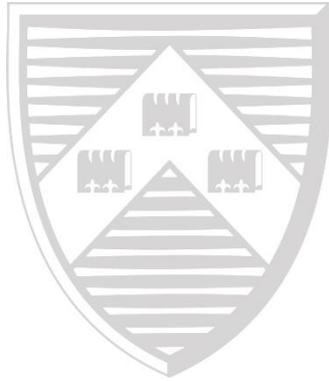


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Who does better for the economy?
Presidents versus parliamentary
democracies

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Who does better for the economy? Presidents versus parliamentary democracies*

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Abstract

Are certain forms of government associated with superior macroeconomic performance? This paper attempts to answer this question by examining how government systems impact upon macroeconomic outcomes. We find that presidential regimes consistently produce less favourable outcomes as compared with parliamentary ones with lower output growth, higher and more volatile inflation and greater income inequality. Moreover, the magnitude of this effect is sizable. For example, output growth is between 0.6 and 1.2 percentage points lower and inflation is six percentage point higher under presidential regimes relative to those under parliamentary ones. The difference in distributional outcomes is even more stark; income inequality is between sixteen to twenty per cent worse under presidential systems. We also find that presidential regimes are particularly harmful in: less established democracies; where there is lack of inclusive institutions; where the rule of law is not fully respected; and, where the presidents have extensive legislative powers, especially in the presence of electoral systems with proportional representation.

JEL Classification: E02; H11; P16.

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1 Introduction

The proliferation of independent nations following the demise of the Soviet Union in the early 1990s revitalized the debate on constitutional rules, in particular on the forms of government.¹ In an influential paper, Linz (1990) argued that presidential regimes - where the president is the chief executive and is elected by popular vote - are less conducive to stable democracy than parliamentary regimes, pointing to the ‘perils of presidentialism’ on two grounds.² First, in presidential systems there is competing claims by both the president and the assembly for legitimacy, leading to divided government, with serious implications for the stability of democratic systems. Second, presidential regimes are associated with significant rigidity due to both the single person nature of the office and the fixed terms associated with it. In contrast, Mainwaring & Shugart (1997) assert that presidential regimes also have advantages that may counterbalance some of their handicaps. For example, it is argued that presidential systems offer greater choice to the electorate who can vote both for the chief executive and the legislative assembly. In addition, it is suggested that there is a more direct link between the choices made at the ballot box and the electoral outcomes under presidentialism, in contrast to parliamentary systems in which coalition formations may weaken this link, reducing the accountability under the latter. Hence, Mainwaring & Shugart (1997) conclude that presidential regimes perform better in societies where presidents have weaker legislative powers and when the political party system is not overly fragmented.

The work of Persson & Tabellini (2003) (PT(2003) hereafter) on the economic effects of constitutions has changed the direction of this debate, initiating a new literature on the implications of political institutions on economic outcomes. By exploring both the form of government and electoral rules on macroeconomic outcomes, Persson & Tabellini (2003) uncovered well-defined relationships between presidential versus parliamentary regimes and the size and the composition of government spending, government deficits, output per worker and total factor productivity. In particular, they find that presidential regimes are associated with smaller governments, lower welfare spending, lower productivity and more pronounced electoral cycles.

A thriving debate ensued PT(2003) firmly establishing the subdiscipline of political economics (see, for example Acemoglu 2005). A substantial part of this research effort is channeled towards a re-examination of the impact of constitutional rules - regarding both the type of regime (presidential versus parliamentary) and electoral system (majoritarian

¹The origins of the debate on the implications of the form of constitutions date back much earlier. Both Walter Bagehot and Woodrow Wilson wrote on the ideal forms of constitutional structure in 1867 and 1885, respectively (see Elgie 2005).

²See Carey (2005) for a comparative analysis of presidential versus parliamentary government.

versus proportional) on the size of government and the composition of public spending. For example, Blume et al. (2009) find that having a presidential rather than a parliamentary regime has no statistically significant effect on either the size of the government, the scale of corruption, output per worker, or the total factor productivity.³ In contrast, Gregorini & Longoni (2009), by incorporating a large set of political and demographic factors, confirm PT(2003)'s finding of a negative impact of presidentialism on the size of government. Similarly, by refining PT's measurement and methodology, Rockey (2012) re-establishes the negative and significant role of presidential regimes on the size of government. Interestingly, and in line with Blume et al. (2009), Rockey (2012) shows that this relationship disappears when the sample is extended to contain the new democracies of the 1990s.

The purpose of this paper is to examine whether certain forms of government are associated with better macroeconomic performance, which has surprisingly received much less attention in the existing literature. Even though the size of government, the scale of corruption, the composition of public spending (as studied in the existing literature) are important dimensions of policy outcomes, these would not form the standard set of macroeconomic performance indicators. Moreover, the only two studies exploring the role of constitutions on economic growth - a key performance measure - present conflicting findings; while Gerring et al. (2009) find a negative role of presidentialism on GDP per capita; Knutsen (2009), in an extended sample, finds no relationship between the form of government and economic growth. In this paper we explore the role of regime type on output and the volatility of output, inflation and volatility of inflation, examining links that are largely unexplored in the existing literature.⁴ In addition to these four indicators, we extend our analysis to the link between the regime type and income inequality. The reasons for including income inequality in our analysis are two-fold. First, the level of inequality is an important determinant of political and economic instability with major implications for macroeconomic performance, as widely documented (see, for example, Alesina & Perotti 1996, Campos & Nugent 2002). Second, there has been a steady rise in income inequality across the globe, reaching record levels at present, which makes it crucial to understand its potential sources (see OECD 2015, for extensive evidence for the rising income inequality across the globe and its implications).⁵

³Blume et al. (2009) extend the PT(2003) sample by including 31 additional countries that held free elections in the 1990s.

⁴Indeed, the basis of the standard loss function widely utilized in the policy games literature is the policy maker's dislike for high and volatile inflation as well as low and volatile output. See for example Barro & Gordon (1983) among many others. More recently, Woodford (2003) shows that such a simple framework is indeed a good approximation for policy making in much richer models with proper microfoundations.

⁵It is now widely believed that the substantial deterioration in income inequality was a key factor in a number of recent electoral surprises including the UK's referendum in June 2016 to leave the European

In order to systematically link macroeconomic outcomes to the form of government, we utilize an annual data set for 119 countries over the period 1950-2015 and construct an extensive set of performance indicators. We then formally examine the implications of the government system on each of these indicators. Our findings clearly point to compelling advantages of parliamentary systems. For example, we find that countries run by presidential regimes consistently produce lower output growth, higher and more volatile inflation as well as greater income inequality relative to those under parliamentary ones. Also importantly, we find that the magnitude of this effect is sizable; for example, the gap between output growth under presidential regimes relative to parliamentary ones varies between 0.6 and 1.2 percentage points. Similarly, in countries run by presidential systems inflation is on average six percentage point higher than in those under parliamentary regimes. The difference in distributional outcomes is even more stark; income inequality is between sixteen to twenty per cent worse under presidential systems.

Finally, we explore whether there are circumstances under which our ranking of the two regimes is reversed. In this exercise, we draw upon the arguments in the existing literature in identifying a number of mechanisms through which the form of government impacts upon the economy. In the process we compile a rich set of indicators to proxy the nature and the quality of democracy; the quality and the inclusiveness of institutions; legislative power and control; and measures of the electoral system. We show that our main result of presidential regimes consistently producing less favourable macroeconomic outcomes prevails in a wide range of circumstances.

