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Georg Man

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POLITICAL COMPETITION AND GROWTH IN GLOBAL PERSPECTIVE: EVIDENCE FROM PANEL DATA

GEORG MAN*

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The present paper investigates the relationship between political competition, its components (executive versus legislature), and economic growth in international panel data. The results suggest the presence of a statistically significant nonlinearity between political competition (overall and in the executive) and growth in the form of a U-shape. In contrast, political competition variables do not exert statistically significant effects on growth in linear specifications. These results withstand an array of extensions and robustness checks, and provide international panel data evidence complementing work conducted for national and cross-sectional contexts.

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Key words: economic growth, market power, panel data, political competition

I. Introduction

An international perspective on the link between political competition and economic growth appears more than warranted. Political competition is a global phenomenon which is by no means restricted to democratic polities where free and fair elections take place on a regular basis, see Mulligan and Tsui (2006). Political competition can be broadly defined as a non-violent contest for political influence and power, see Marshall and Jagers (2009), or as competition by leaders for citizens' allegiance, see Pinto and Timmons (2005). The awarding of the 2015 Nobel Peace Prize to the National Dialogue Quartet of Tunisia - the Jasmine nucleus of the Arab Spring - has also focused public attention on the importance of non-violent contests for power.

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Existing work mostly focuses on national contexts for the Western Democracies, e.g. Besley et al. (2010), or Alfano and Baraldi (2011). Taking existing theoretical research as the point of departure, the present study is an empirical exercise pursuing the following agenda: Firstly, it asks whether there is a statistically significant and economically important link between political competition and aggregate economic growth in international, country-level panel data. The panel perspective is important as it can deal with a range of econometric issues encountered in international data. Secondly, I ask whether statements about the relationship between competition and growth at the international level can form the basis for recommendations relating to institutional design.

Because political competition is a complex concept, the present study not only considers the impact on growth of overall political competition but also of different components of competition. When it comes to preparing a successful and economically viable institutional reform, it matters a great deal which aspect of political competition affects the economy, how exactly, and how much. I use for analysis the major components of political competition relating to the different political sub-systems of a polity, namely the executive versus the legislature.¹ The aim is to get a nuanced picture of which specific aspects of political competition matter, opening a black box.

Besley et al. (2010) investigate the impact of political competition on growth in the United States: The authors first develop a theoretical model of political competition through elections. Competition induces business-friendly economic policies (tax cuts and infrastructure spending) and prevents the support of small, special interest groups at the expense of the general economy. These policies translate into faster growth. The predictions are tested with panel data on the US states; for most specifications, the authors consider the period 1929-2001 and estimate a fixed effects model. Political competition is operationalized via a measure which utilizes the vote share.² Besley et al. (2010) find that political competition leads to more pro-business policies and has a positive and sizeable effect on growth.

Alfano and Baraldi (2011) analyze the impact of political competition on economic growth for 20 Italian regions in the 1980-2008 period. Political

¹ Elements of these sub-systems are also taken into account, e.g. checks and balances.

² Namely, an estimate of the model parameter κ is used which captures the composition of the electorate, based on the average vote share of the Democrats; higher values of κ stand for more political competition.

competition is measured by the normalized Herfindahl index of the concentration of votes. The primary objective is to search for an inverted U-shape between competition and growth, which the authors can indeed confirm using dynamic panel estimators.

An empirical contribution is Pinto and Timmons (2005) who look at the impact of political competition on factor mobilization, human capital, and efficiency for around 90 countries; the focus is on levels rather than growth rates. Political competition is primarily measured using an index of democracy taken from the Polity project database.

Mulligan and Tsui (2006) model political competition as monopolistic competition; the key driving force is the threat of entry and its effect on the value of leadership. What makes this model appealing is the general modelling of political competition: Based on the distinction between degree versus means of political competition, the authors do not necessarily refer to a specific mode of competition (e.g. elections) - in contrast to the Besley et al. (2010) paper.³ The article by Acemoglu and Robinson (2006) deals with political competition and technological advance. Parente and Prescott (2000) establish theoretically an explicit link between political competition and economic competition, focusing on the protection of vested interests and incumbent firms. Hence, the contribution provides a rationale for empirically assessing the importance of political versus economic competition.

