scholars' attention. Second, and perhaps even more urgently, what we lack are systematic comparative studies about the factors that are conducive to the rise of TCs. Hitherto literature has only hinted at several factors which, however, have not been systematically tested (e.g. McDonnell and Valbruzzi 2014; Pastorella 2013, 2014). So, what are the conditions that increase the chances that a TC, rather than a partisan cabinet, is formed?

Since this is a first quantitative study of TCs in Europe, we do not propose a single coherent theoretical model. Instead, we use the existing case study literature to identify four broader, yet coherent factors that we later on translate into specific measures. Hence, our choice of the factors we focus on is primarily guided by existing scholarship on TCs, although we do control in the analysis for several further predictors of potential relevance.

The first and most intuitive factor we focus on is citizens' lack of trust in the political system and its working. In line with the literature above, TCs are understood as deviations, manifesting a failure of the party system to generate a 'standard' partisan-led government. Hence, we hypothesize that TCs are more likely to occur when citizens' trust in the political system is eroded. This can pertain specifically to the lack of trust in political parties (e.g. Ceka 2013), as the main bodies against which the phenomenon of TCs can be positioned. But it can also pertain more broadly to corruption problems on the societal level at large, or the general lack of trust in that politics and governance are fair and transparent (Hooghe and Quintelier 2014).[2] After all, many scholars have shown that corruption erodes belief in the political system and alienates citizens from political parties (e.g. Chang and Chu 2006; Rothstein and Uslaner 2005; Seligson 2002). For instance, in Italy (Pederzoli and Guarnieri 1997) or in the Czech Republic (Hloušek and Kopeček 2014), TCs were appointed once political parties faced a major legitimacy crisis, especially when the party systems were crumbling due to serious, mostly corruption, scandals (cf. McDonnell and Valbruzzi 2014: 666). In such a situation, societies may prefer a technocratic cabinet to supplant, at least temporarily, the discredited political elite. Based on the insights from these case studies, we hypothesize, first, that technocratic cabinets are associated with low levels of citizens' trust in the political system (H1).

Second, it is plausible to expect that TCs are associated with poor economic performance of the country. The most recent examples of TCs are related to economic crises, as exemplified by the TCs in Italy, Greece and Bulgaria (cf. Marangoni and Verzichelli 2015; Pastorella 2014, 2016). These TCs, which consisted of economic experts and crisis managers, were supposed to avert imminent economic disasters. It is generally assumed that the authority of TCs arises from their specialized knowledge, experience and insight into complex issues (cf. Pastorella 2016; Strøm 2003: 57). In contrast, partisan cabinets are primarily legitimized by a mandate which emerges from an electoral reflection of the popular will (cf. Cochrane 1967; Cotta and Verzichelli 2003: 109). Hence, again based on the insights from available TC case studies, we hypothesize that technocratic cabinets are more likely to occur when economic performance of the country is poor (H2).

Our third hypothesized factor is related to the party system. It can be expected that TCs are associated with nascent, unconsolidated party systems. This assumption is based on findings of many scholars who show that after 1989 the countries in Central and Eastern Europe featured party systems characterized by significant instability, fractionalization, volatility and poorly organized political parties, unable

[2] We would like to thank an anonymous reviewer of *CEP* for pointing to us the relevance of, specifically, trust in political parties as an important factor to consider in our analysis.

to generate experienced professional politicians to fill top executive positions (Dalton and Weldon 2007; Mainwaring and Torcal 2006; Tavits 2013). Connected to that, we also hypothesise that TCs are appointed more when parliamentary parties are unable to reach a compromise over a partisan cabinet due to a large fractionalization which is typical for the nascent party systems. Due to the negative relationship between the degree of party system fractionalization and cabinet stability (Grofman and Roozendaal 1997; Lijphart 1984), we presume that in a fractionalized party system partisan cabinets tend to be fragile and vulnerable to a break-up. In sum, we hypothesize that the rise of technocratic cabinets may be more likely in nascent and fractionalized party systems (H3).

Finally, we shall look at the role of the president in the political system. Two ways to capture the role of the president seem relevant. First, the authors who study the share of non-partisans in cabinets relate this fact to powerful presidents who are institutionally strong enough to rule without much reference to parliamentary parties and who are particularly powerful in the cabinet formation process (McDonnell and Valbruzzi 2014: 666; Neto and Strøm 2006; Schleiter 2013: 35). Second, we also expect that TCs are more likely in countries with popularly elected presidents, irrespective of their constitutional powers. Such presidents are endowed with popular legitimacy (cf. Lijphart 1999: 141) and may also benefit from their 'legitimacy advantage' which results from non-concurrent electoral cycles of the president and the parliament (Protsyk 2005: 735–7).[3] The formation of the Rusnok technocratic cabinet almost exclusively by the popularly elected president Zeman in the Czech Republic in 2013 is a case in point (e.g. Brunclík 2016: 19–23). Thus, we expect technocratic cabinets to be more frequent in systems with powerful and/or popularly elected presidents (H4).