What is the policy implication of examining the role of government systems on economic performance? Although constitutions remain in place for long periods of time, countries periodically consider constitutional amendments including changes in the system of governance. Indeed, Hayo & Voigt (2010) identify 123 changes in the form of government in 169 countries during 1950-2003. This includes ten post-Soviet Union countries moving from presidential to parliamentary systems in the 1990s as well as ten countries in North Africa and Middle East who switched their regimes in the opposite direction since 1950s. More recently, France has made changes to its constitution in the direction of parliamentary systems. Similarly, constitutional reform has been on the agenda in a number of countries in the Middle East since the widespread protests, referred to as the Arab spring, starting in 2011. Also, at present, the electorate in Turkey will be voting in an upcoming referendum on an amendment to the country's constitution entailing a move from the current parliamentary system into a presidential one. We believe that establishing the link between the forms of government and economic outcomes serves

Union as well as the presidential elections in the US in November 2016. See for example Bell & Machin (2016).

an important purpose by providing an important piece of information for constitutional engineers in countries considering a regime change.

The rest of the paper is organized as follows. Section 2 presents the methodology, the data and some descriptive statistics. Our formal empirical results are presented and examined in Section 3 which also contains our treatment of potential endogeneity issues as well as some additional robustness checks. Section 4 carries out a number of extensions. Finally, Section 5 concludes.

2 Estimation strategy and data

2.1 Methodology

To assess the role of the form of government on macroeconomic performance, we estimate the following cross country panel regressions:

$$Y_{i,t} = \alpha + \theta Pres_{i,t} + \gamma Maj_{i,t} + \beta X_{i,t} + z_{i,t} \quad (1)$$

where $Y_{i,t}$ represents the dependent variable of interest (levels and volatility of economic growth and inflation, and income inequality) in country i in period t , $Pres_{i,t}$ and $Maj_{i,t}$ are measures representing the form of government and voting rule respectively, and $X_{i,t}$ are a set of control variables, specific to the dependent variable in each case. Although our focus is on the form of government, it has been shown that the voting rule also matters for economic outcomes; as such we include variables for both types of constitutional rules (see for example PT2003, Blume et al. 2009, Rockey 2012) (see, for example, PT(2003), Blume et al. (2009) and Rockey (2012)).

We estimate regressions of specification (1) using Generalised Least Squares with random effects and time dummies for each period. As a benchmark, we utilize 15-year horizons for each panel (as is common in the literature) starting from 1965, thus providing three panels for each country in the regression. For each regression, two specifications are estimated incorporating two alternative sets of control variables in $X_{i,t}$; a benchmark specification with a limited number of control variables, and a second one with an extended set of regressors.

2.2 Data and constitutional variables

We use data from a variety of empirical sources as discussed in Appendix A which contains a full description of all variables; where available, all data is collected over the period 1950-2015. We utilise two data sources for our measures of the form of government, each

employing subtly different definitions. The first is from Bormann & Golder (2013) who define presidential systems as those where the head of state cannot be removed by the elected assembly, as proposed by Cheibub et al. (2010). In addition, a country where a president who is popularly elected may be removed by the assembly are classified as operating in a ‘semi-presidential’ regime. All other regimes are parliamentary. PT(2003) follow a similar methodology classifying a parliamentary government as one which can be subject to a confidence vote; correspondingly, a system where this confidence vote is absent is defined as a presidential government.⁶ Table 1 illustrates which countries are categorised into each form of government under the two data sources; as is observed from the table, the only differences between the two sources are with respect to the ‘semi-presidential’ classification and the data coverage. The underlying classification of regimes into presidential, semi-presidential and parliamentary regimes is also presented in Figure A1 in the Appendix.

2.3 Descriptive statistics

Table 2 presents the whole sample means for each of the five dependent variables in our analysis, under presidential and parliamentary systems for both Bormann & Golder (2013) and PT(2003) classifications. As can be seen, in great majority of the cases parliamentary regimes deliver more favorable outcomes than presidential ones, and differences between the two systems are frequently observed to be statistically significant. Using the lower end of our estimates, on average, parliamentary countries are observed to grow 0.6 percentage points per annum faster than the presidential ones; have 3.2 percentage points lower inflation; have lower variation in inflation; and have lower levels of income inequality.⁷ As is also clear from Table 2, these disparities in macroeconomic outcomes are larger and more statistically significant when using the PT(2003) definition of forms of government; these differences derive from the relatively smaller sample in PT(2003) and are not due to the differences in country classifications between the two presidential variables.

Figure 1 presents histograms for these five variables under both parliamentary and presidential regimes. It is observed that for every macroeconomic outcome, with the exception of growth volatility, the better-performance of parliamentary regimes compared to presidential ones is consistent throughout the sample and is not driven by outliers.

Figure 2 presents scatter plots for countries along the metrics which show statistically

⁶PT(2003) discuss two dimensions across which they see presidential systems being defined: that of the confidence vote and that of the separation of powers between the president and the legislator.

⁷To remove the impact of high inflation outliers, we use the method applied in Cukierman et al. (1992) where the GDP deflator, π , is transformed using $\pi/(1 + \pi)$.

Table 1: Countries and forms of government classifications

| BG | PT | | |
|-------------------|---|--|---|
| | Presidential | Parliamentary | Not included |
| Presidential | Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Ghana, Guatemala, Honduras, Malawi, Mexico, Nicaragua, Peru, Philippines, Paraguay, El Salvador, Switzerland, Uganda, Uruguay, United States, Venezuela | | Benin, Burundi, Rep of Congo, Cuba, Indonesia, Kenya, Liberia, Maldives, Micronesia, Nigeria, Palau, Panama, Sierra Leone, Suriname |
| Semi-presidential | Sri Lanka | Austria, Bulgaria, Comoros, Finland, France, Ireland, Iceland, Poland, Portugal, Romania, Senegal, Slovak Republic, Taiwan, Ukraine | Armenia, Cabo Verde, Central African Republic, Croatia, Georgia, Guinea-Bissau, Kyrgyzstan, Lithuania, Madagascar, Macedonia, Mali, Mongolia, Mauritania, Niger, Serbia, Sao Tome and Principe, Slovenia, South Korea, Timor-Leste |
| Parliamentary | | Australia, Belgium, The Bahamas, Bangladesh, Belize, Barbados, Canada, Cyprus, Czech Republic, Denmark, Estonia, Fiji, Germany, Greece, Hungary, India, Israel, Italy, Jamaica, Japan, Latvia, Luxembourg, Malta, Mauritius, Netherlands, Norway, Nepal, New Zealand, Papua New Guinea, Spain, Sweden, Thailand, Trinidad and Tobago, Turkey, St. Vincent and the Grenadines, United Kingdom | Andorra, Albania, Antigua and Barbuda, Bhutan, Czechoslovakia, Dominica, Grenada, Kiribati, St. Kitts and Nevis, Lao PDR, Lebanon, St. Lucia, Liechtenstein, Marshall Islands, Moldova, Myanmar, Pakistan, Sudan, Solomon Islands, San Marino, Somalia, Tuvalu, Vanuatu |
| Not included | Belarus, The Gambia, Namibia, Russia, Zambia, Zimbabwe | Botswana, Malaysia, Singapore, South Africa | |

