It's a matter of confidence: Institutions, government stability and economic outcomes

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It's a matter of confidence.

Institutions, government stability and economic outcomes.*

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In this paper, we analyse the effect of constitutional structures on policy outcomes. In particular, we exploit heterogeneity in parliamentary systems deriving from the presence and the use of the confidence vote to investigate whether stable and unstable parliamentary systems behave differently in terms of the policy they implement. This finer partition of parliamentary systems allows us to identify effects that are more robust than those in the literature. We show that the difference between presidential and parliamentary systems documented in previous works is driven by a difference between presidential and stable parliamentary systems. We suggest that possible transmission channels are legislative cohesion and (the absence of) selection.

Keywords: presidential system, parliamentary system, confidence vote, government stability

JEL Classification: C72, D72

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1 Introduction

Over the last decade political economy literature has focused on the impact that political institutions have on economic policies (Persson, 2002). The seminal work of Persson and Tabellini (2003) has shown that institutions, namely political regimes, matter in shaping size and composition of government spending. Since these findings, a wealth of literature (e.g. Blume *et al.*, 2009) has highlighted how those results are not robust to changes such as, for example, the set of countries and the time span. Furthermore, some authors (e.g. Acemoglu, 2005; Voigt, 2011) have suggested that the distinction between parliamentary and presidential systems may simply be too coarse and that possible extensions include the use of more fine grained variables to classify constitutional systems.

The purpose of this paper is to better analyse the dichotomy between presidential and parliamentary regimes. In particular, we consider the presence and the effective use of the confidence vote as the key variable to distinguish parliamentary from presidential systems.[1] This specific constitutional feature operates through different mechanisms that may also depend on several underlying aspects of the political environment. In some cases, the confidence vote does indeed generate frequent changes of government, thus replacing possibly bad politicians and generating a different government composition (*selection effect*). In other countries, the confidence vote acts as a credible threat and may induce either the executive to behave better (*disciplining effect*) or the parliament to accept more frequently the executive's misbehaviour (*legislative cohesion*). Hence, the performance of parliamentary systems may depend on politicians' characteristics such as, for example, the quality of the information available and/or the alignment of their interests with the citizens' interests (Lindberg, 2012). Given this complexity, we investigate more deeply the characteristics of countries that adopt a parliamentary constitution by considering the stability of governments as a proxy to distinguish different parliamentary systems (Lijphart, 2004). We measure stability as inversely related to the frequency of government changes, which is clearly correlated with the effective use of the confidence vote.

The issue is to understand if institutions and their actual enactment, picked up by our finer partition of political regimes, do matter in terms of implemented policies. The main result of this paper is that this classification of constitutional systems (presidential, stable parliamentary, unstable parliamentary) delivers more robust results than those in the literature. In detail, we find that stable parliamentary systems are significantly different from both presidential and unstable parliamentary systems. In contrast, unstable parliamentary systems and presidential systems behave alike in terms of the policy they implement. This result is robust to changes in the set of countries included in the dataset and in the definition of stability.

[1] For a detailed review of the relevance of the confidence vote, see Lijphart (1999).

Hence, we contribute to the literature by refining the standard classification of constitutions (see Persson and Tabellini, 2003) introducing stable and unstable parliamentary systems. In Persson and Tabellini (2003), the authors compare constitutional systems - presidentialism *vs.* parliamentarism - and electoral rules - majoritarian *vs.* proportional - in order to identify the differences, if any, in a number of relevant social and economic indicators.[2]

Extensive literature followed Persson and Tabellini (2003), with the aim of extending, testing or questioning their results. First, Blume et al. (2009) find that, while the results on the effect of the electoral rules are robust, the effects of the parliamentary *vs.* presidential constitutional choice are sensitive to an enlargement of the dataset and the updating of the economic indicators used as regressors.

Over time the profession has felt the need for an extension of the Persson and Tabellini analysis. Acemoglu (2005) and Voigt (2011), among others, question the presidential/parliamentary classification of constitutional structure in a twofold manner: on the one hand they advocate the endogenous nature of the constitutional form of government, noting that it is an equilibrium outcome rather than an exogenous characteristic, on the other hand they ask for a finer partition of countries, taking into account the heterogeneity within each group. Moreover Voigt (2011) highlights the lack of an analysis of possible transmission channels. While recent works, such as Robinson and Torvik (2008) and Hayo and Voigt (2013), investigate the determinants of the choice or change of the constitutional structure, not much has been done to refine the classification of constitutional structures when studying their effect on policy.[3]

In Section 2 we suggest how our findings may be explained by two effects that are consistent with previous theoretical literature: a selection effect, as in Cella et al. (2015), and a legislative cohesion effect, as in Baron (1998), Diermeier and Feddersen (1998a, 1998b) and Diermeier and Vlaicu (2011). Section 3 presents the data and the model, Section 4 discusses the results and Section 5 concludes.

2 Theoretical background

The idea that further partitioning parliamentary systems may provide insights into the link between institutions and economic policy finds its support in several theoretical papers. In fact while the interplay of uncertainty and incentives operates unambigu-

[2] Persson and Tabellini identify presidential/parliamentary regimes according to the legal existence of the confidence vote, so that presidential countries where the government is subject to a confidence vote - as for instance France - are classified as parliamentary. The authors find that presidential systems systematically spend the five percent less than parliamentary systems.