In addition to these four broad factors identified in the existing literature, we also include in our empirical analysis several plausible control variables not directly drawn from case studies on TCs. These are related specifically to the state of the party system (the lack of alternation in executive, and the prominence of populist forces)[4] as well as to the country characteristics more broadly (level of democracy, level of economic development, and population size).

In the next section, we provide a descriptive account of all the European TCs in the last quarter a century. In the following section, we test our hypotheses presented here with the use of this newly collected systematic data.

The dataset and the descriptive results

To assess our hypotheses, we have created a dataset of all the 476 cabinets formed in 36 European countries between 1989 and 2015. The list includes 29 European Union

[3] The president, whose popular mandate is more recent ('fresher') than that of the parliament, enjoys the electoral legitimacy.

[4] We would like to thank one anonymous reviewer for pointing to us the theoretical relevance of these two control variables.

and European Economic Area (EU/EEA) members and seven non-EU/EEA Eastern European states. The vast majority of countries in the dataset can be meaningfully considered as fully democratic and on some basic level comparable. However, in the non-EU/EEA set, there are several states that are clearly distinct from the rest in terms of a number of political and social characteristics, notable examples being Russia and Ukraine. To account explicitly for these differences, we run two separate groups of models, one for the EU/EEA countries only and one for the full set of 36 countries, to distinguish clearly the results for the more coherent group of the EU/EEA states. Furthermore, we control in our explanatory analyses for the countries' level of democracy as well as for their level of economic development.

We should mention that one of our motivations for including in the dataset also the non-EU/EEA states lies in that in a number of these states, TCs turn out to be relatively frequent and at the same time simply identifying them is often difficult, as scholarly sources on some of the political systems in the non-EU/EEA countries are scarce. In other words, we believe it is a distinct value added of our project that we have been able to collect empirical evidence on all TCs in all European countries, providing a comprehensive description of the phenomenon.

Within our set covering the 36 countries, altogether 53 cabinets have been identified as technocratic, following the above definition of TCs. In addition, we have selected from the full dataset of all the 476 European cabinets (less the 53 TCs) a random sample of further 104 partisan cabinets, creating an overall dataset of 157 cabinets, accounting for one-third of all European cabinets in the given period. Such a procedure whereby we collect data on all the cases of interest (the 'events', in our case the TCs) and a random sample of the cases from the rest of the underlying population (the 'non-events', in our case partisan-led cabinets) is advisable in studies where the cases of particular interest are relatively rare (King and Zeng 2001a). Provided that minor adjustments are introduced into the analysis, as we do, such an analysis provides statistically consistent estimates, while saving the otherwise very significant data collection costs (see also King and Zeng 2001b). The full dataset is available in online appendix to this article.[5]

The dependent variable

Several interesting descriptive observations can be made on the basis of the collected data. First, the TCs are concentrated in only around half of the European countries, as there are altogether fifteen European countries with at least one TC in the given period. In twelve out of these fifteen countries, two or even more TCs occurred. In Table 1, we list the countries with at least one TC, with the number of TCs as well as the prime minister and the TC period.

An average European country experienced in the given period 1.5 TCs (standard deviation SD = 2.5; median zero). If we only consider the countries with at least one TC, the mean rises to 3.5 (SD = 2.8; median 3). In terms of the share on the overall

[5] The on-line appendix is available also at http://www.michalparizek.eu/data.html.