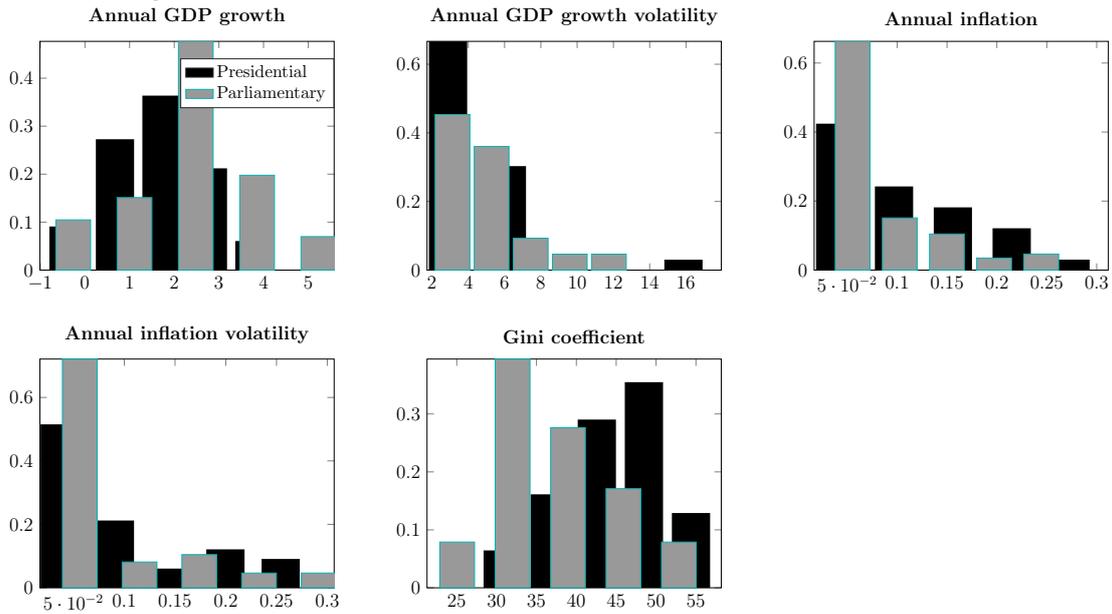
Classifications of countries by form of government between the Persson and Tabellini ('PT') and the Bormann and Golder ('BG') and data sets.

Table 2: Presidents and parliaments: descriptive statistics

| | Bormann & Golder (2013) | | | PT(2003) | | |
|----------------------|-------------------------|------------------------|----------------------|-------------------------|-------------------------|-----------------------|
| | Pres | Parl | Diff | Pres | Parl | Diff |
| Annual GDP growth | 1.680 (1.131) 33 | 2.275 (1.437) 86 | 0.595** (0.020) | 1.782 (1.182) 32 | 2.527 (1.284) 51 | 0.745*** (0.009) |
| Growth volatility | 4.523 (2.764) 33 | 4.642 (2.351) 86 | 0.119 (0.828) | 3.973 (1.465) 32 | 3.668 (1.451) 51 | -0.305 (0.358) |
| Inflation | 0.108 (0.076) 33 | 0.077 (0.056) 86 | -0.032** (0.035) | 0.142 (0.096) 32 | 0.070 (0.054) 51 | -0.072*** (0.000) |
| Inflation volatility | 0.106 (0.078) 33 | 0.079 (0.069) 86 | -0.027* (0.087) | 0.133 (0.088) 32 | 0.065 (0.057) 51 | -0.068*** (0.000) |
| Gini coefficient | 45.333 (7.312) 31 | 36.559 (7.41) 76 | -8.774*** (0.000) | 46.986 (8.589) 32 | 36.811 (8.185) 51 | -10.176*** (0.000) |

Note: Descriptive statistics are based on whole sample averages. For each of the five variables represented in the first column, the mean is calculated under both presidential and parliamentary regimes, with both the standard deviation (in parentheses) and number of observations presented underneath; in the fourth and seventh columns the difference between these two means are presented, with p-values from t-tests (in parentheses) presented underneath. A standard star convention is used, with *, ** and *** representing significance levels of 10, 5 and 1% respectively. Both Bormann & Golder (2013) and PT(2003) are used in classifying presidential versus parliamentary regimes; in the case of the former, semi-presidential systems are not included in the analysis.

Figure 1: Presidents and parliaments: macroeconomic outcomes



Histograms illustrating the distribution of our main macroeconomic indicators of interest as an average over the whole sample (1950-2015) across parliamentary and presidential regimes using Bormann & Golder (2013) classification for government structures.

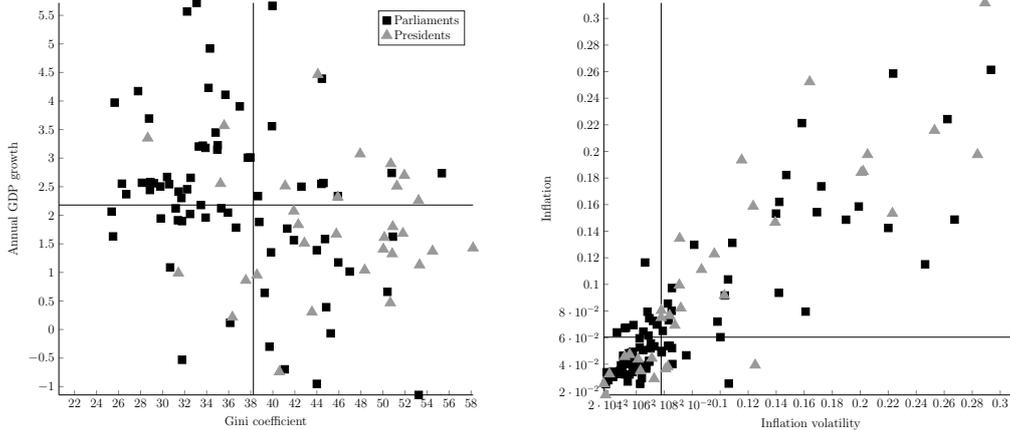
significant differences in Table 2. In each plot, a point represents a country and the solid lines the median value in each of the macroeconomic outcomes. In the left-hand pane of Figure 2 the top-left quadrant represents those countries of above average economic growth and below average inequality. In this good-outcomes quadrant 91 percent of countries are parliamentary representing half of all parliamentary countries; in the bottom-right quadrant, representing worse than average outcomes for economic growth and inequality, 61 percent are presidential countries, representing half of all presidential countries.

Similar results are found in the right-hand pane where the best outcomes are those found in the bottom-left quadrant; below average levels and volatility of inflation. In this quadrant 80 percent are parliaments (nearly half of all parliamentary countries) whereas in the opposing top-right quadrant 48 percent of observations are from presidential countries (representing 63 percent of all presidential countries).

3 Forms of government and macroeconomic outcomes

In this section we present and discuss the effects of the government system on five separate outcome measures, as set out above. These are each taken in turn, and are based on empirical results from estimating specification (1).