Complementing the existing literature, my results are obtained from an international panel with over 10,000 country-year observations covering 187 countries for the period 1975-2007. I emphasize the panel approach and the use of the corresponding econometric techniques, so the present study aligns with existing research on the topic such as Besley et al. (2010). Also, the panel approach has advantages over the use of pure cross-section data.⁴

In a broad sample of countries, only two indicators of political competition emerge as significant drivers of aggregate growth: a measure of overall political competition on the one hand, and a component measure (executive recruitment) on the other hand. For both indicators, the partial relationship with growth takes

³ This suggests that, at least in principle, a non-democratic system with competing power centers can exhibit more intense political competition than a democracy where two major political parties form a long-standing coalition.

⁴ Measures of political competition come from large-scale international data projects explicitly aiming at operationalizing political competition at the international level.

the form of a U-shape: An increase in political competition first reduces growth, but after a certain degree of competition has been reached, growth picks up and the relationship gets positive.⁵

Taking the results for the two indicators together, it can be presumed that the component executive recruitment competitiveness is an important factor behind the performance of the overall competition measure, and so the two indicators deliver a consistent picture. The specific nonlinear shape found here does not permit simplistic “competition is good, competition is bad” conclusions. It can be interpreted in several ways, and I discuss several possible explanations, as well as the difference in results across the range of political competition measures.

The implications of the present study are twofold. Firstly, out of several political competition variables tested and after controlling for other political factors such as checks and balances, only two variables deliver statistically reliable and consistent results. These variables are those that are most robust to the wide spectrum of politico-institutional arrangements encountered across the world, thus well-suited to identify an effect on growth. The scope for making statements about the link between political competition and economic growth based on international data is therefore limited — hence the evidence appears fairly agnostic. Secondly, results obtained at the national level do not appear to generalize to the international level. Care should therefore be taken when formulating general policy or institutional design recommendations based on results obtained for specific, national contexts.

Section II lays out the panel approach to estimation and describes the dataset. Main results are presented in Section III, while Section IV considers extensions and robustness. Section V concludes.

II. Estimation and data

A. Empirical strategy

The relationship between political competition and growth is first analyzed using the following *linear* panel regression equation:

$$y_{it} = x_{it} \beta_x + Z_{it} \beta_z + u_{it}, \quad (1)$$

⁵ An additional result is that *financial* sector competition is also important for economic growth — more financial market competition fosters growth.

where the subscript refers to cross-sectional unit (country) i in time period t ; y_{it} is the dependent variable (growth of GDP per capita), x_{it} is a political competition measure, Z_{it} is the group of controls, and u_{it} is the error term. The data comprises observations on a relatively small number of units, it is thus appropriate to use the fixed effects (FE) model, see, e.g., Wooldridge (2002). The FE model deals with unobserved time-invariant heterogeneity presumed in international data and is also the primary estimation technique used by Besley et al. (2010) in their contribution.⁶

Besides the linear benchmark, I estimate a quadratic specification with respect to the political competition measure.⁷ The estimation strategy adopted throughout the present study is thus as follows: The focus explanatory variables are the political competition variables. For each of these, I formulate a model including the political competition variable, as well as the control variables, and estimate the model using a linear respectively quadratic specification.

B. Dataset

The data comprises observations on 187 countries for the time 1975-2007. This interval is due to the availability of international data on political competition and an interesting period in modern history as regards the political arena across the world. Table 1 describes the dataset, borrowing from my previous work. The use of panel data ensures a sufficient number of observations and aligns with existing studies for national contexts like Besley et al. (2010). The main results are based on the 5-year-intervals version of the data because this periodicity is well-suited for growth analyses and widely used in the literature; alternative periodicities are considered as robustness check.

The dependent variable is the growth rate of real GDP per capita. There are two groups of explanatory variables — the controls versus political competition

⁶ My results are robust to the inclusion of time fixed effects and trends. The estimations and tests are carried out with the Gretl software, see Cottrell and Lucchetti (2012). Robust covariance matrix estimation is employed to obtain heteroskedasticity-robust standard errors following Beck and Katz (1995). Statistical testing and further considerations speak in favour of the FE model as compared to other estimators.