Table 1 Overview of technocratic cabinets in Europe, 1989–2015. *Source:* authors' own dataset

Country	TCs	List of TCs
Albania (ALB)	2	Bufi 1991, Ahmeti 1991–1992
Bulgaria (BGR)	6	Popov 1990–1991, Berov 1992–1994, Indzhova 1994–1995, Raykov 2013, Oresharski 2013–2014, Bliznashki 2014
Czech Republic (CZE)	3	Tošovský 1998, Fischer 2009–2010; Rusnok 2013–2014
Estonia (EST)	1	Vähi 1992
Greece (GRC)	5	Grivas 1989, Zolotas 1989–1990, Papademos 2011–2012, Pikrammenos 2012, Thanou-Christophilou 2015
Hungary (HUN)	1	Bajnai 2009–2010
Italy (ITA)	3	Ciampi 1993–1994, Dini 1995–1996, Monti 2011–2013
Latvia (LVA)	2	Škele I 1995–1997, Škele II 1997
Lithuania (LTU)	4	Prunskiene 1990–1991, Vagnorius 1991–1992, Abišala 1992, Lubys 1992–1993
Moldova (MDA)	2	Braghis 1999–2001, Tarlev 2001–2015
Macedonia (MKD)	2	Kljusev 1991–1992, Kostov 2004
Romania (ROU)	4	Stolojan 1991–1992, Vacaroiu 1992–1996, Isarescu 1999–2000, Ciolos 2015–2017
Russia (RUS)	12	Gaidar 1992, Kiriyenko 1998, Primakov 1998–1999, Stepashin 1999, Putin I 1999, Putin II 1999–2000, Kasyanov I 2000–2003, Kasyanov II 2003–2004, Fradkov I 2004, Fradkov II 2004–2007, Zubkov I 2007, Zubkov II 2007–2008
Serbia (SRB)	1	Cvetkovic 2008–2012
Ukraine (UKR)	5	Fokin 1990–1992, Kuchma 1992–1993, Masol 1994–1995, Marchuk 1995–1996, Yushchenko 1999–2001

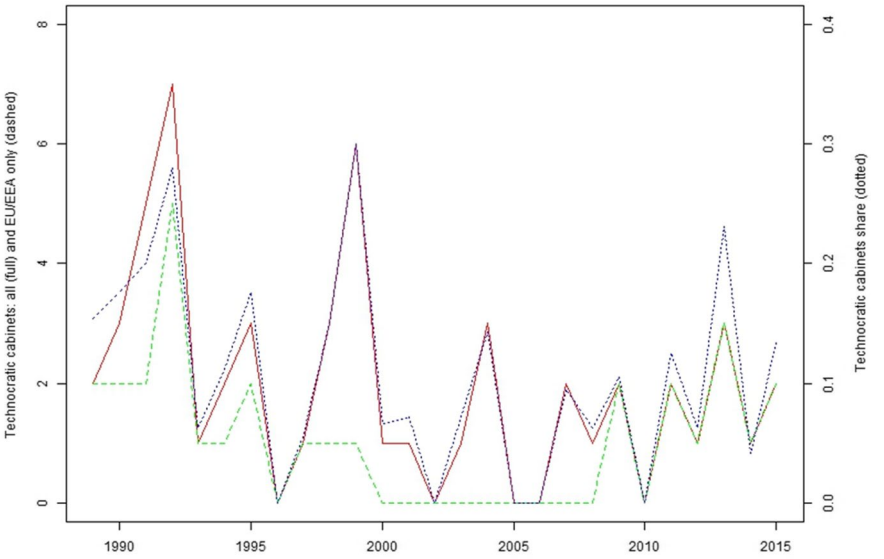

Fig. 1 TCs formed in Europe, 1989–2015. *Source*: own calculations

number of cabinets, if we only consider countries with at least one TC, the average share of TCs is 21% (SD = 0.15; median 0.18). These basic descriptive statistics indicate that TCs are far from rare. The example of Bulgaria is very instructive in this sense, as in this country as many as six out of the fourteen cabinets formed (43%) were technocratic.

Figure 1 provides the temporal perspective on TCs in Europe. The full line (left scale) indicates the total number of TCs in all the 36 European countries. The dashed line depicts the same variable, but only for the current EU/EEA countries. Finally, the dotted line (right scale) shows the share of TCs on the overall number of newly formed cabinets across Europe. The figure shows that after a surge of TCs in Europe in early 1990s their number decreased. In late 1990s another peak is observable, but as indicated by the dashed line capturing only the EU/EEA states, no TC was formed in the current EU/EEA area in between 2000 and 2008. However, we see a new increase in the number of TCs after 2008, with a new peak of almost 25% of European cabinets formed in 2013 being technocratic.