[3] An exception is the work of Ardanaz and Scartascini (2014) who sustain that the degree of separation of power within presidential systems is heterogeneous. They replicate the analysis of Persson and Tabellini (2003) but interacting presidential systems with a dummy indicating the executive budget discretion. They find that presidentialism has a larger negative impact on government size only when executive discretion regarding budget allocation is low.

ously in presidential systems and generally gives rise to unique equilibria, parliamentary systems are more heterogeneous and can support multiple equilibrium strategies and induce multiple equilibrium outcomes (see for example Cella et al. (2015)). For example, parliamentary systems outcomes may differ depending on whether the confidence vote is mostly used as a threat or whether it effectively replaces politicians. This refers to the *de facto* behaviour of politicians that in turn depends on their (short- or long-term) incentives structure. In this context, the confidence vote may affect government duration given that a legislative defeat would lead to new elections that would replace the executive and the legislative body with positive probability. On the contrary, in presidential systems both bodies have fixed terms and government stability is not affected by the working of the policy process.[4] In other words, under presidentialism politicians face undistorted incentives and vote according to policy preferences.

In particular, the literature identifies three channels through which the confidence vote may affect the policy-making process in parliamentary systems. First of all, if the confidence vote is actively used to replace politicians, it improves their expected quality (*selection effect*, see Cella et al., 2015; Huber and Gallardo, 2008). If instead the confidence vote acts as a threat, it may either reduce the distortions to the executive's behaviour (*disciplining effect*, see Cella et al., 2015; Huber, 1996), or induce the voting cohesion in parliament (*legislative cohesion*, see Baron, 1998; Diermeier and Feddersen, 1998b; Diermeier and Vlaicu, 2011).

Cella et al. (2015) highlight this twofold nature of the confidence vote. They model an executive and a legislative body in a parliamentary system where politicians may face early elections if the parliament does not approve the executive's proposed policy. Politicians can be of two types, they either care about implementing the efficient policy or they only care about being in office. The authors show that in such a setting two equilibria may arise, depending on the parameters that describe politicians' quality (type distribution) and information. The confidence vote may act as a threat and induce an office oriented executive to propose the efficient policy in order to prevent early termination of the legislature. In the presence of this *disciplining effect*, stable systems are characterised by a low level of inefficiency. Alternatively, the confidence vote may be used in equilibrium to replace possibly bad politicians. As, on average, office oriented politicians are replaced more often, the expected quality of the executive improves. Hence the selection effect operates more efficiently in unstable systems in which we should observe a better alignment of the executive's and voters preferences.

In a model of parliamentary democracy, where the government controls the legisla-

[4] As noted by Diermeir and Vlaicu (2011, p.863): "Under presidentialism the policy process is driven by short-term issue-by-issue incentives because there are only short-term consequences of an unsuccessful proposal. In parliamentary systems, on the other hand, the failure of a policy proposal can lead to a change in the composition of the governing coalition. This injects political incentives in the policy process whereby coalition members consider both their short-term policy interests and their long-term political interest".

tive agenda, Baron (1998) instead shows that government members may change policies regarding government spending to preserve the government and may also seek support from the minority in parliament. In other words, the legislative cohesion effect contributes to the stability of parliamentary systems through the approval of a larger fraction of policies aimed at keeping current politicians in power.

The existence of all these effects implies that parliamentary systems are more heterogeneous than presidential systems, as, depending on their underlying characteristics, they may have a different response to the policy implementation process and a different degree of stability even for a given set of constitutional rules. Moreover, stability and policy response are theoretically correlated, therefore it is meaningful to use stability as a proxy to refine the classification of parliamentary systems. The focus of our paper is to exploit empirically this de facto heterogeneity.

Our model then moves from these considerations to investigate the complex mechanisms that link constitutional features to economic outcomes. We compare the effects that constitutional structures have on the policy-making process, adopting a partition of parliamentary systems that takes into account their degree of stability. In particular, the disciplining effect would imply that the difference between presidential and parliamentary structures should derive from unstable parliamentary systems. Whereas, both legislative cohesion and selection effects would induce stable systems to be those that differ more from presidential systems. Hence our approach will allow a better understanding not only of the existence of the link between institutions and policies but also of the underlying mechanisms that generate it.

3 Empirical strategy

We start by replicating the standard empirical setting for ease of comparison with the previous literature. Then, we introduce some modifications to handle the identification issue. Here we present the datasets and the empirical specifications.

3.1 Data

Data are taken from three main sources. We start with the same dataset as in Persson and Tabellini (2003) (PT). The dataset includes economic and social indicators for 85 countries.[5] The main dependent variables are central government expenditure (*cgexp*) and central government revenues (*cgrev*). These variables are computed as a

[5] Countries are classified as follows: OECD (*oecd*); Central, Latin America and Caribbeans (*laam*); Africa (*africa*); South and Central Asia (*asiae*). There is a prevalence of OECD and LAAM countries that jointly represent the 60% of the sample. For a detailed list of variables and sources, see Persson and Tabellini (2003).

percentage of the GDP and are averaged between 1990 and 1998.[6] The set of covariates includes indicators for the continental location and colonial history that always enter the regression equations,[7] dummies for the origin of the constitution,[8] age of democracy (*age*), distance from equator (*lat01*), percentage of people having either English or other European languages as their native language (*engfrac* and *eurfrac*, respectively), democracy level (*gastil*), per-capita income (*lyp*), proportion of people between the age 15-64 (*prop1564*) and over 65 (*prop65*), population size (*lpop*) and a dummy indicating a federal system (*federal*).

