

UNIVERSIDADE DE SÃO PAULO  
INSTITUTO DE RELAÇÕES INTERNACIONAIS  
PROGRAMA DE PÓS-GRADUAÇÃO EM RELAÇÕES INTERNACIONAIS

Marketa Maria Jerabek

**DO POLITICAL INSTITUTIONS MATTER FOR ECONOMIC PERFORMANCE? A  
POLITICAL ECONOMY ANALYSIS FOR LATIN AMERICAN COUNTRIES**

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People have passed through a very dark tunnel at the end of which there was a light of freedom. Unexpectedly they passed through the prison gates and found themselves in a square. They are now free and they don't know where to go. Václav Havel

Sober perseverance is more effective than enthusiastic emotions, which are all too capable of being transferred, with little difficulty, to something different each day. Václav Havel

## **Abstract**

It seems appropriate to compare countries with a similar historical background and a different but comparable level of economic performance in order to make conditional statements. Studies about political institutions and economic performance in Latin American countries were conducted principally in qualitative analyses. The main objective of this study was an attempt based on the political economy to answer the question if different political institutions can explain economic performance in a time series cross section regression analysis. Using 18 Latin American countries for the years 1975-2010 the result of this research permits the conclusion, that political institutions such as political regime, electoral system, federalism on municipal level, partly the ideological polarization degree of executive's party and the parties in legislature and the stability of a political regime matter for economic performance. Nevertheless, leaping to conclusions about clear causality would be careless and precipitous as the problem of endogeneity of political institutions has not been properly resolved in this research.

Keywords: Political Institutions, Economic Performance, Latin America

## **Resumo**

Parece apropriado comparar países com contextos históricos parecidos e níveis de desempenho econômico diferentes mas comparáveis para poder fazer afirmações condicionais. Pesquisas sobre instituições políticas e desempenho econômico na América Latina foram conduzidas principalmente com metodologias qualitativas. O objetivo principal da presente dissertação foi uma tentativa de responder a questão se as instituições políticas podem influenciar o desempenho econômico nos países da América Latina numa regressão corte transversal de séries temporais. Usando 18 países da América Latina para o período de 1975-2010 o resultado deste estudo permite a conclusão que instituições políticas como regime político, sistema eleitoral, federalismo no nível municipal, em parte a distância da ideologia partidária do presidente e dos partidos nas câmaras e da estabilidade do regime político são relevantes para o desempenho econômico. Entretanto, precipitar conclusões sobre uma clara causalidade seria descuidoso como o problema da endogeneidade das instituições políticas não foi resolvida apropriadamente nesta pesquisa.

Palavras-chave: Instituições Políticas, Desempenho Econômico, América Latina

# 1. Introduction

Do political institutions matter for economic performance in the case of Latin American countries? In case of affirmation, the subsequent goal of this research consists of ascertaining which political institutions are relevant for economic performance.

The time series cross section analysis of Latin American countries is reasonable. Firstly, as the timeframe of 1975-2010 is shaped by many switches between democratic, semi-democratic and authoritarian regimes in almost all these countries, and thus, providing different political regimes for comparison (see MAINWARING; BRINKS; LIÑÁN, 2008). Only three, Colombia, Venezuela and Costa Rica, of twenty Latin American countries were democratic in 1978 while by 1992 17 of the remaining countries became semi-democratic or democratic (HAGOPIAN; MAINWARING, 2005). Secondly and at the same time as a consequence many Latin American countries are still facing challenges in the democratization process (MILLET, 2009). This current research follows the argument that it is not enough to create subsamples according to the economic development level, at least not for this research about political institutions which are based on cultural and historical pillars. The criteria for the selection of countries, that should be enough different to get enough variation between them and at the same time have enough comparable similarities, depend on the objective of the research. As Latin American countries have a history of colonialism in common and have undergone different political regime changes during the last decades they have a comparable stage in the democratization process, with some country exceptions. This circumstance makes the comparison of political institutions and economic performance among Latin American countries suitable and reliable (same argument in ALBORNOZ; DUTTA, 2007) Further, there exist differences in economic performance between Latin American countries due to institutional differences (demonstrated for example with the institutional indicator on “doing private business”) (CALVACANTI; MAGALHÃES; TAVARES, 2008). The results of this research are therefore of conditional nature and can yield exclusively conditional statements.