Figure 2: Presidents and parliaments: macroeconomic outcomes



Histograms illustrating specific country outcomes across our main macroeconomic indicators of interest as an average over the whole sample (1950-2015) for parliamentary and presidential regimes using Bormann & Golder (2013) classification for government structures. The solid lines in each plot represent median outcomes for each metric across all countries.

3.1 Economic growth levels and volatility

Table 3 presents panel regression results estimating the impact of the form of government on rates of annual growth in GDP, utilizing Generalized Least Squares with random effects. We incorporate standard control variables in line with Barro (2007) as regressors for economic growth. For each regression specification, three separate measures are used to represent the form of government: a scale variable with a value of 0.5 were the country is classified in Bormann & Golder (2013) as semi-presidential, 1 if presidential, and 0 if parliamentary; a second specification using the ‘semi-presidential’ and ‘presidential’ classifications from Bormann & Golder (2013) as dummy variables; and a similar specification using the data available from PT(2003), as defined above in Section 2.2.

The relevant control variables comprise of *InitialGDP* which represents the natural logarithm of GDP per capita of a country; *Education* measured by the log of average number of years in education for the population; *Fertility* and *LifeExp* measured by the log of the number of births per women and life expectancy measured at birth, respectively; *GovtSize* defined as the ratio of total government spending to GDP and *ExRateVol* measured as the standard deviation of the nominal exchange rate between the domestic currency and the US dollar. The first four of these variables are measured as at the start of the panel period whereas the final two are taken as averages of the period. Table 3 presents estimation results from two sets of empirical specifications; with a benchmark specification where the control variables are composed of *Initial GDP* and *Education* and an extended set incorporating all further control variables.

Estimation results in Table 2 point to a clear link between constitutional rules and

| Table 3: Economic growth and the form of government | | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Pres | -1.173*** (0.000) | -1.153*** (0.000) | -1.198*** (0.000) | -0.593** (0.037) | -0.622** (0.033) | -0.691** (0.042) |
| Semi-pres | | -0.017 (0.959) | | | 0.151 (0.623) | |
| Maj | -0.562* (0.070) | -0.502* (0.090) | -0.380 (0.215) | -0.094 (0.734) | -0.066 (0.814) | -0.134 (0.657) |
| InitialGDP | -0.818*** (0.001) | -0.794*** (0.001) | -0.800*** (0.002) | -1.371*** (0.000) | -1.375*** (0.000) | -1.375*** (0.000) |
| Education | 3.850*** (0.000) | 3.863*** (0.000) | 2.518*** (0.015) | 0.420 (0.666) | 0.622 (0.536) | 0.827 (0.446) |
| Fertility | | | | -0.697*** (0.000) | -0.644*** (0.000) | -0.509** (0.021) |
| LifeExp | | | | 0.055* (0.090) | 0.062* (0.055) | (0.338) |
| Openness | | | | 0.006** (0.010) | 0.006** (0.015) | 0.008*** (0.007) |
| GovtSize | | | | -2.653 (0.170) | -2.927 (0.144) | -4.094*** (0.025) |
| ExRateVol | | | | 0.000 | 0.000 | 0.001 |
| R ² | 0.294 | 0.292 | 0.339 | (0.568) | (0.435) | (0.175) |
| <i>n</i> | 205 | 205 | 169 | 204 | 204 | 169 |

Dependent variable is the mean annual GDP per capita growth rates across the estimation window. Coefficients are estimates from random effects regression using panels between 1965-1979, 1980-1994 and 1995-2009 including time dummies and a constant (not presented). Results from column (1) and (4) present those using the scale variable of the form of government using Bormann & Golder (2013), in columns (2) and (5) dummy variables for both types of government from the Bormann & Golder (2013), and similar in (3) and (6) for presidential data from PT(2003). The star convention is standard and is as stated in Table 2. P-values of t-statistics are in parentheses where heteroskedastic robust standard errors have been used.

economic growth; presidential regimes reduce the average growth rate of GDP by between 0.6 per cent and 1.2 percentage points, and this effect is statistically significant at one per cent level in the three specifications with fewer control variables, and to five per cent when additional controls are included. That is, presidential regimes consistently achieve lower growth rates than parliamentary regimes; these point estimates reconcile with those in Table 2 and the top left-hand pane in Figure 1.

We repeat the same exercise for the role of regime type on growth volatility, defined as the standard deviation in the rates of annual output growth. Control variables included in this specification are in line with those from above, with additional variables for a measure of democracy (*Polity*) taken from the Polity IV database, and the volatility of the trade openness variable above (*OpenVol*). As can be seen from Table 4, the regime type plays no significant role on the volatility of economic growth. The same holds for the electoral system, except in two specifications, where majoritarian electoral regimes are estimated to result in lower output volatility.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Pres | -0.079 (0.837) | -0.052 (0.893) | -0.246 (0.498) | -0.079 (0.823) | -0.059 (0.868) | -0.359 (0.318) |
| Semi-pres | | 0.415 (0.354) | | | 0.475 (0.239) | |
| Maj | -0.307 (0.433) | -0.245 (0.520) | -0.568** (0.015) | -0.302 (0.413) | -0.236 (0.519) | -0.614** (0.010) |
| InitialGDP | -0.137 (0.356) | -0.103 (0.467) | -0.196 (0.211) | -0.037 (0.830) | -0.001 (0.996) | -0.172 (0.329) |
| Openness | 0.013** (0.047) | 0.013* (0.057) | 0.008** (0.033) | 0.001 (0.875) | 0.000 (0.964) | 0.002 (0.715) |
| Polity | -0.145*** (0.000) | -0.144*** (0.000) | -0.105*** (0.000) | -0.129*** (0.000) | -0.127*** (0.000) | -0.105*** (0.000) |
| OpenVol | | | | 0.086*** (0.003) | 0.088*** (0.002) | 0.046* (0.089) |
| GovtSize | | | | 2.369 (0.312) | 2.139 (0.345) | -0.411 (0.847) |
| ExRateVol | | | | 0.000 (0.679) | 0.000 (0.644) | 0.000 (0.752) |
| R^2 | 0.161 | 0.159 | 0.145 | 0.168 | 0.170 | 0.173 |
| n | 246 | 246 | 194 | 246 | 246 | 194 |

Dependent variable is the standard deviation in annual rates of growth in GDP per capita for the period; all else is as defined earlier.