⁷ Nonlinearities are not the focus of the present paper; the quadratic specification serves the purpose of exploring a richer set of potential predictions (as is typically the case for nonlinear models) which can then be related to theoretical arguments.

variables. The controls are in line with the growth literature using international data: I include lagged income, the investment share, educational attainment, the population growth rate, and a proxy for economies' openness. These are important factors affecting growth and introduced into the econometric model to isolate the impact of political competition on growth.⁸

Political competition is typically measured in either of two ways: on the one hand, it can be operationalized by (sets of) primarily institutional characteristics; on the other hand, the literature employs vote or seat share variables. In order to appreciate the concept's multidimensional nature, I test seven political competition measures.

The two key institutional variables are *EXREC* and *POLCOMP*. The first variable represents executive recruitment and is taken from the Polity IV database; on a scale from 1 to 8, higher values reflect more political competition.⁹ The variable combines information on the openness (possibilities to attain positions in the executive), regulation (existence of established modes of power transfer), and competitiveness (equality of opportunity to attain positions) in executive recruitment, and conveys information on entry barriers into the political marketplace. The second variable, *POLCOMP*, is a composite measure of overall political competition that ranges from 1 to 10 (higher values indicating more competition). The variable combines information on the competitiveness of political participation with information on the regulation of political participation (existence of rules governing the articulation of political preferences).¹⁰ I use a range of other political competition measures to assess robustness.¹¹

⁸ Additional material containing details of the data, measurement of political competition, econometric aspects, and robustness is available upon request.

⁹ In a linear regression framework, a positive sign of the coefficient on *EXREC* would imply that political competition fosters economic growth.

¹⁰ The importance of the ingredient information utilized in constructing *EXREC* and *POLCOMP* is also scrutinized. I have checked the variable *XRCOMP* which refers specifically to the competitiveness of executive recruitment, and *PARCOMP* for the competitiveness of political participation. Taking into account the components, neither changes the results nor delivers new insights, however.

¹¹ The other institutional variables tested are *LIEC* and *EIEC*. The first variable is the legislative index of electoral competitiveness; higher values indicate stronger political competitiveness within the legislature. The second variable is the executive index of electoral competitiveness. These institutional measures therefore refer to the central sub-systems of a polity, namely the executive versus the legislature.

Table 1. Description of dataset

Variable	Description	Source
GRGDPC	Growth rate of real GDP per capita.	Penn World Table 6.3
LNRGDPCH	Logarithm of real GDP per capita.	Penn World Table 6.3
KI	Investment share of real GDP per capita.	Penn World Table 6.3
LSC	Educational attainment (percentage of "secondary school complete") in the total population aged 25 and over.	R. Barro and J. Lee
POPGROWTH	Growth rate of population.	Penn World Table 6.3
ECCGLOB	The KOF economic globalization index (higher values indicate higher degree of economic globalization of country).	A. Dreher
LEC	Legislative index of electoral competitiveness (higher values indicate stronger political competition).	Database of Political Institutions
EIEC	Executive index of electoral competitiveness (higher values indicate stronger competition.)	Database of Political Institutions
DURABLE	Count of the number of years since the most recent regime change.	Polity IV
STABNSLAX	Measure of political stability; percentage of veto players that drop from government (higher values indicate more <i>unstable</i> polity).	Database of Political Institutions
POLCOMP	Composite, summary measure of political competition (higher values indicate stronger competition).	Polity IV
EXREC	Composite measure of executive recruitment (higher values indicate stronger political competition).	Polity IV
HERFGOV	Herfindahl index government, calculated as the sum of the squared seat shares of all parties in the government.	Database of Political Institutions
MAJ	Margin of majority (fraction of seats held by the government).	Database of Political Institutions
NUMVOTE	Total vote share of all government parties.	Database of Political Institutions
CHECKSLAX	Measure of checks and balances on government decision makers; captures number of multiple veto players in the political process (higher values indicate stronger checks and balances).	Database of Political Institutions
XCONST	Indicator of institutional constraints on chief executive powers; alternative measure of checks and balances (higher values indicate stronger checks and balances).	Polity IV
COMP1	Economy-wide degree of goods market competition, calculated as the ratio of the price level of investment divided by the price level of GDP (higher values indicate less competition).	Penn World Table 6.3
SPREAD	Interest rate spread (lending rate minus deposit rate).	World Development Indicators

Notes: In the column labelled "Source", the following conventions are used: Penn World Table 6.3 stands for Heston et al. (2009), R. Barro and J. Lee stands for Barro and Lee (2000), A. Dreher stands for KOF Swiss Economic Institute (2010), Database of Political Institutions refers to World Bank (2008) and is further described in Beck et al. (2001), Polity IV stands for Marshall and Jaggers (2009), J. Fischer stands for Fischer (2008), and, lastly, World Development Indicators refers to World Bank (2010).