The observation of the relatively high number of TCs in early 1990s seems to be connected with the fact that all the TCs with the exception of the three Italian cabinets (1993–1994, 1995–1996, and 2011–2013) were formed in the countries that belong to the third wave of democratization (Huntington 1991). In line with that, in total eighteen TCs (34%) were formed within the first 5 years after the founding

Table 2 Hypotheses overview, with expected direction indicated

Hypothesis	Structural variables	Immediate political conditions*
H1: trust in politics	Corruption control (−) Trust in political parties (−)	Scandal (+)
H2: economic performance	GDP growth % (−)	NA
H3: party system	Age (−) Fractionalization (+)	No confidence (+) Coalition break-up (+)
H4: presidential role	Presidential score (+) Popular election (+)	Dismissal by president (+)

*The additional immediate conditions categories coded, not attached to any hypothesis, are standard parliamentary elections, and a benchmark category of other reasons for the previous cabinet fall

elections in the given political system.[6] On the other side, there are eleven cabinets formed in rather consolidated democracies where more than 20 years elapsed since the founding elections.

Independent variables

Let us now turn to the explanatory factors and to the measurement of our independent variables. As we have mentioned, we include in our analysis the information on both the broad political and societal conditions, possibly very stable over time, and on the immediate political conditions at the time of the new cabinet formation. For the latter, we have created a set of binary (dummy) variables that capture the immediate cause(s) of the fall of the previous cabinet. We have coded the following six such causes: (a) standard parliamentary elections (variable *Elections*); (b) the break-up of the ruling coalition during the parliament term (*Coalition break-up*); (c) a defeat inflicted by the opposition upon the cabinet during its term, notably through a vote of no confidence (*No confidence*); (d) the dismissal of the cabinet by the president (*Dismissal by president*); (e) a scandal of the outgoing cabinet (*Scandal*); and (f) other reasons for the fall of the cabinet (residual category). The details of the coding of these six categories are described in online appendix.

Table 2 summarizes the hypotheses and the variables attached to them. The central column lists the broader structural variables; the right-most column indicates how the hypotheses are connected with the immediate political conditions dummy variables. The sign in brackets indicated the expected direction of the relationship.

As for the first hypothesis, we use two core measures for the lack of citizens' trust in the political system. The first measure is the citizens' trust in political parties, based on the corresponding question in the subsequent rounds of the European

[6] The term founding elections describes the first competitive multiparty elections, following the transition to democracy (Bogdanor 1993; O'Donnell et al. 1986: 61). For established long-term democracies, the first elections after the end of the WW2 are considered.

Social Survey (2017).[7] This measure has the advantage that it pertains very directly to political parties as the main bodies against which the phenomenon of TCs can be positioned. Its disadvantage is the relatively lower availability of data, especially for non-EU/EEA countries. Our second measure is the prevalence of corruption, based on the *Corruption control* index of the Worldwide Governance Indicators (World Bank 2015a). This measure captures the broader citizens' trust in politics and governance being fair and transparent. Both measures are highly correlated ($r = 0.77$***), and for the reasons of much more systematic data availability, in most models we use *Corruption control* as the measure of preference. Nevertheless, as we also demonstrate, the choice of one over the other does not substantively affect the results. We expect that the higher the citizens trust in political parties, and the better the control of corruption, the lower the probability of the emergence of TCs. In terms of specific political constellations hypothesized to lead to TCs, this reasoning is captured by the binary variable *Scandal* that scores '1' when the previous cabinet fell due to a major public scandal, typically corruption or a crime committed by cabinet members.

Our second hypothesis is concerned with the country economic performance. We measure it using the *GDP growth %* (data from World Bank 2015b). This variable enables us to distinguish periods of economic growth and stagnation (or decline) within each country, but also systematically across countries, as there are clearly observable long-term differences in countries' economic performance. None of the six categories of immediate political conditions is attached directly to this hypothesis.

Third, we are interested in party system *Age* and *Fractionalization*. As for the former, we use the number of months that have elapsed since the founding elections in the country, based on our own data collection. For the latter, party systems *Fractionalization*, we have calculated, for all the elections that took place in years 1989–2015 the Rae fractionalization index, using data from the Parties & Elections in Europe website (2017; cf. Rae 1968). The two immediate political conditions pertinent to the party system are captured with the binary variables capturing the defeat inflicted by the opposition upon the cabinet (*No confidence*) and the ruling *Coalition break-up* during the cabinet term.

Fourth, we measure the impact of three independent variables related to the role of presidents. As indicated above, in terms of immediate political constellations, we expect TCs to be more likely when the previous cabinet is dismissed by the president (variable *Dismissal by president*). In terms of the structural variables, we consider TCs to be more likely in systems with popularly elected presidents enjoying *Legitimacy advantage*, meaning that they have been elected more recently than the incumbent cabinet. Finally, we have created a comprehensive measure of presidential powers, *Presidential score*, separate of the question of direct elections and legitimacy advantage. The variable, inspired by Duverger (1978), ranges from

[7] Question "trstprt" in ESS waves of ESS2-2004 to ESS7-2014. For earlier years (before 2004), we use the data for the closest year, i.e. 2004 (ESS2). In the odd years in the period we always use the previous year, e.g. for year 2005 we impute the values for year 2004.

presidential dominance (3), through executive balance between the prime minister and the president (2), cabinet dominance (1), to countries with no elected president (0), as described in online appendix.