3.2 Inflation levels and volatility

We now turn to the potential role of the form of government in inflation performance, examining the effects on both the rate and the volatility of inflation. We estimate the specification in (1) where the dependent variable is the mean of the transformed GDP deflator. The transformation is as in Cukierman et al. (1992) where the GDP deflator, π obtained from the World Bank, is transformed using $\pi/(1 + \pi)$ to remove the impact of high inflation outliers; using the raw inflation figures would give undue weight to a few outliers of very high inflation rates. In line with the existing empirical work on inflation, all four specifications in Table 5 share control variables *InitialGDP*, *Openness*, *ExRateVol*. In addition to this, we use a measure first proposed and developed by Cukierman et al. (1992) of central bank independence (*CBI*) where higher levels of independence is anticipated to lead to more favourable inflation outcomes; this variable we reserve for the extended regression specification given the availability of data.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Pres | 0.029* | 0.029 | 0.034* | 0.051** | 0.052** | 0.050** |
| | (0.100) | (0.102) | (0.096) | (0.017) | (0.018) | (0.028) |
| Semi-pres | | 0.003 | | | 0.020 | |
| | | (0.858) | | | (0.285) | |
| Maj | -0.031** | -0.033** | -0.050*** | -0.054*** | -0.055*** | -0.078*** |
| | (0.039) | (0.031) | (0.005) | (0.004) | (0.003) | (0.000) |
| InitialGDP | -0.014** | -0.015** | -0.022** | -0.024*** | -0.024*** | -0.027*** |
| | (0.028) | (0.022) | (0.025) | (0.001) | (0.001) | (0.009) |
| Openness | -0.001*** | -0.001*** | 0.000** | -0.001** | -0.001** | -0.001** |
| | (0.003) | (0.003) | (0.020) | (0.026) | (0.028) | (0.025) |
| ExRateVol | 0.000** | 0.000* | 0.000 | 0.000 | 0.000 | 0.000 |
| | (0.030) | (0.052) | (0.909) | (0.611) | (0.580) | (0.413) |
| CBI | | | | -0.095* | -0.094* | -0.120** |
| | | | | (0.085) | (0.092) | (0.033) |
| R^2 | 0.189 | 0.188 | 0.217 | 0.238 | 0.238 | 0.258 |
| n | 234 | 234 | 148 | 174 | 174 | 145 |

Dependent variable is the average for the period of $\pi/(1 + \pi)$ where π is the annual rate of inflation; all else is as defined earlier.

Consistent with our earlier results, presidential regimes produce inferior outcomes; countries governed by presidential systems observe inflation rates that are on average over six percentage points higher than those under parliamentary regimes.⁸ This effect

⁸Note, in order to convert point estimates on the marginal impact of the form of government (x

is consistent across all specifications, and more so in specifications including the measure of central bank independence. The significance of the coefficients attached to the form of government variable are weakened by the significance of the electoral rule which are found to be more consistently and strongly statistically significant, where countries with majoritarian electoral rules are estimated to achieve lower inflation rates, by between six and nine percentage points, than those with proportional representation. This weakens those results from the form of government variable as there is a high degree of collinearity between these variables, with countries which are parliamentary also more frequently tend towards majoritarian voting systems.

Table 6: Inflation volatility and the form of government

| | (1) | (2) | (3) | (4) | (5) | (6) |
|------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Pres | 0.013 (0.191) | 0.013 (0.170) | 0.014 (0.259) | 0.025* (0.050) | 0.025** (0.055) | 0.016 (0.261) |
| Semi-pres | | 0.019 (0.190) | | | 0.028* (0.086) | |
| Maj | -0.023** (0.017) | -0.021** (0.045) | -0.030*** (0.008) | -0.022* (0.055) | -0.019* (0.095) | -0.038*** (0.003) |
| InitialGDP | -0.019*** (0.000) | -0.018*** (0.000) | -0.018*** (0.009) | -0.022*** (0.000) | -0.022*** (0.000) | -0.020** (0.011) |
| Openness | 0.000 (0.297) | 0.000 (0.268) | 0.000 (0.353) | 0.000 (0.901) | 0.000 (0.977) | 0.000 (0.584) |
| ExRateVol | 0.000 (0.174) | 0.000 (0.132) | 0.000 (0.127) | 0.000 (0.423) | 0.000 (0.535) | 0.000* (0.088) |
| CBI | | | | -0.048 (0.111) | -0.048 (0.100) | -0.070** (0.018) |
| R^2 | 0.153 | 0.156 | 0.158 | 0.237 | 0.230 | 0.222 |
| n | 234 | 234 | 173 | 174 | 174 | 145 |

Dependent variable is the standard deviation for the period of $\pi/(1 + \pi)$ where π is the annual rate of inflation; all variables are as defined earlier.

Table 6 performs the same exercise for the variation in inflation. Parallel to the findings above, inflation volatility is higher under both presidential regimes and proportional electoral systems; however, whereas the results for the voting rule remains strongly significant, those for the form of government are less consistently significant. This, again, is likely to arise from the presence of collinearity between the form of government and the voting rule, and when the regression is run without the latter the former turns out to

say) on the transformed variable for inflation (where $y = \pi/(1 + \pi)$), one must use the chain rule, to get $\partial\pi/\partial x = \partial\pi/\partial y \times \partial y/\partial x = \beta/(1 - y)^2$ where β is the coefficient from the regression and where $\bar{y} = 0.0924$ is applied.

be statistically significant to at least five percent in all six specifications. That is, there is a correlation between the constitutional framework of a country and the volatility in inflation, and the voting rule better predicts this than forms of government.

3.3 Income inequality

We next turn to the effects of the form of government on income inequality which we argue to be a key defining characteristic of societies. For example, income inequality is shown to be an important factor underlying both economic and political instability with clear implications for overall macroeconomic performance (see, for example, Alesina & Perotti 1996, among others). When combined with steadily rising income inequality over the past three decades and its record levels at present, we argue that it is very important to understand whether the form of government plays any role in distributive outcomes (see for example OECD 2015). To the best of our knowledge, our paper is the first to formally examine this relationship.⁹

Estimation results in Table 7 point to a clear impact of the form of government on income inequality; presidential regimes are associated with income Gini coefficients between 16 to 20 percent higher than those of parliamentary regimes. These results reconcile with both of those from Table 2 and Figure 1.

Overall, our results in this section establish that parliamentary regimes produce superior outcomes as compared with those under presidential systems. We find that growth is higher; inflation and its volatility are lower; and income distribution is more equal in parliamentary systems.

3.4 Endogeneity concerns

An important issue in identifying the effects of constitutional rules on macroeconomic outcomes is related to the potential endogeneity of political institutions. The concern is that economic conditions could impact the choice of constitutional forms and thus the causal direction of variables is not straightforward. Such endogeneity issues arise from two main sources: first, the limited in-country variation between forms of government means that statistical inference is based on cross-country analysis; and second, any decision on the form of government is unlikely to be truly exogenous to the political and economic climate

⁹Shugart (1999) is the only other study we know of that links regime type to income inequality albeit informally. By listing the sample countries according to their income inequality, Shugart (1999) points to a strong tendency for presidential regimes to feature high inequality. Gregorini & Longoni (2009) looks at the role of income inequality in the relationship between electoral rules and public consumption and finds that income inequality raises public consumption in countries with proportional electoral systems but has no effect on public consumption in those with majoritarian electoral rule. However, they do not consider the potential implications of the form of government on income inequality.

| Table 7: Inequality and the form of government | | | | | | |
|--|---------------------|---------------------|----------------------|---------------------|---------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Pres | 0.164*** (0.000) | 0.160*** (0.000) | 0.208*** (0.000) | 0.185*** (0.000) | 0.182*** (0.000) | 0.211*** (0.000) |
| Semi-pres | | -0.012 (0.796) | | | -0.007 (0.873) | |
| Maj | 0.077** (0.037) | 0.061 (0.103) | 0.023 (0.593) | 0.067* (0.076) | 0.056 (0.126) | 0.014 (0.747) |
| GovtSize | 0.040 (0.200) | 0.048 (0.134) | 0.002 (0.960) | 0.133 (0.309) | 0.175 (0.188) | 0.152 (0.272) |
| Openness | -0.003 (0.939) | 0.001 (0.971) | -0.018 (0.594) | 0.000 (0.995) | 0.000 (0.916) | 0.000 (0.275) |
| InitialGDP | -0.022 (0.560) | -0.029 (0.453) | 0.034 (0.408) | 0.016 (0.737) | 0.013 (0.788) | 0.083* (0.060) |
| InitialGDP ² | -0.001 (0.437) | -0.001 (0.422) | -0.004*** (0.008) | -0.002 (0.312) | -0.002 (0.300) | -0.005*** (0.001) |
| HumanCap | | | | -0.071* (0.081) | -0.074* (0.072) | -0.087* (0.091) |
| Inflation | | | | 0.007 (0.942) | 0.004 (0.972) | -0.002 (0.978) |
| R^2 | 0.019 | 0.020 | 0.143 | 0.030 | 0.030 | 0.182 |
| n | 209 | 209 | 167 | 192 | 192 | 164 |