As opposed to the institutional variables, three seat respectively vote share measures are tested. The variable *HERFGOV* (“Herfindahl index government”) closely resembles the market share utilized in empirical Industrial Organization to capture economic competition via static concentration measures. The variable is the sum of the squares of the seat shares of government parties and ranges between 0 and 1; a higher value is taken to reflect more concentration and less competition. The margin of majority (*MAJ*) and the total vote share (*NUMVOTE*) both relate to the relative power of the government in terms of seats or votes; higher values of either variable imply more power in the hands of the government. However, since free and fair elections only take place in very few countries and due to differences in voting systems, measuring competition in a broad sample of countries via seat or vote share variables is much less adequate than in national contexts where such variables are typically used, see, e.g., Besley et al. (2010). Given this, and in order to exploit the variation in international data, my analysis does not primarily rely on vote share variables.

III. Main results

A. Political competition and economic growth

Only two political competition variables emerge as statistically significant determinants of growth, and do so only in the quadratic specification. Table 2 reports the estimates for the measure of executive recruitment (*EXREC*) and for the overall competitiveness within the political system (*POLCOMP*). According to columns (2) and (6), in the FE model, either competition measure and its squared counterpart are highly statistically significant, both individually and jointly (at the 1% level). This result receives further support from the good performance of the controls.¹²

¹² All controls have the presumed signs and are highly significant. The coefficient on lagged income is negative, which constitutes evidence in favour of income convergence in line with the panel growth regressions literature. The positive impact on growth of the investment share also puts the results on a solid foundation: It suggests that political competition affects growth beyond the impact on the incentives to invest. The results from the Hausman (1978) test favour the FE model over the random effects model.

Table 2. Baseline results for the EXREC and POLCOMP variables (full sample)

Variable	(1) Linear	(2) Quadratic	(3) Linear	(4) Quadratic	(5) Linear	(6) Quadratic	(7) Linear	(8) Quadratic	
EXREC	0.0005 (0.0015)	-0.0178 *** (0.0068) 0.0017 *** (0.0006)	0.0016 (0.0099)	0.1167 ** (0.0592) -0.0107 ** (0.0051)	-	-0.0079 ** (0.0031) 0.0008 *** (0.0003)	-0.0056 (0.0072)	0.0078 (0.0225) -0.0014 (0.0021) -0.1829 *** (0.1175) 1.3968 *** (0.2762) 0.4311 (0.2885) -0.2146 (1.2100) 0.3079 *	
POLCOMP					0.0005 (0.0009)				
POLCOMP_SQR									
LNRGDPCH[-1]	-0.0529 *** (0.0131) 0.0982 ** (0.0445) 0.0659 *** -0.4025 ** (0.1593) 0.1049 *** (0.0166)	-0.0536 *** (0.0126) 0.0904 ** (0.0429) 0.0677 *** -0.4037 ** (0.185) 0.1005 *** (0.0167)	-0.1972 *** (0.1168) 1.3700 *** (0.2733) 0.4578 - (0.2855) -0.1111 - (1.2533) 0.2402 - (0.1639)	-0.1874 *** (0.1156) 1.4526 *** (0.2730) 0.4802 * (0.2738) 0.0143 - (1.2237) 0.2424 - (0.1617)		-0.0525 *** (0.0129) 0.1001 ** (0.0440) 0.0635 *** (0.0198) -0.3908 ** (0.1675) 0.1026 *** (0.0178)			
LSC									
POPGROWTH									
ECCLOB									
Observations	549	549	430	430	549	549	430	430	
Countries	119	119	119	119	119	119	119	119	
R-squared	0.4071	0.4152	0.4077	0.4221	0.4077	0.4221	0.4077	0.4221	
Hausman test p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Notes: Columns (1), (2), (5) and (6) show results from the FE approach, while the other columns show the Arellano-Bond Generalized Method of Moments estimator. Statistically significant results from the Hausman test favour the FE approach over the random-effects estimator. For each variable, the table entries contain: the coefficient estimate; statistical significance information (three asterisks denote 1% significance level, while joint significance is marked by a grey area); finally, Beck and Katz (1995) panel-corrected standard errors in parentheses.