Finally, in addition to the core explanatory factors outlined above, we include in the analysis also several controls. First, it is possible that the occurrence of TCs is related the lack of government alternation, as citizens dislike the lack of change in the executive composition. To account for this, for each government in our dataset we have collected data also on the composition of three previous governments and, inspired by Mair (1997), devised a measure of the degree of alternation based on the change in the party composition of the governments as well as the personality of the prime minister. Second, we also control for the prominence of populist parties in the system, as strong populist forces may represent a challenge to the traditional party system and hence be associated with a call for TCs.[8] We use the data collected by Havlík and Stanley (2015) to calculate the share of parliamentary seats held by populist parties. Both measures are described in more detail in online appendix. In addition, we also include three basic variables capturing key country characteristics: the *Polity IV index* as the measure of democracy, *GDP per capita* as the measure of overall wealth, or level of economic development, and *Population* size. As for the immediate political constellations leading to the previous cabinet fall, we also include one 'control' category of the standard parliamentary elections, *Elections*, so a fall of cabinet due to the standard democratic procedures.[9]

Explanatory analysis

Let us now turn to the explanatory analysis where we identify the factors that are associated with increased probability that a TC, as opposed to a partisan-led cabinet is formed. We perform our analysis on the level of individual cabinets or cabinet formations, meaning that our dependent variable is binary in nature, scoring '1' when the cabinet formed was technocratic and '0' when it was partisan-led. This leads us to the use of logistic regression analysis.

Several analytical choices we made should be mentioned. First, since our data are on the individual cabinet level, and since several covariates are measured on country rather than cabinet level, we cluster the model standard errors by country. Second, we account in the analysis also for the fact that a complete sample of events (TCs) but a random sample of around one-third of non-events (partisan-led cabinets) is included in the dataset. In line with the debate about the suitability of random sampling for rare events data in the previous section, we also include in our analysis models with adjusted case weights (King and Zeng 2001a: 145). Furthermore and third, we also estimate models using the penalized likelihood method for the estimation of the logistic regression—the so-called Firth's logit (cf. King and Zeng 2001a:

[8] Once again, we owe this point to an anonymous reviewer.

[9] The last category of 'other' causes for the fall of the previous cabinet serves as the baseline category, against which we consider the effects of the other dummy variables.

14). This procedure is designed specifically to account for the relative rareness of the events, in our case of the technocratic cabinets. Our results remain stable under all these specifications. In the following several paragraphs, we review the results of altogether twelve logistic regression models, with varying specifications. After that, we provide a summary discussion of the key observations.

In Table 3, we present the results of the six models with the dataset limited to the 29 EU/EEA states. In Model 1, we start with the six structural conditions variables, namely *Corruption control* (as one of two alternatives for capturing H1), *GDP growth %* (H2), party system *Fractionalization* and *Age* (H3) and *Presidential score* and *Legitimacy advantage* (H4). Three variables—*Corruption control*, *GDP growth*, and *Legitimacy advantage*—point in the expected direction and show a statistically significant effect on cabinet formation. Technocratic cabinets are significantly more likely to be formed in countries with lower corruption control, hence with less trust in politics, in situations of lower economic growth, and when the president enjoys a legitimacy advantage over the parliament. Contrary to our expectations, we observe a significant but negative effect of our *Presidential score*, meaning that TCs are more likely to be formed under institutionally weaker presidents, other things equal. This is a matter we return to later on. None of the variables capturing party system characteristics shows a discernible effect on TC formation. The model correctly predicts around 85% of cases.

In Model 2, the five binary variables capturing the immediate political conditions of cabinet formation are included as well. In line with our expectations, we see that TCs are more likely to be formed when the previous cabinet was dismissed by the president (*Dismissal by president*) or when it fell due to a major political *Scandal*. With this expansion of the number of covariates, the variable presidential *Legitimacy advantage* loses significance. This more complete model shows very solid sensitivity (79%) and specificity (95%) values and correctly predicts over 90% of EU/EEA cabinets in the given period.