Dependent variable is the log of the mean Gini coefficient for income inequality over the period of the panel; all else is as defined earlier.

of the country. The methodology we followed above relies on ‘conditional-independence’, that is, the selection of the form of government is assumed to be random after controlling for all other variables (X in (1)), which may be a too strong assumption. Following PT(2003) we take two remedial actions; instrumental variables estimation and Heckman correction procedure.

Instrumental variables The most widely used strategy in the face of potential endogeneity issues is the use of instrumental variables. In this approach, the bias caused by the selection of the form of government in a given country being non-random is first estimated prior to subsequently estimating the size of the coefficient θ in (1). We follow PT(2003) to adopt our set of instruments: variables indicating the time when the current constitutional form was adopted in the country; language variables representing Western influence in the country; and the latitude of the country.¹⁰ Again, similar to PT(2003) and Rockey (2012) we apply the same instruments as used in the Heckman procedures, explained below. We find that these provide good instruments: first-stage F-tests provide values of a minimum of 32.91 (depending on the data specification in question) and the instruments are excludable from the second stage of the process as suggested by Sargan-Hansen test procedures. Although in general point estimates of the effects of presidential systems on macroeconomic outcomes tend to increase through this instrumental variable approach, the increase in noise involved in the process (through adding in randomness in the first stage) means that the significance of results remains in line with those of Section 3.

Heckman correction estimation technique Another strategy in testing for possible endogenous relationship in the causal direction, as is also utilized by PT(2003), is the Heckman correction procedure. In this method, a potential selection bias in the observations which are present in the regression analysis is controlled for by adjusting estimates for a possible correlation between the random elements of macroeconomic outcomes and the selection of constitutional choices. In the former, variables which are correlated with ‘*Pres*’ in (1) and not the error term ‘*z*’ are used as instruments in a two-stage approach to estimate the link between the constitutional form and the other attributes of each country. In the first stage of a Heckman correction a Probit regression is estimated on constitutional selection. Similar to PT(2003), we use dummy variables measuring the date of when the constitution within a country was established, using dummy variables for periods between before 1920, between 1921 and 1950, and beyond 1950; ‘cultural influence’ variables whether the country was a colony of Spain, the UK or another entity

¹⁰A full list and description of instrumental variables applied can be found in Appendix A.

and the proportion of the population who speak English or another European language; and a variable measuring the distance of the capital of the country from the equator. The second stage of the process is to estimate the effect of constitutional choice on the dependent variable of interest. When performing these tests, the quantitative and qualitative results remain in line with those reported above. The null hypothesis that the correlation coefficient between the random parts of constitution selection and performance is zero cannot be rejected in the majority of cases, and as such similar estimates prevail. In general, the results with respect to the impact of presidential regimes on macroeconomic performance get stronger (both in terms of estimated coefficient and associated statistical significance) to those presented above; however, the results and interpretations are still in line with those above (not reported).

3.5 Further sensitivity checks

Our main set of results have been tested for sensitivity above through utilizing different country classifications, different control variables and through instrumental variable and Heckman correction techniques. In this sub-section we implemented a number of other sensitivity checks; using panels still over fifteen years but starting in 1960 (as opposed to 1965 above) leads to quantitatively similar results for all dependent variables in the analysis. Point estimates can get larger, especially for growth and growth volatility coefficients; however, the fewer observations also leads to relatively weaker levels of significance. The results from above are also not sensitive to ten year panels starting in 1950, with similar results obtained from these shorter time periods.

4 When do presidential regimes perform worst?

Having established the relationships between the form of government and macroeconomic performance, we now turn to examining a number of mechanisms through which these linkages are likely to work. It is widely understood that to evaluate the consequences of presidential versus parliamentary regimes it is crucial to understand the wider institutional context in which they operate (see for example Elgie 2005). In what follows, we present a set of arguments mapping the features of the institutional structure to economic performance, and set out how we approach them in our analysis, in four separate categories.

4.1 Alternative mechanisms

The nature and the quality of democracy It has long been recognized that both the form and the quality of democracy play a key role in political and economic outcomes. In a highly influential piece, Lijphart (1984) carefully distinguishes between consensus and majoritarian democracies, which are characterized by, respectively, inclusive and compromising features versus exclusive and competitive ones. As such, consensus democracies are seen as a *kinder and gentler* form of governance, where *as many people as possible will do the governing*. Clearly, consensus democracies imply wider representation and broader participation especially of the minorities (Bormann 2010). Indeed, Lijphart (1999) finds that consensus democracies have a better record across a number of macroeconomic performance indicators. Conventional wisdom, however, points to a favourable effect of majoritarian democracies on economic performance on account of decisive and more effective policy-making that is argued to be their defining feature. In sum, the form of democracy is seen as a crucial determinant of economic performance, a proposition also put forward by Persson (2005).

The quality and the inclusiveness of institutions In addition to the arguments presented for democracy above, the quality and the inclusiveness of institutions are also seen as important channels through which governance impacts on policy. Indeed, the role of institutions on various political and economic outcomes has been one of the most widely explored issues in economics since the 1990s (see for example Rodrik et al. 2004, Acemoglu et al. 2005, among others). The quality of institutions within which individual government systems operate would also be expected to impact upon the economic consequences of presidential versus parliamentary regimes. For example, authoritarian regimes with limited public deliberation are found to result in inferior outcomes (Chandra & Rudra 2015).

Legislative power and control As is argued above, given the powerful nature of the presidential office the strength of the checks and balances is viewed as a key factor in mitigating the potential harmful effects of presidentialism (Shugart & Carey 1992). For example, checks and balances are argued to constrain the winner-takes-all tendencies inherent in presidential systems (see, for example, Mainwaring & Shugart 1997). Hence presidents with limited legislative power are seen as likely to strengthen the viability of these regimes. It is not surprising, therefore, that the separation of power that enables the allocation of power among different office holders, thereby creating checks and balances is seen as the defining feature of presidential regimes. This suggests that distribution of power matters; in systems where presidents hold only limited power over legislation or a

lack of veto power may produce more preferential outcomes for presidential regimes.

Electoral system and the number of parties Whether a presidential regime operates with a two or a multiparty system is seen as another key factor in its viability. Presidentialism with a fractional multiparty system is viewed as a particularly difficult combination and is seen as an obstacle to stable democracy (see for example Mainwaring 1993, Mainwaring & Shugart 1997). This argument is based on the premise that multipartism makes it more difficult for the president to be involved in effective dialogue on policy issues and to build inter-party coalitions. A greater number of parties is also expected to increase ideological polarization and the likelihood of executive/legislative deadlock. Electoral systems restricting the number of parties are therefore expected to improve outcomes under presidential systems. This is likely to be the case under majoritarian single-district electoral rules rather than with proportional representation. Cheibub (2003), however, points to the lack of evidence on the costs of proportional representation under presidentialism.