A higher value of either *EXREC* or *POLCOMP* reflects more intense political competition. In the quadratic specification, the positive estimated coefficient on the squared terms corresponds to a U-shaped partial relationship between political competition and growth.¹³ That is, an increase in political competition is initially accompanied by a reduction in growth; after the intensity of competition has surpassed a threshold, however, the association turns positive. Possible theoretical explanations for this nonlinear effect of political competition on growth are offered below.

While the variable *EXREC* refers to executive recruitment, i.e., a specific sub-system of a polity, *POLCOMP* represents an overall measure of political competition. The finding that both variables are robustly significant in a quadratic specification and that both display a U-shape can be interpreted as follows. Firstly, the result for *POLCOMP* suggests that overall, the partial relationship between political competition (measured via a summary index containing many aspects of the concept) and aggregate economic growth has the form of a U-shape. Since by construction, a given degree of *POLCOMP* will typically reflect quite varied institutional arrangements, the information conveyed is not very specific. However, and secondly, combining with the result for *EXREC* provides a clue as to which specific component of political competition could be behind the U-shape — namely competition in executive recruitment, of which the partial relationship to growth also follows a U-shape.¹⁴ The results for the two variables thus present a consistent picture.

The other subset of political competition variables — mainly serving as robustness check — are the vote (*NUMVOTE*) respectively seat shares (*HERFGOV* and *MAJ*). The working assumption of this variable type being problematic in a broad sample of countries is in fact borne out by the regression results: There is no systematic pattern (with respect to statistical significance and/or stability of coefficients) for any of these variables, which implies a lack of robustness.

¹³ The U-shape result is consistent across alternative specifications, extensions, and subsamples of the data. The quadratic specification is potentially sensitive to outliers, see, e.g., Montinola and Jackman (2002), or Strulik and Sikandar (2002), but outliers do not drive the results in the present case.

¹⁴ It is important to ask why executive recruitment is the only component variable that is statistically significant. One explanation could be that, in a broad sample of countries, many observational units display a low degree of political competition respectively are to be classified as authoritarian. Hence, the legislature does not really play an important role while executive turnover (at least in the form of the threat of entry) is fairly ubiquitous.

The above results are heterogeneous across the spectrum of political competition measures. This can be rationalized especially with reference to the broad international vista of the present study. Intuitively, in such a context, statistically reliable findings will typically be obtained only for those competition measures that are most robust across the wide range of political systems encountered across the globe. As pointed out already, only few countries hold free and fair elections and possess relatively independent polity subsystems, in particular a legislature. Hence, seat and vote share variables and component measures focusing on the legislature will not be sufficiently informative, presumably. In contrast, competition within the executive applies to virtually all polities, and should also translate into overall competition measures. In fact, Mulligan and Tsui (2006) stress the contestability of the political marketplace as a key feature of political competition, irrespective of the specific institutional arrangements.

And indeed, the present analysis shows that the executive recruitment measure emerges as highly statistically significant. In this sense, *EXREC* represents a basic and robust measure of political competition in the international context. The measure therefore appears well-suited to capture political competition across a wide range of institutional arrangements, both conceptually and factually. Given this, two more lessons from the analysis here are that only few political competition variables are informative in the international context, and since only one component variable is significant, the data does not provide much insight as to which specific channel of political competition is more important for growth.

B. Nonlinear impact of political competition

The most robust and salient result so far is the highly significant U-shaped partial relationship (nonlinearity) between two measures of political competition and aggregate economic growth.

The U-shape could be interpreted by invoking the notion of political competition as special General Purpose Technology, or GPT.¹⁵ Starting from a situation with a low degree of political competition, an increase in competition,

¹⁵ The term GPT has been used in the area of endogenous growth theory, see Aghion and Howitt (1997), and refers to a scenario where the arrival of a new, broad technology with far-reaching implications for the economy (e.g. electricity) initially disrupts economic activity even at the aggregate level. The potentially adverse impact of *political* change for growth is a recurrent theme in the literature, see e.g. Alesina and Perotti (1994).

i.e., the arrival of the GPT “political competition” (e.g., due to political reform) causes turmoil and output losses. But over time, society learns and exploits the GPT’s full potential, achieves productivity gains, and this puts the economy on a higher growth path. This story can be visually represented as a U-shape between political competition and growth. And indeed, as anecdotal time-series evidence from the fall of the Iron Curtain suggests, the arrival of more political competition was soured with drops in aggregate output, but then growth picked up and even accelerated.