As political institutions do not have enough variation over time there are not enough differing data within a country to analyze the effects of institutional reforms on the variation in the economic performance. Therefore one has to rely on cross-country comparisons to get the causal effects of political institutions on economic development and growth (see PERSSON;

TABELLINI, 2003, p. 95). Cross-country analyses about political institutions are linked to some difficulties as each country has an individual deep-rooted social, political and economic coinage what makes the direct comparison between the countries political institutions challenging (PEREIRA; TELES, 2009, p. 2). An important conclusion from the conducted research by Pereira and Teles (2009) is that good political institutions matter for economic growth, independent whether they are in an autocracy or democracy. This means that bad political institutions in a democracy can lead to a worse outcome in economic performance than good political institutions in an autocracy. Further, political institutions matter for economic performance in non-consolidated democracies mostly because consolidated democracies have already institutionalized political institutions. Finally, their research expounds the importance of high quality political institutions for the economic performance in countries within a political liberalization process (PEREIRA; TELES, 2009, p. 26).

The research founds on political economy thought claiming that agents such as voters, lobbyists and politicians have different preferences over policies (ACEMOGLU, 2005). Thus, the different distribution of political power among groups in societies leads to different policies across countries. The conflict of interests among various individuals and groups over resource allocation and economic policy results in the formation of different economic institutions (as property rights, entry barriers, etc.) (ACEMOGLU; ROBINSON, 2006). The arrangement of economic institutions is therefore conditioned by the power of political elite groups in a society that shape directly economic institutions. Consequently, the economic policies tend to be beneficial for powerful political groups and individuals rather than for the welfare in a society (ACEMOGLU; JOHNSON; ROBINSON, 2004). Acemoglu and Robinson (2000) argue that societies fail to adopt the best technologies due to institutional failures. Existing powerful interest groups prevent the establishment of new technologies to protect their economic rents and conflicting interests are unified through political institutions into policy decisions (PERSSON; TABELLINI, 2004, p. 85).

The comparison between the British North America and Iberian Latin America demonstrates that self-enhancing institutions were crucial, since they permitted the economies of the North Atlantic to obtain independence without any interruption of institutional functionality. Effects of institutional changes made property rights more secure and enhanced the efficiency of market transactions. To the contrary this has not been the case in Latin American countries

after the end of colonialism. The newly independent Latin American countries stagnated, especially because of political disorder (NORTH; SUMMERHILL; WEINGAST, 1999). “The Iberian colonialism failed to create dynamic societies that could independently generate technological or organizational innovation” (COATSWORTH, 2008, p. 550). Differences in education quality and quantity, differences in the allocation of resources among activities with different productivity levels and the use of different technologies explain only approximately differences in incomes and the different economic performances among countries (ACEMOGLU, 2010). Conforming Acemoglu (2010) institutional explanations appeared beside approaches that emphasize the role of geography and culture for economic performance.

## **2. Literature**

Persson and Tabellini (2000, 2003) have delivered important basic models of political decision-making with implications for economic outcomes and have advanced the political economy research valuably (ACEMOGLU, 2005). Persson, Roland and Tabellini (2007) conclude that proportional representation conducts to more government spending than majoritarian representation in parliamentary democracies. In addition Persson (2005) claims that reforms into parliamentary, proportional and permanent democracy lead to most growth-promoting policies. On the very contrary is embedded Fukuyama’s (2008) argument, without doing any quantitative research about it, reasoning the impossibility to apply specific political institution features to different countries to obtain better economic outcome. Cultural and historical variety biases predicted economic outcomes of a political institution. Alfano and Baraldi (2008) demonstrated in their panel analysis including Italian regions that a lower degree of proportionality of mixed electoral systems implies a higher regional growth rate. Additionally, they show that “the impact of corruption on regional growth negatively depends on the degree of proportionality of the mixed electoral systems” (ALFANO; BARALDI, 2008, p. 3). Aboal (2009) goes beyond the distinction of democracy and non-democracy to understand how political institutions influence economic growth. Conforming Aboal (2009) it is not true that democracies always lead to faster growth than dictatorships. The mixed results about the prediction that democracies achieve higher growth than dictatorships (see PRZEWORSKI, 2004; PERSSON; TABELLINI, 2008) support Aboal’s conclusion.