In Model 3, the five controls are added—*Alternation, Parliament seats populists, Polity IV index* score, *GDP per capita*, and *Population* size. We see an indication of an association of TCs with a lack of alternation, in the expected direction, but with an effect significant only at a 10% level. The previously reported results remain substantively unchanged, except that GDP growth also appears significant at the 10% level only. In this model we lose some observations due to data availability issues; at the same time, the mode has very solid predictive power, with 93% of observations predicted correctly, and strong sensitivity (84%) and specificity (97%) values.

Model 4 replicates the analysis from Model 3, but with a change in the variable capturing hypothesis H1, from *Corruption control* to the more specific variable *Trust in political parties*. As we mentioned earlier, these two variables are highly correlated and the change does not alter the result for H1. As in previous models, again economic performance shows a strongly significant negative effect on TC. In contrast, the negative effect of presidential powers disappears in this model.

Models 5 and 6 provide further checks of the robustness of our results. Model 5 replicates the analysis from Model 3 but with the weighting of the cases to account explicitly for the higher share of TCs in our sample than in the underlying population, as suggested by King and Zeng (2001a). The main reported results remain

Table 3 Logistic regression results: EU/EEA states (models 1–6)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Corruption control	−4.495*** (1.147)	−6.254*** (1.435)	−10.247*** (3.056)		−6.499*** (1.762)	−3.187*** (1.226)
Trust in political parties				−1.327* (0.648)		
GDP growth (%)	−0.214** (0.076)	−0.285* (0.140)	−0.289′ (0.148)	−0.298** (0.098)	−0.389′ (0.211)	−0.24* (0.117)
Presidential score	−2.978*** (0.860)	−4.452*** (1.171)	−5.747** (2.214)	−1.300 (0.912)	−4.953** (1.699)	−2.63298* (1.227)
Legitimacy advantage	1.275** (0.473)	0.915 (0.720)	1.908*** (0.577)	−0.501 (1.278)	1.442* (0.612)	1.082 (1.668)
Fractionalization	−0.340 (2.938)	−2.099 (6.133)	2.680 (6.827)	−7.589′ (4.520)	−0.972 (7.874)	−0.449 (4.663)
Age	−0.001 (0.001)	−0.003 (0.002)	−0.005 (0.008)	−0.003 (0.003)	−0.003 (0.002)	−0.001 (0.002)
Elections		−1.046 (1.590)	0.347 (1.927)	0.112 (1.225)	−1.554 (1.492)	−0.749 (1.163)
Coalition break-up		−1.694′ (0.893)	−1.250′ (0.717)	−0.368 (1.278)	−2.079* (0.841)	−1.07115 (1.143)
No confidence		0.726 (1.914)	2.654 (2.264)	1.141 (1.669)	0.925 (2.104)	0.670 (1.207)
Dismissal by president		17.345*** (1.772)	18.583*** (2.577)	19.932*** (2.038)	18.401*** (1.729)	1.971 (3.751)
Scandal		3.554* (1.748)	5.097* (2.009)	3.662* (1.582)	3.885 (2.418)	2.436′ (1.452)
Alternation			−0.372′ (0.197)	−0.150 (0.244)		
Parliament seats populists			−0.001 (0.019)	0.057 (0.035)		
Polity IV index			0.909′ (0.480)	0.326 (0.327)		
GDP per capita			−0.0001 (0.0001)	0.00000 (0.0001)		
Population			0.009 (0.054)	−0.052 (0.034)		
Constant	4.262′ (2.241)	8.012′ (4.591)	2.286 (4.896)	8.102 (5.496)	6.723 (5.172)	2.990 (3.732)
Observations	110	110	90	90	110	110
Log likelihood	−32.791	−22.547	−16.733	−25.316	−2.852	−7.793
% Correctly predicted	84.5	90.9	93.3	91.1	90.9	90
Sensitivity	0.59	0.79	0.84	0.72	0.65	0.62
Specificity	0.94	0.95	0.97	0.98	1	1

′$p<0.1$, *$p<0.05$, **$p<0.01$, ***$p<0.001$

unchanged, but the variables *GDP growth* is again only significant at the 10% alpha level. In addition, in this specification, variable Scandal does not show significant results, while variable *Coalition break-up* does, unlike in all other models. Furthermore, the number of correctly predicted events (TCs) in the model is lower, as reflected also in the lower sensitivity value.