Existing work on the link between political competition and economic performance has also produced some results on nonlinearities. Alfano and Baraldi (2011) obtain an inverted U-shape between political competition and growth for the Italian regions.¹⁶ Secondly, Besley et al. (2010) find theoretically and empirically (for the United States) an overall positive impact of political competition on growth. They also find that the impact of competition on growth is strongest for an intermediate degree of competition, while for very low and very high degrees of competition, the impact on growth is weaker (nonlinearity). The U-shape found here implies the opposite, however: the link between political competition and growth is not always positive, and the strength of competition’s effect on growth (as measured by the slope of the partial relationship between *EXREC* respectively *POLCOMP* and growth) is *weakest* for intermediate values of competition.

Thirdly, the theoretical contribution by Acemoglu and Robinson (2006) focuses on the impact of political competition on innovation policies of the ruling faction towards the adoption of new technologies. At very low and very high levels of competition, the ruling faction implements policies that promote the adoption of new technologies, because at the lower end of the competition spectrum, the ruling faction need not fear the loss of power, while at the upper end, it is the threat of replacement that forces the ruling faction to implement such a policy. Hence, the impact of political competition on innovation differs between the boundaries

¹⁶ A theoretical rationale which the authors provide is the interplay of countervailing forces: Political competition can enhance welfare because it generates information and competence, but it can also reduce welfare since it may lead incumbents facing the threat of re-election just to extract rents. Another piece of evidence reaching similar conclusions is the empirical study by Barro (1996) focusing on the link between democracy and growth. My Table 2 also provides some support for the inverted U-shape under the Arellano-Bond GMM estimator - the method used by Alfano and Baraldi (2011). However, for the present context and data, dynamic estimators are regarded as fragile.

and the intermediate range of competition, the impact now being weaker in the intermediate range. This result broadly accords with my U-shape result, not least as regards the strength of the effect which for the U-shape is indeed weakest in the intermediate range. Since Acemoglu and Robinson (2006) have confronted their model with historical evidence by conducting case studies for Britain and Germany during the industrialization period, I provide contemporary evidence from a broad sample of countries. The support from case studies is good news in the sense that these findings may be relevant for individual countries as well.¹⁷

The present study also complements and extends my previous work, specifically a cross-sectional, nonparametric analysis focusing on the shape of the relationship between political competition and growth, see Man (2014). In contrast, the present study emphasizes the panel perspective and its advantages, considers a longer time span, and explores many additional aspects. Interestingly, the results from the cross section lend some support to the U-shape for the overall competitiveness variable *POLCOMP*. This coincidence suggests that this shape is not the figment of the data structure and the parametric approach taken here, i.e., of imposing a specific functional form.

IV. Extensions and robustness checks

A. Political stability

Recurrent and sometimes violent unrest with ongoing protests and clashes may be associated with disruptions in economic activity, for example in the tourism sector. Hence, an increase in political competition alone may not deliver if not accompanied by political stability. However, the direction of a link between stability and growth is not clear a priori because stability, e.g., in the form of government persistence, could also lead to entrenchment, protection of vested interests, and corruption — with negative consequences for economic growth.¹⁸ Consequently, political competition and political stability may be closely

¹⁷ If Total Factor Productivity (TFP) data were available, one could get closer to testing the Acemoglu and Robinson (2006) model with its focus on innovation.

¹⁸ Alesina et al. (1996) find a negative relationship between political instability and economic growth for a sample of 113 countries. But Bellettini et al. (2013) show how in the specific case of Italy, persistence of individual politicians can have negative consequences for economic outcomes, e.g., by preventing innovation.

intertwined, and the question is therefore whether stability matters for the impact of political competition on growth.