We then extend the dataset (to obtain what we call the BCIM dataset) to 116 countries, using data from Blume et al. (2009), thus updating the following variables: output per worker (*logyl*) from 1988 in the PT dataset to 2000 and the perception of corruption (*cpi*) from 1995-2000 to 2000-2005. We include data on additional dependent variables to provide robustness checks: social protection as a percentage of the GDP (*socprot*) for the period 1995-2012 and expenditure on education as a percentage of the GDP (*edspend*) for the period 1995-2012.[9] We also consider the executive's ideological position (*right_left*), and the district magnitude (*magn*) to perform additional robustness checks in Section 4.2.[10]

Finally, in order to partition parliamentary countries according to the stability distribution, we create several stability indexes from a set of political indicators drawn from the World Bank Database of Political Institutions (DPI, 2012). The dataset covers the period 1975-2012. Our main indicator is $gov\ life$, defined as follows:

$$gov\ life = \frac{\sum_i D_i / \sum_i E_i}{L_i}, \tag{1}$$

where D_i represents the number of years a government has been in office between two elections, E_i is a dummy which indicates elections, and L_i, is the legal length of any electoral term according to country-specific constitutional rules.[11] Thus, $gov\ life$ is the average length of any electoral cycle computed for each country i, normalized by the legal length of the electoral cycle. The index ranges from zero to one, with higher

[6]Other possible dependent variables included in the PT dataset are central government expenditure on social services and welfare as a percentage of the GDP (*ssw*), log of the output per worker (*logyl*) and the perception of corruption (*cpi*).

[7]The continental location variables are reported in Footnote 5. As for the colonial history, variables include: *col_espa* if a country is a former colony of Spain or Portugal; *col_uka* if a country is a former English colony and *col_otha* if a country is a former colony of a country other than England, Spain and Portugal. All the variables are weighted for the years of independence as follows: $col\_uka = col\_uk * (250 - t\_indep)/250$, where $col\_uk = 1$ is a dummy indicating a former English colony, $t\_indep \in [0, 250]$ is the years of independence and 250 is used as the standard value for all non-colonized countries. The same exercise holds for *col_espa* and *col_otha*.

[8]The variables *con20, con2150, con5180*, respectively dating the constitution's origin before 1920, between 1921-1950, and between 1951-1980.

[9]Sources: IMF/GFS Yearbook.

[10]Source: DPI, 2012.

[11]The index $gov\ life$ is built using the indicator *yrcurnt* from the DPI dataset which is coded zero in the election year, and $X_i - 1$ in the year after the election.

values corresponding to higher stability.

We classify parliamentary countries in *parl stab* if their value of $gov\ life$ is above the median of the stability distribution, and *parl unstab* if their value of $gov\ life$ is below the median.[12] We introduce separate measures of stability in Section 4.2 for the robustness checks. Table 6 in the Appendix reports some descriptive statistics.

3.2 Model

We first replicate results by Persson and Tabellini (2003) and Blume et al. (2009), considering the effects of a twofold classification of countries in presidential and parliamentary systems, according to the legal existence of the confidence vote. The empirical equation is estimated through OLS:

$$Y_i = \alpha + \beta_1 pres_i + \gamma maj_i + \delta X_i + \varepsilon_i, \tag{2}$$

where X_i is the set of observable country-specific covariates, and ε_i is the error term which is assumed to be normally distributed.

Then, following the categorization of parliamentary systems in terms of stability, we introduce our finer classification of countries, that further partitions parliamentary systems into stable and unstable systems. We apply the dummy coding technique to account for the heterogeneity in the subgroup of parliamentary systems, thus generating three categories: *pres*, *parl stab* and *parl unstab*. We estimate the model with the following multiple regression:

$$Y_i = \alpha + \beta_2 parlstab_i + \beta_3 parlunstab_i + \gamma maj_i + \delta X_i + \varepsilon_i, \tag{3}$$

where *pres* is the baseline category that represents the control group in our setting. We are interested in testing whether presidential systems differ from stable parliamentary systems ($\beta_2 \neq 0$), whether presidential systems differ from unstable parliamentary systems ($\beta_3 \neq 0$) and whether stable and unstable parliamentary systems differ from each other ($\beta_2 \neq \beta_3$).

Finally, we re-estimate the model using the instrumental variable (IV) strategy. We do so because we acknowledge that the choice of a constitution may be an equilibrium outcome therefore determined by the agents' preferences. In other words, variables may exist that simultaneously affect both the choice of constitution and the dependent variable, thus potentially biasing the OLS coefficients due to an omitted variable prob-

[12] More precisely, first we drop three countries which are within 0.05 points from the median of the stability distribution in order to avoid a random assignment of countries due to measurement errors. Note results hold even when we make the threshold move along the stability distribution. In detail, the results remain significant until stable parliamentary countries are in the 75th percentile of the stability distribution. After that, results are no longer significant. This is consistent with the disciplining effect discussed in Section 2 according to which fully stable parliamentary countries should not be significantly different from any other constitutional category.

lem.[13] In order to address this issue, we simultaneously estimate a nonlinear system of equations by a maximum likelihood estimator. The instrumenting equation (4) is a multinomial probit model where the constitutional categories are regressed over a set of instruments and additional controls. The headline equation (5) follows the same structure as equation (3):

$$P_c(j) = Prob[U_j > U_\kappa; \kappa \in C, \kappa \neq j], \quad K = 0, 1, 2$$
$$U_{ij} = \zeta_j X_i + \varphi Z_i + \eta_{ij}; \tag{4}$$
$$Y_i = \alpha + \beta_2 parlstab_i + \beta_3 parlunstab_i + \gamma maj_i + \delta X_i + \varepsilon_i. \tag{5}$$

We jointly estimate equations (4) and (5) to allow error terms (η_{ij}, ε_i) to be correlated, thus taking into account the full covariance structure of the model (Roodman, 2011).[14] Equation (4) defines the choice probability of a given constitutional alternative j from the choice set C containing K elements, where $K = 0, 1, 2$ represent the presidential system, the unstable parliamentary system and the stable parliamentary system, respectively. Such probability depends on the relative utility that country i obtains from adopting the constitutional type j instead of a different constitutional type, where X_i is the same set of covariates that enter equation (5), and Z_i is the vector of instruments. The error term η_{ij} is assumed to have multivariate normal distribution and is not necessarily independent across choices.