4.2 Empirical results

To test for the relationships described above, we re-estimate the specifications in Tables 3-7, with the addition of a rich set of proxies for each of the four separate mechanisms. These new estimations include, in addition to the previous set of regressors, a control variable measuring the importance of the each mechanism as well as an interaction variable with the form of government; it is the direction and significance of this interaction variable which tests for the presence of the hypothesised mechanisms. Given the very large number of resulting regressions (six estimations for our five separate macroeconomic outcomes for each new variable in the analysis) we only report a summary of our findings, listed in Table 8.

In Table 8, the first column lists the names the four category of factors that are likely to impact upon the role of government in economic outcomes, as outlined above, and the second column lists the individual indicator used in each category. The remaining columns represent the change in the estimated impact of presidential regimes on each macroeconomic performance measure that is estimated in each case. The entries ‘Mitigating’ (‘Amplifying’) refer to the cases where an increase in the relevant indicator, specified by the entry in that row, mediates (amplifies) the unfavourable effect of presidential systems on the specific measure listed at the top of that column.

Our findings in this section can be summarized as follows. With respect to the form and the quality of democracy, we utilize a range of measures such as the *Polity* index, age of democracy, indicators of participatory and electoral democracy, and a proxy for

Table 8: Summary of empirical results: alternative mechanisms

| Hypothesis | Variable | Growth | Growth volatility | Inflation | Inflation volatility | Income inequality |
|-------------------|-----------------------|--------------|-------------------|--------------|----------------------|-------------------|
| Democracy | <i>Polity</i> | Inconsistent | Inconsistent | Mitigating | Mitigating | Inconsistent |
| | <i>DemAge</i> | Inconsistent | Inconsistent | Mitigating | Mitigating | Inconsistent |
| | <i>PartDem</i> | Inconsistent | Inconsistent | Mitigating | Mitigating | Inconsistent |
| | <i>ElecDem</i> | Inconsistent | Inconsistent | Mitigating | Mitigating | Inconsistent |
| | <i>MediaFree</i> | Mitigating | Inconsistent | Mitigating | Mitigating | Mitigating |
| Institutions | <i>ParComp</i> | Mitigating | Mitigating | Mitigating | Inconsistent | Amplifying |
| | <i>RuleOfLaw</i> | Mitigating | Inconsistent | Inconsistent | Inconsistent | Amplifying |
| Power and control | <i>Xconst, PolCon</i> | Mitigating | Inconsistent | Mitigating | Inconsistent | Mitigating |
| | <i>JudCon</i> | Mitigating | Inconsistent | Mitigating | Inconsistent | Mitigating |
| Electoral system | <i>Majoritarian</i> | Mitigating | Inconsistent | Mitigating | Mitigating | Mitigating |
| | <i>NumParties</i> | Mitigating | Inconsistent | Mitigating | Inconsistent | Amplifying |

Results obtained from using a variety of interaction variables as predicted to be important in the existing literature. In all instances, both the presidential variable and the nominal interaction variable is also included. In the above, the results from the six specifications from the initial analysis is presented: when no consistency is identified in the interacting relationship ‘inconsistent’ is noted; when this relationship is of a mitigating nature (that is, if higher values of the interaction variable mediates the poorer outcomes associated with presidents) ‘mitigating’ is noted; and when the reverse is true ‘amplifying’ is recorded. Cells which are shaded represent those results which are significant to at least 10%.

media freedom. Clearly, an enhancement of democracy through the *Polity* index and the age of democracy lessen the unfavourable impact of presidentialism on inflation and its volatility while expanding media freedoms appear to curtail the negative growth effects associated with presidential regimes.

Regarding the role of the quality and the inclusiveness of institutions, our proxies are *ParComp*, measuring the degree to which political participation is free from government control (data obtained from the Polity IV database), and *RuleOfLaw* index, a widely used indicator of institutional quality. Results presented in Table 8 confirm that an improvement in public deliberation and the rule of law moderate the unfavourable effects of presidential regimes on the volatility and the rate of growth, respectively.

We explore the role of checks and balances by incorporating measures of legislative control and judicial constraints. The estimation results listed in Table 8 suggest that a tightening of both legislative and judicial constraints curtail the negative implications of presidents' on both inflation and income inequality.

We also test for the likely role of the electoral system and the number of parties in our specifications in Table 8. Majoritarian electoral rules are seen to curtail presidential systems' negative impact over growth, inflation, inflation volatility and income inequality. In contrast, a rise in the number of political parties is also found to improve growth and inflation outcomes while worsening income distribution ones.

In sum, we find that outcomes under presidential regimes improve; when the presidents have: weak legislative power; when the institutional quality is high; when the rule of law is respected; when there are inclusive institutions; and when there are advanced political rights and civil liberties. In general, we note that the detrimental effects of presidential regimes on economic outcomes are not reversed in any of the cases considered in Table 8.

We must, however, note a number of empirical regularities that makes strong generalizations difficult. Frequently our evidence supports the respective hypotheses that the interaction variables are found to be mediating the negative effects of presidential systems for economic growth and the levels and the volatility of inflation.¹¹ In spite of the large levels of support from the point estimates of these hypotheses, the results are not consistently statistically significant. This may be explained by the smaller number of observations within these regression specifications with the availability of the interacting variables. The remainder of this insubstantial statistical significance may also be related to the perspective that the relationships between constitutions and macroeconomic outcomes are complex and it is not always clear-cut to establish why certain forms of

¹¹The results for growth volatility do not provide support for the hypotheses, and those from inequality suggest inconsistencies with these overall mediating affects, where in three (of five consistent set of results) occasions the interacting variable can be found to be amplifying the higher levels of inequality found under presidential systems.

government are associated with certain outcomes (see for example Gerring et al. 2009).

5 Conclusions

This paper examined the link between the form of government and macroeconomic performance. By using data from a large number of countries across 1950-2015, we estimate relationships between a set of performance measures and government systems. Our set of measures include the level and the volatility of output growth and inflation as well as income inequality. We show that there are clear differences between outcomes under presidential versus parliamentary regimes. More specifically, we find that presidential regimes consistently produce inferior outcomes; output growth is between 0.6 and 1.2 percentage points lower; inflation is approximately six percentage points higher and income inequality is sixteen to twenty percent higher under presidential regimes, relative to those under parliamentary ones.

We have also explored whether there are circumstances under which the unfavourable impact of presidentialism on the economy is reversed. To this end, we examined a number of institutional factors within which government systems operate. We find that presidential regimes are worse for the economy in less established democracies with limited participation and government controlled media; where the rule of law is not respected; where the presidents have extensive legislative powers and in the absence of judicial controls on the president, particularly in the presence of electoral systems with proportional representation.