Given the limited availability of political stability data for a broad panel of countries, I primarily use the *DURABLE* variable taken from the Polity IV database because it captures reasonably well the lifetime of a polity and, in this sense, its stability - which is likely to be positively correlated with overall stability in a country.¹⁹ The first step in the analysis is to simply add the political stability variable to the econometric model and re-estimate the regressions. The second step is to add an interaction term between political competition and the political stability proxy.²⁰ This identifies a second-order effect, i.e., the effect of political competition in a given country, conditional upon the degree of political stability in that country. After re-estimating all regressions, the U-shape between *EXREC* respectively *POLCOMP* and growth is preserved, while political stability exerts a quantitatively very small and statistically insignificant influence on growth.²¹

B. Checks and balances

The components approach of the present study suggests the use of several political competition variables as well as the inclusion of another important element of political systems — checks and balances — into the analysis. Checks and balances are a key institutional factor in controlling governments and co-determine how political competition works through the political system. But as Beck et al. (1999) explain, checks and balances — the number of actors whose cooperation is needed before decisions can be made — may have opposing effects on decisionmaking. Consequently, the impact on political competition and growth is not clear a priori.

Including variables that convey information about checks and balances can therefore help to assess how important political competition is vis-à-vis these institutional factors. Checks and balances are captured by employing two variables, namely *XCONST* from Polity IV and *CHECKSLAX* from the Database

¹⁹The variable counts the number of years since the most recent regime change. High values can be interpreted as lack of political turmoil and a more stable polity irrespective of the actual degree of political competition.

²⁰The interaction term is constructed by multiplying the political competition variable of interest with *DURABLE*. The same strategy is followed below when looking at economic liberalization; the interaction term there is constructed by multiplying the political competition variable with *ECGLOB*.

²¹The estimation results for this section are available upon request. Apart from using interactions, I have created subsamples of the data (stable versus unstable) based on a threshold value of *STABNSLAX*; the regressions are run for each category separately. The results coincide with those obtained from the interaction exercise.

of Political Institutions.²² To assess the impact of checks and balances on the results obtained so far, the corresponding variables are added, one at a time, to the econometric model, and all regressions are re-estimated. The previous results as regards the shape and significance of the two salient political competition variables are preserved, while checks and balances are not statistically significant and the economic effects are small.

C. Economic competition and liberalization

Two additional ramifications concern the link between political competition and the economic arena. The first question is about the effects and importance for growth of political versus economic competition; the second question focuses on the impact of economic liberalization.

In order to answer the first question, I look at competition in goods markets (economy-wide) and in the financial sector.²³ The estimation strategy modifies by extending the controls to include variables for goods market competition (*COMP1*) and financial sector competition (*SPREAD*). This ramification is interesting as it touches on the possibility that rulers may substitute competition in the economic arena (whether amenable to policy action is another issue) for political reform and still maintain a given growth rate. The estimation results show that the statistically significant U-shaped relationship between *EXREC*, *POLCOMP* and growth is preserved even after taking into account economic competition. The proxy for financial market competition delivers a statistically significant negative coefficient, i.e., more financial sector competition is good for growth. This accords with research that highlights the central role of the financial sector as the bridge between savers and investors and a foundation of economic growth.

The second question, namely whether economic liberalization affects the link between political competition and growth, is tackled by using the *ECGLOB* variable, i.e., a broad proxy for countries' openness. I proceed by including into the empirical model an interaction term between political competition and the

²² Neither of these variables is used in the construction of *EXREC* and *POLCOMP*, i.e., the only salient political competition measures.

²³ Considering a link between competition areas is beyond the scope of this paper but suggested in the literature. Haber (2004) shows how lack of political competition in Mexico has led to the evolution of banking monopolies, and contrasts this with the case of the United States where political competition prevented concentration. A related contribution on the link between political economy and finance is Pagano and Volpin (2001).

openness proxy and then re-estimating the regressions for all political competition variables. Again, the same variables emerge as significant. The interaction effect itself is neither statistically significant nor quantitatively important. Political competition thus does not appear to matter more for countries that are more liberalized.

D. Subsamples and further checks

Are the results obtained so far preserved when considering subsamples of the data? To this end, the full sample is first split in two parts based on a threshold value of the income variable. For illustrative purposes, one may refer to the resulting subsamples as low-income versus high-income economies.²⁴ The regressions are then re-estimated; according to Table 3, especially the U-shaped relationship between political competition and growth is universal across subsamples. Distinguishing between democratic and non-democratic countries - based on a binary classification of polities - does not alter the results either.