The instrumental variables are chosen to ensure the *exclusion restriction*, that some of the variables entering equation (4) have no direct effect on the policy outcome, but the effect on the constitutional choice, once we control for other regressors $Cov(Z_i, \varepsilon_i \mid X_i = 0)$. As noted by Persson and Tabellini (2003), the exclusion restriction is guaranteed by three variables, i.e. *con2150, con5180* and *con81*, respectively dating the adoption of a constitution before 1920, between 1921-1950, and between 1951-1980. These variables may be used as instruments as they are clearly exogenous to recent policy outcomes but correlated with the constitutional choice, as historically there have been waves of adoptions of specific types of constitution. However, the predictive power of the constitutional dating variables is somewhat weak.[15] Thus, Persson and Tabellini include three more instruments in the first-stage estimation: the fraction of the population speaking major European languages as their native language (*engfrac, eurfrac*), and the distance from the equator (*lat01*). These variables are proxies for the European

[13] The identifying assumption in equations (2) and (3) is that, conditional on the vector of controls, the type of constitution and the error term are orthogonal. If this is not true, then the OLS estimator is no longer consistent. See Acemoglu (2005) for a detailed discussion.

[14] We estimate a likelihood function with more components, one for the linear equation and N-1 for the multinomial equation, where N is the number of options. This method is more efficient than the traditional two step procedure proposed by Heckman (1979) even in the case of weak instruments (Perez and Sanz, 2005).

[15] Nonetheless, the F-test of the joint significance of these three variables significantly rejects the null hypothesis. See Table 7 in the Appendix.

influence on the constitutional decision, following the argument of Hall and Jones (1999) who suggest that the extent to which countries have been influenced by Europe has a considerable impact on the quality and type of institutions. The language predictor and latitude are indeed highly correlated with the form of government, but their validity as instruments has been widely questioned in the literature (see Acemoglu, 2005; Rockey, 2012), and by Persson and Tabellini themselves.[16] To account for this, we include the Hall-Jones instruments as covariates both in the instrumenting equation and in the headline regression.

Finally, we introduce an additional instrument to improve the identification strategy. This instrument, which we label *confl mean*, is defined as the proportion of years a country has been involved in internal and external violent political activities between years 1816 and 1900, thus representing the country-level degree of social and political conflict during the XIX century.[17] The index *confl mean* may significantly affect the probability of a country falling into a particular constitutional category. Indeed, the degree of conflict may strongly impact the choice of the constitutional system itself: high values of the index may indicate deeply divided societies in which political decision making needs to rely on power-sharing rules. Parliamentary systems offer the ideal environment for a broad power-sharing executive, given that the cabinet is a collegial decision-making body (Lijphart, 2004). On the contrary, presidential systems introduce rules that favour a winner-takes-all outcome, also by facilitating the adoption of a majoritarian electoral rule (Linz, 1994). As additional evidence in favour of this correlation, Jung and Deering (2015) show that unstable conditions at the time of the constitutional choice increase the likelihood of the adoption of a parliamentary system. This effect should be slightly bigger in the case of unstable parliamentary systems given that the degree of stability of a country's political environment may be persistent, i.e. a more unstable environment is more likely to arise in the presence of past political instability (Alesina *et al.*, 1996). Therefore, we argue that the new instrument has a robust predictive power for the endogenous regressor, i.e. the constitutional choice, and it is orthogonal to the error term of the headline equation, given the time span elapsed between the instrument and the dependent variable.[18]

[16] "We think that [...] the three constitutional dating variables [...] are uncorrelated with the remaining unobserved determinants of fiscal policy, while we are less certain about the remaining instruments [i.e. the language variables and the latitude]. Assuming that the first three instruments are valid, the validity of the remaining [instruments] can be tested via the implied overidentifying restrictions."(Persson and Tabellini, 2004, p. 37). However, the overidentifying restriction is not convincing given the low predictive power of the constitutional timing variables. Thus, as noted by Acemoglu (2005, p.1041), "there are good reasons to suspect that they may not be excludable from the regression of interest."

[17] Source: Correlates of War Project. The index is computed as the sum of the years between 1816-1900 a country has been involved in violent conflicts over the reference period. Violent conflicts include both intra and inter state conflicts. For a detailed review of the definition and categorization of conflicts, see Sarkees (2010).

[18] Results from the instrumenting equations are reported in the Appendix, Table 7.

4 Results

We start our empirical analysis by comparing our new framework with the standard analysis by Persson and Tabellini (2003) and Blume et al. (2009). We first run regressions (2) and (3) on the PT dataset using central government expenditure and central government revenues as dependent variables (Table 1). A look at Column (1) and (3) reminds us of the standard results in the literature, namely that presidential systems spend systematically less than parliamentary ones, regardless of the chosen measure of the government size. In Table 1, Column (2) and (4) show that the difference between constitutional systems is driven by the subgroup of stable parliamentary countries. Indeed β_2 is statistically significant in both columns and seems slightly larger in magnitude when compared to previous results. Coefficient β_3 is never significantly different from zero so we cannot reject the hypothesis that unstable parliamentary systems behave like presidential systems.

Table 1: Constitutions, Central Government Expenditure and Central Government Revenues. OLS estimations. PT dataset

Dep.Var.	cgexp (1)	cgexp (2)	cgrev (3)	cgrev (4)
pres	-5.181^{***}		-5.001^{**}	
	(1.93)		(2.02)	
parl stab		6.298^{***}		7.541^{***}
		(2.28)		(3.20)
parl unstab		1.383		-0.104
		(1.87)		(1.05)
F-test		6.97^{**}		10.82^{***}
Observations	80	80	76	76
Adjusted R^2	0.631	0.643	0.586	0.640

Notes: White heteroskedasticity-consistent standard errors in parentheses. All the regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha*. *F-test* (columns (2), (4)) refers to the hypothesis that the coefficients for *parl stab* and *parl unstab* are equal ($\beta_2 = \beta_3$).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

If we test whether parliamentary countries can be treated as an homogeneous group ($\beta_2 = \beta_3$), we find that we can always reject the null hypothesis (p-values are 0.013 and 0.002, respectively).