Finally, in Model 6, we again include the same covariates as in Models 3 and 5, but we estimate the model using the Firth's penalized likelihood method. As in Model 5, the cases are re-weighted to reflect the true share of TCs in the population of all the EU/EEA cabinets. Once again, we see a consistent and robust effect of variables *Corruption control*, *GDP growth*, the *Presidential score*, and (at the 10% confidence level) the binary variable *Scandal*. In contrast to the previous models, the *Dismissal by president* dummy does not show a significant effect. The model tends to under-predict TCs, although this problem is mitigated when the under-weighting of TCs in the dataset is not applied.

Let us now consider how the results change when the dataset is expanded to include also the seven non-EU/EEA European states. We do not suggest that the mechanisms leading to TC formation are the same in the hardly democratic countries, such as Russia, and in the more 'standard' EU/EEA democracies. At the same time, we can find out whether the association between TCs' occurrence and the different predictors hold also for this broader set of countries, and perhaps thus motivate further case studies.

With the inclusion of all the 36 European countries, the overall number of cabinets in the dataset increases to 157, out of which 53 cabinets are technocratic. In Table 4, we report the results of six logistic regression models analogous to those reported in Table 3. Once again, standard errors clustered by countries are reported in brackets. The same procedures as in Models 5 and 6 are applied to account for the relative over-representation of TCs in our sample and for the TCs' rareness—the appropriate re-weighting in Models 11 and 12 and the penalized likelihood (Firth's) method in Model 12. It turns out that the obtained results are mostly close to those reported for the EU/EEA countries only.

First, all the Models 6–12 confirm the sizable association between the probability of TCs and the lack of trust in politics, whether we measure it using the data on trust in political parties or data on corruption control. Second, with the exception of Models 7 and 10, we see a consistent effect of the *Presidential score*, again indicating that systems with weaker presidents form TCs more than systems with presidential dominance over the parliament, controlling for all the other covariates. Third, and again consistently with the EU/EEA-only results presented above, TCs are more likely to occur when the previous cabinet fell due to a political scandal or when it was dismissed by the president (variables *Scandal* and *Dismissal by president*).

However, several results differ for the European countries at large, when compared with the EU/EEA-only sample. First, the variable *GDP growth* loses statistical significance, indicating that economic performance is not a driving factor of TCs' occurrence in the non-EU/EEA countries. Second, there are indications in Model 10 that TCs' occurrence is positively associated with *Population* size and negatively associated with time elapsed since founding elections (*Age*) and party system *Fractionalization*. The first result is likely driven by the

Table 4 Logistic regression results: EU/EEA states (models 7–12)

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Corruption control	− 1.964*** (0.539)	− 2.627*** (0.727)	− 3.377*** (0.851)		− 2.230*** (0.633)	− 1.680*** (0.693)
Trust in political parties				− 0.861* (0.433)		
GDP growth (%)	− 0.036 (0.048)	− 0.030 (0.054)	− 0.039 (0.067)	− 0.120 (0.075)	− 0.037 (0.052)	− 0.035 (0.039)
Presidential score	− 0.613 (0.456)	− 1.193* (0.472)	− 2.165*** (0.584)	− 0.742 (0.524)	− 1.137* (0.553)	− 0.830′ (0.518)
Legitimacy advantage	0.520 (0.475)	− 0.826 (0.729)	− 1.013 (0.737)	− 0.416 (0.801)	− 0.466 (0.770)	− 0.301 (0.949)
Fractionalization	− 0.135 (1.341)	− 1.746 (1.485)	− 3.324 (2.349)	− 5.246* (2.196)	− 2.148 (1.634)	− 1.849 (2.683)
Age	− 0.001 (0.001)	− 0.002 (0.002)		− 0.005* (0.002)	− 0.002 (0.002)	− 0.001 (0.002)
Elections		0.011 (0.604)	0.217 (1.045)	0.084 (1.059)	− 0.067 (0.619)	− 0.205 (0.835)
Coalition break-up		− 1.062* (0.541)	− 1.275 (0.977)	− 0.448 (0.991)	− 1.104 (0.700)	− 0.887 (0.876)
No confidence		1.208 (0.751)	1.723 (1.117)	0.981 (1.335)	1.194′ (0.677)	0.958 (0.833)
Dismissal by president		3.755** (1.399)	3.414* (1.732)	3.428′ (1.874)	3.607** (1.342)	2.778* (1.391)
Scandal		3.435*** (1.032)	3.828** (1.315)	2.641* (1.218)	3.042** (0.978)	2.449* (1.101)
Alternation			0.013 (0.096)	0.084 (0.116)		
Polity IV index			− 0.012 (0.190)	− 0.084 (0.202)		
GDP per capita			− 0.00004 (0.00005)	0.00001 (0.0001)		
Population			0.017′ (0.010)	0.021* (0.010)		
Constant	0.545 (1.456)	2.183 (1.545)	4.136′ (2.125)	5.895* (2.695)	1.024 (1.508)	0.748758
Observations	157	157	143	123	157	157
Log likelihood	− 73.463	− 57.088	− 47.832	− 43.952	− 9.451	− 22.684
% Correctly predicted	73.2	82.8	82.5	82.9	79.6	79.6
Sensitivity	0.55	0.64	0.67	0.70	0.43	0.43
Specificity	0.83	0.92	0.90	0.90	0.98	0.98