Why do presidential systems produce worse economic outcomes? Even with our analysis of the potential mechanisms through which the form of government is expected to impact on the economy, it is not straightforward to answer this question. One explanation may be related to the too powerful nature of the presidential office, leading to greater fluctuations in the economy with the change of office. Such volatility is evidenced by sharper electoral cycles under presidential regimes. Another potential explanation may be that presidential regimes are not conducive to consensus building which is known to have favourable effects on the economy. We believe that examining potential sources of why presidential regimes fare worse than parliamentary ones is an important task for future research.

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A Appendix

TABLE A1: Data appendix (variables in order of appearance)

| Variable | Description and Source |
|-----------------------|--|
| Dependent variables | |
| GDP growth | Annual growth rate of GDP per capita; data obtained from the World Bank. |
| GDP growth volatility | Standard deviation of 'GDP growth' above over the panel period. |
| Inflation | GDP deflator as an annual percentage taken from the World Bank. |
| Inflation volatility | Standard deviation of 'Inflation' above over the panel period. |
| Gini coefficient | Gini coefficient measure of income inequality; data obtained from World Income Inequality Database. |
| Independent variables | |
| Pres | A binary measure determining if a country is operating under a presidential regime; data obtained from both Bormann and Golder (2013) and Persson and Tabellini (2003). A more detailed discussion of the definitions applied can be found in Section 2.2. |
| Semi-Pres | A binary measure determining if a country is operating under a semi-presidential regime; data obtained from Bormann and Golder (2013). A more detailed discussion of the definition applied can be found in Section 2.2. |
| Maj | A binary measure indicating if a country is operating under a majoritarian voting system; data obtained from Bormann and Golder (2013). |
| InitialGDP | Log of the GDP per capita (expressed in current US Dollars) at the start of the panel period; data obtained from the World Bank. |
| Education | Metric of education measured as the average total number of years of education; data obtained from Barro & Lee (2013). |
| Fertility | Log of the fertility rate expressed as the number of births per woman; data obtained from the World Bank. |

| | |
|-----------|--|
| LifeExp | Log of the life expectancy at birth in years; data obtained from the World Bank. |
| Openness | The sum of imports and exports expressed as a fraction of GDP; data obtained from the World Bank. |
| GovtSize | Share of government consumption in total GDP; data obtained from Penn World Tables. |
| ExRateVol | Standard deviation of the exchange rate expressed as a fraction against the US dollar over the panel period; data obtained from Penn World Tables. |
| Polity | Measure of democracy within a given country on a (-10,10) scale; higher values relating to higher degrees of democracy and lower values indicating greater degrees of autocracy. Data obtained from the Polity IV Project. |
| OpenVol | Standard deviation of 'Openness' above over the panel period; data obtained from Penn World Tables. |
| CBI | Measure of central bank independence obtained from Cukierman et al. (1992), Polillo & Guillén (2005) and Crowe & Meade (2008), all of whom use the same methodology. |
| HumanCap | Index of human capital per person, based on years of schooling and returns to education; data obtained from the Penn World Table. |

Instrumental variables

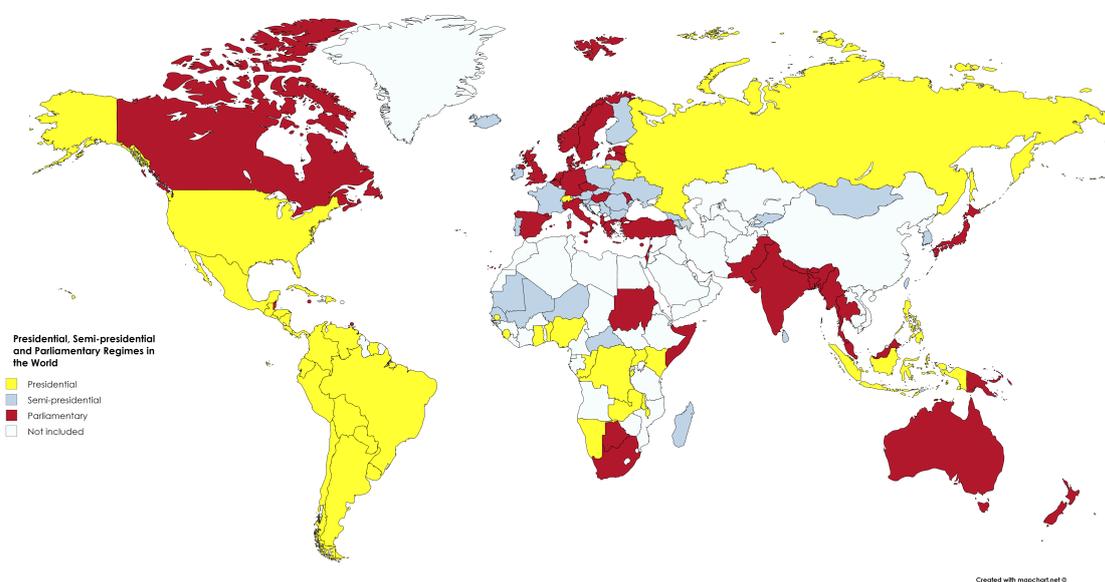
| | |
|----------|---|
| DemAge | Measure of the length of time in which the Polity score (see above) has been positive non-stop; that is, how long a country has been consistently operating within a democracy. Data obtained from the Polity IV Project. |
| FrankRom | Predicted trade share of an economy, based on a gravity model of international trade that only uses a country's population and geographical features adapted from Frankel & Romer (1996); data obtained from Hall & Jones (1999). |
| EurFrac | Fraction of the country which speaks one of the main European languages; data obtained from Persson and Tabellini (2003). |
| EngFrac | Fraction of the country which speaks English; data obtained from Persson and Tabellini (2003). |
| ColEsp | Binary variable determining if the country was colonised by Spain; data obtained from Persson and Tabellini (2003). |

| | |
|----------|--|
| ColUK | Binary variable determining if the country was colonised by the United Kingdom; data obtained from Persson and Tabellini (2003). |
| ColOther | Binary variable determining if the country was colonised by another country; data obtained from Persson and Tabellini (2003). |
| Latitude | Latitude of the country's capital city; data obtained from Persson and Tabellini (2003). |

Interaction variables (where not discussed above)

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|------------|--|
| PartDem | A measure of the level to which democracy is participatory within a country; data obtained from Varieties of Democracy database. |
| ElecDem | A measure of the level to which the ideal of electoral democracy is achieved; data obtained from Varieties of Democracy database. |
| MediaFree | The degree to which media is free from government; data obtained from Varieties of Democracy database. |
| ParComp | A variable which measures the extent to which alternative preferences for policy and leadership can be pursued in the political arena; data obtained from Polity IV Project. |
| RuleOfLaw | A variable measuring agents perceived confidence in the rule of law of a country, in particular over contract enforcement, property rights, the police and the courts; data obtained from the Worldwide Governance Indicators. |
| Xconst | Measure of constraints on chief executive where lower numbers represent fewer constraint; data obtained from the Polity IV Project. |
| PolCon | Measure the feasibility of change in policy given the structure of a nation's political institutions and the preference of the actors that inhabit them; data obtained from the POLCON database. |
| NumParties | Effective number of electoral parties in an election where an average is taken over the course of the panel; data obtained from Bormann and Golder (2013). |

Figure A1: Presidential, semi-presidential and parliamentary regimes



Map illustrating parliamentary, presidential and semi-presidential regimes using Bormann & Golder (2013) classification for government structures.