We then run the same set of regressions on the extended BCIM dataset to check the robustness of our approach (Table 2). As shown by Blume et al. (2009) and reported in Column (1) and (4) the difference between constitutional systems in the traditional classification is no longer significant, even though the coefficients retain the same sign.

The significancy of the coefficients of the finer partition is instead preserved. Columns (2) and (5) show that β_2 is still significantly different from zero, that β_3 is not significantly different from zero and that we can reject the hypothesis that $\beta_2 = \beta_3$ (p-values

Table 2: Constitutions, Central Government Expenditure, Central Government Revenues. OLS estimations. BCIM dataset

Dep.Var.	cgexp (1)	cgexp (2)	cgexp (3)	cgrev (4)	cgrev (5)	cgrev (6)
pres	−3.755			−2.701		
	(2.42)			(2.36)		
parl stab		5.206**	5.128**		6.882***	6.929***
		(2.11)	(2.18)		(2.32)	(2.49)
parl unstab		1.734	1.442		0.302	0.052
		(1.98)	(1.96)		(1.95)	(1.96)
PPI			4.486			5.186
			(4.92)			(5.02)
F-test		2.30**	2.92**		9.82***	6.74***
Observations	91	89	82	87	85	82
Adjusted R^2	0.67	0.69	0.70	0.66	0.71	0.73

Notes: White heteroskedasticity-consistent standard errors in parentheses. All regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha*. *F-test* (columns (2)-(3) and (5)-(6)) refers to the hypothesis that the coefficients for *parl stab* and *parl unstab* are equal ($\beta_2 = \beta_3$).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

are 0.0495 and 0.009, respectively). In other words extending the dataset does not change any of the empirical facts observed in the original dataset, thus suggesting that not treating parliamentary systems as a homogeneous group is a modelling improvement.

Our partition of parliamentary systems is based on the observed behaviour of the country and not on the details of the constitutional rules. We argued in Section 2 that we intend to capture the heterogeneity generated by the different equilibria that may arise in a given constitutional setup. To further validate this interpretation of the results we include the Parliamentary Power Index (PPI) proposed by Fish and Kroenig (2009) as an additional control. This index reports the strength of the legislative body by measuring the fraction of "powers" that the national legislature held out of 32 listed ones in 2007. The introduction of PPI as a regressor allows us to control for differences in the constitutional features of parliamentary countries. Columns (3) and (6) show that results do not change when we include the index, thus supporting our interpretation.

Finally, we replicate the analysis but adopting the IV approach as described in Section 3.2 both on the PT dataset (Table 3) and on the BCIM dataset (Table 4). Columns (2) and (4) of both tables show that the empirical findings are confirmed even when we instrument the possibly endogenous constitutional decision, further supporting our modelling choice.

Table 3: Constitutions, Central Government Expenditure and Central Government Revenues. IV estimations. PT dataset

Dep.Var.	cgexp (1)	cgexp (2)	cgrev (3)	cgrev (4)
pres	-6.51^{*}		-6.47^{*}	
	(3.16)		(3.72)	
parl stab		5.774^{**}		6.231^{**}
		(2.92)		(2.29)
parl unstab		1.346		0.571
		(1.20)		(1.36)
F-test		2.97^{**}		9.82^{***}
Headline covariates	Yes	Yes	Yes	Yes
Observations	83	82	82	81
Adjusted R^2	0.68	0.68	0.67	0.66

Notes: White heteroskedasticity-consistent standard errors in parentheses. The IV approach follows the strategy presented in Section 3.2. In Columns (1) and (3), the instrumenting equation is estimated using a probit model. In Columns (2) and (4), the instrumenting equation is a multinomial probit model. Results from the instrumenting equations are reported in the Appendix, Table 7. Columns (1)-(4) include the following controls: *engfrac, eurfrac, lat01, age, lyp, trade, prop1564, prop65, gastil, maj, federal, lpop, oecd*. *F-test* (columns (2) and (4)) refers to the hypothesis that the coefficients for *parl stab* and *parl unstab* are equal ($\beta_2 = \beta_3$).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Constitutions, Central Government Expenditure and Central Government Revenues. IV estimations. BCIM dataset

Dep.Var.	cgexp (1)	cgexp (2)	cgrev (3)	cgrev (4)
pres	-3.29		-4.38	
	(3.91)		(3.93)	
parl stab		5.702^{**}		7.243^{***}
		(2.23)		(2.75)
parl unstab		1.981		2.185
		(1.63)		(2.16)
F-test		2.85^{**}		6.42^{***}
Headline covariates	Yes	Yes	Yes	Yes
Observations	100	86	99	86
Adjusted R^2	0.59	0.61	0.60	0.63

Notes: White heteroskedasticity-consistent standard errors in parentheses. The IV approach follows the strategy presented in Section 3.2. In Columns (1) and (3), the instrumenting equation is estimated using a probit model. In Columns (2) and (4), the instrumenting equation is a multinomial probit model. Results from the instrumenting equations are reported in the Appendix, Table 7. Columns (1)-(4) include the following controls: *engfrac, eurfrac, lat01, age, lyp, trade, prop1564, prop65, gastil, maj, federal, lpop, oecd*. *F-test* (columns (2) and (4)) refers to the hypothesis that the coefficients for *parl stab* and *parl unstab* are equal ($\beta_2 = \beta_3$).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.1 Robustness checks and possible transmission channels

We perform several robustness checks to test the validity of the results. First of all, we test the model on dependent variables different from those analysed so far: output per worker, the perception of corruption, social protection expenditure as a percentage of the GDP and expenditure on education as a percentage of the GDP. We run regressions (2) and (3) on both the original and enlarged datasets. The change in dependent variables does not alter our results (Tables 8-11 in the Appendix).