$'p < 0.1$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$

high number of TCs formed in the given period in the populous Ukraine and Russia. Again, due to the rather specific political regimes of these countries, we do not want to interpret this finding as reflecting broader trends across European countries. The second result (negative effect of Age) corresponds to hypothesis H3. The last result probably has to do with the high fractionalization of the new systems, including current non-EU/EEA, in Central-Eastern Europe especially in early 1990s. All models in Table 4 show generally lower percentages of correctly predicted cases than the corresponding models in Table 3, for the EU/EEA countries only.

Overall, the empirical analysis reveals an interesting and a fairly coherent picture of factors associated with TCs' occurrence. First and very robustly, TCs occur with higher probability when the system faces a lack of trust by its citizens. This holds robustly whether we measure the lack of trust as high corruption (or more precisely low corruption control), or as the lack of trust in political parties specifically. This is fully in line with hypothesis H1. This observation holds robustly even when the age of the party system, measured in the time elapsed since its founding elections, is controlled for. H1 is also supported by that TCs occur more frequently when the previous government fell due to a major scandal.

Second, we see a negative effect of the *Presidential score* on TCs occurrence. This finding, although fairly clear-cut in statistical terms, deserves further discussion, not the least because in our hypothesis H4 we have formulated a contrary expectation. Empirically, the consistent negative sign of the variable is clearly driven by its correlation with the first two very prominent variables in our analysis, *Corruption control* and *Trust in political parties*. A large number of TCs occurs in Central-Eastern European states, some of which tend to have more powerful presidents, this being the case especially for the non-EU/EEA countries. At the same time, these states often suffer from high corruption levels and low trust in parties. It turns out that these variables absorb a lot of explanatory power also from the variable *Presidential score*. When only a bivariate relationship between president powers and TCs occurrence is tested, no effect is shown for the EU/EEA countries and a positive effect is shown when all countries are included. Hence, while the negative coefficient we report is numerically correct and robust, we warn against an interpretation that would expect TCs to be significantly more frequent, in purely descriptive terms, in countries with weak presidents at large, without controlling for the other covariates' impact. Having said that, TCs are consistently more likely when the previous government was dismissed by the president, in line with H4. Of course, this only applies to the countries where this strong competence for the president is present—Russia, Ukraine, and Romania.

Our third observation is that poor economic performance is an important factor contributing to TCs' occurrence in the EU/EEA countries, in line with H2. In the non-EU/EEA countries, this factor does not seem to play a systematic role, however. This is related to our last key observation, namely to that neither democracy levels, nor party system variables reveal any significant association with TCs' occurrence.

Conclusion

The aim of the article was to analyse the character of circumstances under which technocratic cabinets, as opposed to partisan cabinets, are formed in European countries. Although the results reported in the previous section—especially concerning the effect of the lack of trust in politics, economic performance, and political scandals—appear robust under various model specifications, we believe more research is desirable to further advance this important research agenda. First, we work with a diverse set of TCs, corresponding to our operational definition of TCs as cabinets with a non-partisan PM. A more nuanced analysis could explore the variation within this group. Further research should also consider identifying, based on the aggregate patterns shown in this article, a small set of cases for further qualitative study of the mechanisms leading to TC emergence. So far, the literature has focused on TCs in a very limited subset of European countries. Our aggregate analysis shows the phenomenon is more widespread than what the case study literature covers.

Even though our analysis sets for itself relatively modest targets—to assess quantitatively associations between TCs' occurrence and a small set of plausible explanatory factors—we believe the study has broader theoretical and conceptual implications, especially with regard to the ubiquitous tension between political and bureaucratic decision-making, the latter being supposedly impartial and merely administrative. In the world where the political space for national-level decision-makers is ever more constrained by the processes of economic and societal globalization, or in the case of European countries where it is ever more entrenched in European decision-making, this seems to be a research agenda of enormous importance. We hope our article will constitute a small contribution to it.

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