The data has also been constructed for alternative data periodicities. Checking the annual and the decades data version, no significant and/or stable relationship between political competition and growth materializes.²⁵

An additional aspect is the role of corruption. For example, Mauro (1995) analyses the link between corruption and growth. One can imagine a chain from too little political competition to excessive corruption to lack of investment to slow growth, so that corruption may be an important channel through which political competition affects growth. Due to data availability problems, I do not extend the analysis to account for corruption, however.²⁶

²⁴The economic rationale for splitting the dataset according to income levels is motivated by a potentially differential impact of political competition in poor versus rich countries. Barro (1997) as well as Mulligan and Tsui (2006) mention the so-called Lipset-hypothesis stating that the level of income has an impact on preferences for political rights.

²⁵This could be due to the dominance of short-term influences in the case of annual observations, or the lack of temporal variation for the decades version.

²⁶From a theoretical point of view, not including a corruption measure is not really a deficiency because corruption represents a secondary factor impacting on the economy, and is likely to be rooted in the lack of political competition.

Table 3. Comparison of results for EXREC and POLCOMP across samples

Variable	Full sample		Poor subsample		Rich subsample	
	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
Panel A						
EXREC	0.0005 (0.0015)	-0.0178 *** (0.0068) 0.0017 *** (0.0006)	0.0010 (0.0014)	-0.0149 *** (0.0054) 0.0015 *** (0.0005)	-0.0011 (0.0029)	-0.0281 ** (0.0137) 0.0025 ** (0.0011)
EXREC_SQR						
LNRGDPCH[-1]	-0.0529 *** (0.0131)	-0.0536 *** (0.0126)	-0.0557 *** (0.0151)	-0.0562 *** (0.0145)	-0.0503 *** (0.0138)	-0.0513 *** (0.0131)
Observations	549	549	286	286	263	263
Countries	119	119	66	66	53	53
R-squared	0.4071	0.4152	0.5016	0.5080	0.2499	0.2602
Hausman test p-value	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002
Panel B						
POLCOMP	0.0005 (0.0009)	-0.0079 ** (0.0031) 0.0008 *** (0.0003)	0.0011 (0.0009)	-0.0055 * (0.0031) 0.0007 ** (0.0003)	-0.0012 (0.0016)	-0.0195 *** (0.0050) 0.0016 *** (0.0004)
POLCOMP_SQR						
LNRGDPCH[-1]	-0.0525 *** (0.0129)	-0.0539 *** (0.0125)	-0.0545 *** (0.0146)	-0.0565 *** (0.0144)	-0.0513 *** (0.0146)	-0.0529 *** (0.0138)
Observations	549	549	286	286	263	263
Countries	119	119	66	66	53	53
R-squared	0.4077	0.4221	0.5045	0.5127	0.2518	0.2991
Hausman test p-value	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000

Notes: All results are based on the FE approach. The specifications are as in the respective models of Table 2; the estimates for the full sample are replicated from that table, for the readers' convenience. Lagged income is a key control and its performance in line with the literature strengthens the empirical validity of the results for the political competition variables. For each variable, the table entries contain: the coefficient estimate; statistical significance information (three asterisks denote 1% significance level, while joint significance is marked by a grey area); finally, Beck and Katz (1995) panel-corrected standard errors in parentheses.

V. Conclusions

The present study has analyzed the empirical relationship between political competition and aggregate economic growth in international panel data, extending the geopolitical scope of existing research which has so far focused on national contexts for selected Western Democracies.

I find that only two measures of political competition are robustly and significantly related to growth. Specifically, a variable capturing overall political competition, and a measure of executive recruitment competitiveness display a U-shaped partial relationship with growth. The impact of political versus economic competition is also assessed, with financial sector competition emerging as positively and significantly related to growth.

A key implication is therefore that only few political competition variables deliver statistically reliable results. Consequently, in order to identify the effect of political competition on growth in a broad sample of countries, competition measures should be used that are as robust as possible to the great variety of institutional arrangements encountered around the globe. More generally, however, the scope for making statements about the competition-growth nexus based on international data is limited, and results obtained for national contexts do not appear to simply carry over to the international level. The data also provides limited information as to which components of political competition matter most for growth. In this sense, the evidence obtained here is agnostic.

But exactly for this reason, the results imply that — as regards lessons for institutional design or political reform aimed at fostering growth — it is important to conduct more country-specific analyses that scrutinize the situation of individual countries. Policy advice should focus on individual country case studies.

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