We then estimate the model including the executive's ideological position and the district magnitude as additional regressors. The underlying idea is that a leftist executive should implement higher public expenditure and that district magnitude may have a positive impact on the size of fiscal policies (Milesi-Ferretti et al., 2002). Table 12 in the Appendix shows that results do not change.

A third set of robustness checks is performed on the partition of parliamentary countries in stable and unstable countries, as this partition is the distinguishing feature of the empirical strategy. In the main analysis countries are partitioned according to the index *gov life*. We consider three alternative stability indexes: *gov end*, defined as the fraction of governments that are successful in reaching the legal term of the mandate;[19] *year exec*, defined as the average tenure of the head of the executive weighted by the legal length of any electoral term;[20] *year party*, defined as the average number of years the governing party has been in office weighted by the legal length of the electoral term.[21] Results reported in Table 13 of the Appendix show that the empirical findings are not sensitive to the choice of stability index.

A further concern is related to the possible reverse causality between stability and policy outcomes. Indeed, public expenditure may be increased by the government in order to remain in power, thus increasing stability. As a robustness check we classify parliamentary countries as stable and unstable countries based on the index *gov life* in the time interval 1975-1989 (instead of 1975-2012). In this way, the dependent variables (which are averages of the expenditure/revenues in the period 1990-1998) cannot have a direct effect on the classification. Results are reported in Table 5. The sign and magnitude of the coefficients in Table 2 and Table 5 support the validity of our approach.

[19]The index is built using the indicator *yrcurnt* from the DPI dataset. Higher values of the index correspond to higher stability.

[20]This index is built using the indicator *yearoff* from the DPI dataset, which collects information about the number of years the head of the executive has been in office. Higher values of the index correspond to higher stability. Note that this index may provide different results from the previous ones, since it keeps counting the number of years a government has been in power even if an election occurs, if the incumbent government wins the election.

[21]This index is built using the indicator *prtyin* from the DPI dataset, which counts the number of years the chief executive party has been in office. Higher values of the index correspond to higher stability. Note that the index accounts for the possibility that a single party remains in power for a large number of years

Table 5: Constitutions, Central Government Expenditure and Central Government Revenues. OLS estimations. BCIM dataset

Dep.Var.	cgexp (1)	cgrev (2)
parl stab	6.201^{**}	6.403^{**}
	(2.87)	(3.05)
parl unstab	1.26	0.646
	(1.66)	(2.49)
F-test	3.43^{*}	5.51^{**}
Observations	89	82
Adjusted R^2	0.735	0.708

Notes: White heteroskedasticity-consistent standard errors in parentheses. All the regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha*. *F-test* refers to the hypothesis that the coefficients for *parl stab* and *parl unstab* are equal ($\beta_1 = \beta_2$).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The overall empirical analysis is consistent with the theoretical intuitions stated in Section 2. In particular in a model such as in Cella et al. (2015), the performance of parliamentary systems closely approaches the performance of presidential systems if the confidence vote entails a better ability of legislators to reject bad policy proposals and thus a more unstable political environment. However, if the *selection effect* is not effective then the *de facto* behaviour of politicians will be driven by political incentives. This mechanism not only drives stable parliamentary systems away from the performance of presidential systems, but also from unstable parliamentary systems. The same effect is consistent with the presence of the *legislative cohesion* effect in models such as in Baron (1998), according to which the executive and the parliament coordinate to keep politicians in power and to avoid a no confidence motion. Coordination indeed leads either the executive to formulate policy proposals that please the majority of the veto-players or legislators to accept a larger fraction of executive's proposals to avoid early elections.

To better understand the mechanisms behind these two effects we focus on the interaction between stability and quality of the institutions in parliamentary systems. Theoretically both effects should be milder in countries with better institutions. The low frequency of politician's replacement may in fact depend on a higher expected quality of actors in the political arena which makes stability the optimal choice. On the other hand, strong institutions may deter legislative cohesion even among low quality politicians. In both cases we expect the difference between stable parliamentary systems and other groups to decrease in the quality of institutions. We empirically investigate this relation by introducing the Government Effectiveness index (*goveff*) and its interactions.[22] Results in Table 14 in the Appendix support this theoretical conjecture.

The main findings described above do not find evidence in favour of the *disciplining effect* that predicts a similar performance between presidential and stable parliamentary systems. However, this may depend on the difficulty of empirically isolating the subgroup of fully stable parliamentary countries. This leads us to suppose that the difference between presidential and parliamentary systems is not monotonically increasing in the level of stability of the latter system. To test this insight, we try to further split parliamentary countries into more than two categories according to their stability distribution. Indeed, even if the analysis is sensitive to the small number of countries included in each category, we find that the difference between constitutional systems is increasing in the stability of the parliamentary constitutional design, but it drops when we consider fully stable parliamentary countries. Results are reported in the Appendix, Table 15.

5 Conclusion

This paper analyses the effect of constitutional structures on policy outcomes with specific attention to the role of the confidence vote. In particular, the novelty of the paper rests with the understanding of the link between government stability and economic outcomes for parliamentary systems. Hence, the empirical analysis we perform introduces finer partition of parliamentary countries according to their degree of stability. We find that stable parliamentary systems behave differently from both presidential and unstable parliamentary systems with respect to every dependent variable we consider.

We also provide some novel insights into the transmission channels that may generate our empirical results. When the executive is disciplined by the threat of the confidence vote (*disciplining effect*), then it will always formulate congruent policy proposals. In this case, the confidence vote is never actively used and the performance of fully stable parliamentary systems and presidential systems will tend to coincide. Indeed, when the confidence vote is actively used by the parliament, then the difference in performance between the two constitutional systems will be increasing in the stability of the parliamentary system. That applies either when the majority of parliament is office-motivated (*selection effect*) or when the executive and the parliament coordinate to stay in office until the end of the term (*legislative cohesion effect*).

We also introduce a novel empirical approach by proposing a new instrument that better predicts the constitutional choice of countries, thus tackling the problems of endogeneity.

We therefore contribute to the growing body of literature of empirical constitutional

[22]The index is taken from the World Governance Indicators of the World Bank. We use the average of available years (1996-2014).

economics by dealing with some of the critiques of previous works in particular by offering a method of analysis that generates results that are more robust and that shed some light on the possible transmission channels.

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Appendix

Table 6: DESCRIPTIVE STATISTICS

	Pres (1)	Parl Unstab (2)	Parl Stab (3)	p(1,2) (4)	p(1,3) (5)	p(2,3) (6)	p(pt,bcim) (7)
CGEXP	22.9	32.1	32.5	0.00	0.00	0.32	0.43
CGREV	20.7	27.6	30.7	0.00	0.00	0.08	0.91
SOCPROT	4.84	7.89	7.45	0.00	0.02	0.60	-
LYP	7.88	8.53	8.77	0.01	0.00	0.31	0.22
TRADE	68.8	79.5	92.5	0.27	0.05	0.31	0.05
GASTIL	2.92	2.49	2.12	0.09	0.07	0.08	0.06
PROP65	5.83	9.78	8.87	0.00	0.01	0.95	0.11
AGE	0.14	0.21	0.23	0.16	0.08	0.97	0.00
OECD	0.05	0.34	0.36	0.00	0.00	0.98	0.08
AFRICA	0.20	0.17	0.08	0.78	0.14	0.15	0.39
ASIA	0.10	0.14	0.21	0.63	0.19	0.58	0.08
LAAM	0.52	0.07	0.18	0.00	0.00	0.25	0.89
PPI	0.49	0.66	0.67	0.00	0.00	0.73	0.89

Notes: Entries in columns (1), (2) and (3) are mean values for constitutional categories when using the BCIM extended dataset. p(x,y) is the probability of falsely rejecting equal means across groups corresponding to columns x and y, under the assumption of equal variances. Column (7) is the probability of falsely rejecting equal means across the original PT dataset and the BCIM extended dataset, under the assumption of equal variances.

Table 7: IV instrumenting equations. BCIM dataset

Model	Probit	Multinomial (base=pres)	
Dep-Var.	pres	stable	unstable
	(1)	(2)	(3)
confl mean	-1.71^{***}	0.65^{**}	0.87^{***}
	(0.07)	(0.30)	(0.41)
con2150	-0.003	-0.24	0.28
	(0.08)	(0.21)	(0.23)
con5180	0.37^{**}	-0.79^{***}	0.27
	(0.09)	(0.27)	(0.23)
con81	0.78^{***}	-0.97^{***}	-0.03
	(0.13)	(0.33)	(0.26)
engfrac	-0.46^{**}	0.27	0.28
	(0.16)	(0.21)	(0.23)
eurfrac	0.82^{***}	-0.46^{***}	-0.49^{***}
	(0.15)	(0.18)	(0.23)
lat01	-0.87^{**}	0.89^{*}	0.02
	(0.39)	(0.48)	(0.51)
age	1.14^{***}	-2.03^{***}	-0.49^{*}
	(0.29)	(0.67)	(0.43)
F-TEST on confl mean		13.6^{***}	
F-TEST on constitution variables	21.4^{***}	28.98^{***}	27.39^{***}
Observations	83	80	80
Adjusted R^2	0.735		

Notes: White heteroskedasticity-consistent standard errors in parentheses. We estimate Column (1) using a probit model and Columns (2) and (3) using a multinomial probit. Entries are average marginal effects. All columns include (but do not report) the following controls: *maj, gastil, lyp, lpop, trade, prop1564, prop65, federal, oecd.* F-test on *confl mean* refers to the joint significance of confl mean in the stable and unstable categories. F-test on *constitution variables* refers to the joint significance of the constitution dating variables, i.e. *con2150, con5180, con81.*
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Constitutions and Output per Worker. OLS estimations.

Dataset	PT		BCIM	
Dep.Var.	logyl	logyl	logyl	logyl
	(1)	(2)	(3)	(4)
pres	-0.294^{*}		-0.157	
	(1.84)		(1.01)	
parl stab		0.325^{*}		0.392^{**}
		(1.78)		(2.04)
parl unstab		0.115		-0.0364
		(1.55)		(2.20)
Observations	74	73	84	83
Adjusted R^2	0.731	0.695	0.753	0.721

Notes: White heteroskedasticity-consistent standard errors in parentheses. *logyl* is the productivity level as in Persson and Tabellini (2003) (Columns (1) and (2)), and in Blume et al. (2009) (Columns (3) and (4)). The regressions include the following controls: *age, lyp, trade, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha, avelf, prot80, catho80, confu.*
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Constitutions and Perception of corruption. OLS estimations.

Dataset	PT		BCIM	
Dep.Var.	cpi (1)	cpi (2)	cpi (3)	cpi (4)
pres	-0.620^{*} (1.76)		-0.326 (-1.05)	
parl stab		0.627^{*} (1.80)		0.559^{*} (1.72)
parl unstab		0.491 (1.40)		0.362 (1.19)
avelf	1.274^{**} (2.09)	1.567^{**} (2.42)	0.987^{*} (1.83)	1.432^{**} (2.49)
Observations	78	78	88	88
Adjusted R^2	0.829	0.833	0.806	0.820

Notes: White heteroskedasticity-consistent standard errors in parentheses. *cpi* is the perception of corruption as in Persson and Tabellini (2003) (Columns (1) and (2)), and in Blume et al. (2009) (Columns (3) and (4)). The regressions include: *age, lyp, trade, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha, avelf, prot80, catho80, confu.* The addtional control *avelf* is included and reported in the table. *avelf* is the index of ethnolinguistic fractionalization, as in La Porta et al. (1998).
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Constitutions and Social Protection. OLS estimations.

Dataset	PT		BCIM	
Dep.Var.	socprot (1)	socprot (2)	socprot (3)	socprot (4)
pres	-2.184 (2.10)		-2.028 (2.01)	
parl stab		2.924^{**} (2.05)		2.149^{**} (1.09)
parl unstab		-0.346 (2.16)		0.270 (1.71)
Observations	76	76	86	86
Adjusted R^2	0.758	0.761	0.714	0.729

Notes: White heteroskedasticity-consistent standard errors in parentheses. *socprot* is the central government social protection expenditure as defined by the IMF-GFS dataset (averaged over years 1995-2012). The regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha.*
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Constitutions and Education Expenditure. OLS estimations.

Dataset	PT		BCIM	
Dep.Var.	edspend (1)	edspend (2)	edspend (3)	edspend (4)
pres	−0.413		−0.512	
	(1.10)		(1.16)	
parl stab		0.832**		1.10**
		(0.65)		(0.89)
parl unstab		0.346		0.270
		(1.16)		(1.71)
Observations	75	75	84	84
Adjusted R^2	0.508	0.521	0.514	0.529

Notes: White heteroskedasticity-consistent standard errors in parentheses. *edspend* is the central government expenditure on education as percentage of the GDP as defined by the IMF-GFS (averaged over years 1995-2012). The regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha.*
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Constitutions, Central Government Expenditure, District Magnitude and Ideology. OLS Estimations. PT and BCIM dataset.

Dataset	PT		BCIM	
Dep.Var.	cgexp (1)	cgexp (2)	cgexp (3)	cgexp (4)
pres	−3.327		−2.641	
	(1.54)		(2.05)	
parl stab		5.543**		4.502**
		(2.26)		(2.30)
parl unstab		−0.0559		1.484
		(2.03)		(1.64)
right_left	1.266	0.970	1.968	2.055
	(1.94)	(1.72)	(1.39)	(1.48)
magn	−0.228	−0.271	−0.333	−0.354
	(0.24)	(0.24)	(0.27)	(0.27)
Observations	75	75	85	85
Adjusted R^2	0.671	0.692	0.628	0.645

Notes: White heteroskedasticity-consistent standard errors in parentheses. The regressions include: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha.* The addition controls *right_left* and *magn* are included. *right_left* reports the average ideological position of the executive from 1970 to 2012. Values are between 1 - right-oriented executive - to 3 - left-oriented executive. *magn* represents the district magnitude weighted by the country's population. Source: DPI dataset.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Robustness checks with different stability indexes. OLS estimations

Dep.Var.	cgexp (1)	cgexp (2)	cgexp (3)	cgexp (4)
Dataset		PT		
parl stab	6.298***	5.932**	5.816***	6.064**
	(1.93)	(2.62)	(2.78)	(2.03)
parl unstab	1.383	−0.316	2.560	1.852
	(1.87)	(2.57)	(1.63)	(1.94)
Dataset		BCIM		
parl stab	5.206**	4.510**	4.656*	4.590**
	(2.11)	(2.08)	(1.98)	(2.17)
parl unstab	1.734	−1.700	2.522	2.827
	(1.98)	(1.81)	(2.07)	(1.50)

Notes: White heteroskedasticity-consistent standard errors in parentheses. A detailed explanation of the way in which the stability indexes have been assembled is reported in Section 4.2. Columns (1), (2), (3) and (4) report the stability indexes *gov life, gov end, year exec, year party*, respectively. The regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha.*
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Constitutions, Central Government Expenditure and Central Government Revenues with WGI effects. OLS estimations. BCIM dataset

Dep.Var.	cgexp (1)	cgexp (2)	cgrev (3)	cgrev (4)
parl stab	5.101**	6.833***	5.487**	8.026***
	(2.11)	(2.43)	(2.39)	(3.08)
parl unstab	1.772	1.329	0.524	0.342
	(1.98)	(2.28)	(1.97)	(2.10)
goveff	−3.490*	−2.539	−0.251	−0.098
	(1.96)	(2.25)	(1.76)	(1.19)
parl stab$*goveff$		−3.139*		−2.502*
		(1.80)		(1.84)
parl unstab$*goveff$		0.367		0.132
		(2.41)		(2.42)
Observations	89	89	85	85
Adjusted R^2	0.692	0.695	0.693	0.705

Notes: White heteroskedasticity-consistent standard errors in parentheses. All the regressions include the following controls: *maj, age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha. goveff* is the Government Effectiveness index and it is computed as the average of available years: 1996-2014.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Constitutions and Central Government Expenditure. OLS estimations. BCIM dataset

Dep.Var.	cgexp (1)	cgexp (2)
parl stab_1	2.67 (3.01)	1.96 (2.93)
parl stab_2	4.91^{**} (2.60)	2.24 (2.83)
parl stab_3	3.53 (3.01)	5.31^{**} (2.99)
parl stab_4		3.26 (3.33)
Observations	91	87
Adjusted R^2	0.67	0.71

Notes: White heteroskedasticity-consistent standard errors in parentheses. Parliamentary countries are split into 3 categories (columns (1)) and 4 categories (columns (2)) according to the index *gov life*. Note that in this specification *parl stab*(0)=*pres*. The regressions include the following controls: *age, lyp, trade, prop1564, prop65, gastil, federal, oecd, lpop, africa, asiae, laam, col_uka, col_espa, col_otha*.

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