Furthermore, he argues that proportional representation and majoritarian electoral systems *per se* do not imply compulsory different economic growth. “This could be one of reasons why recent empirical works (e.g. PERSSON, 2005) fail to find a clear link between electoral systems and growth” (ABOAL, 2009, p. 28). Aboal proposes in a further step to include the distribution of people among classes in order to reveal the effect of proportional and majoritarian electoral systems before making a prediction about the effect of an electoral system on economic growth. These and other papers in this literature all differ in their measure of democracy and choice of specifications, and neither systematically control for the dynamics of GDP nor attempt to address the endogeneity of democratizations (ACEMOGLU; NAIDU; RESTREPO et al., 2014). Acemoglu, Naidu, Restrepo et al. (2014) tested the hypotheses that democracy affects positively economic development and concluded that the effect is significantly positive when using dynamic panel models. Persson and Tabellini do not model GDP dynamics (ACEMOGLU; NAIDU; RESTREPO et al., 2014).

In fact Przeworski and Curvale (2006) analyzed the effect of political institutions in Latin American countries on economic growth, but they did not focus on individual political institutions in a quantitative research. Their main conclusion implies that Latin America in general was left after colonialism without ready-made functioning institutions and therefore fell behind the United States.

As the current state of research shows (see PERSSON; TABELLINI, 2003; ABOAL, 2009; PEREIRA; TELES, 2009) the political causes of the economic performance have been analyzed in cross-country studies, in comparative political economy research, lumping together countries that are delicate for comparison because of their different historical, social and political background. Enikolopov and Zhuravskaya (2007) claim in their research that there are different results between developing and developed countries in relation to the effects of decentralization and other political institutions on economic performance. Therefore, they used subsamples to separate developed countries from developing countries. Meng (2008) applies the same line of argument while studying federalism and its possible impact on economic and social performance in Latin American countries.

The attempt to understand the functionality of political institutions and the effects on economic performance may have implications on further research in this field and thus on political institutional debates in Latin American countries.

## **3. Theories**

### **3.1. Political regime**

Stated by Acemoglu (2009) democracy can lead under certain circumstances to economic growth whereas worse democracies with politicians pursuing populist policies can have negative effects on economic performance (see ACEMOGLU; EGOROV; SONIN, 2013). De Schweinitz (1959) argued that economic growth has to come first and then democracy. Because in democratic states with low economic performance the personal consumption has a higher priority than the investment which restricts economic growth, the diversion of resources from investment is much higher in more democratic governments. Przeworski, Alvarez, Cheibub et al. (2000) analyzed experiences of 135 countries for 1950-1990 and concluded that the type of political regime has no impact on the growth of total national income. They argue that the per capita income rise more rapidly in democracies because the population rises slower in democracies than in dictatorships. Chen (2007) points out that economic development varies during the process of democratization. In the early stage of democracy it declines while it increases in the later stage. Acemoglu, Naidu, Restrepo et al. (2014) provides evidence from a panel of countries between 1960 and 2010 that democracy affects economic growth in a significant and robust manner controlling for dynamic effects of economic growth. The central estimates show that a country that switches from non-democracy to democracy achieves 20 percent higher GDP per capita in the long run (in the next 30 years). Gerring, Bond, Barndt et al. (2005) emphasize the historical perspective about democracy and economic growth. The longer a country remains democratic the greater will be its investments and consequently its wealth. Gerring, Bond, Barndt et al. (2005) argue that economic policy decisions make part of a learning process that has consequences for the actors. Policy-making in a democracy is a continual interaction between actors occupying formal positions of power and individuals within society. In newly democratized polities governing politicians must learn first what a good policy is and voters must learn to recognize good policies. The interaction between governing politicians and voters is especially visible in economic policy as economic factors are important for voting decisions. Politicians in new democracies learn that their political survival depend profoundly on their economic policy

decisions. Growth performance matters for election purposes and populist short-term policies<sup>1</sup> as often happening in Latin American countries (DORNBUSH; EDWARDS, 1991) may lose their effects on voting decisions after a series of electoral and economic cycles when the voters begin to analyze skeptically these policies (REMMER, 1991; WEYLAND, 2002). As democratic experiences accumulate the tendency is a shift from populist to more long-term policies favorable to economic growth (GERRING; BOND; BARNDT et al., 2005).

### **3.2. Electoral systems**

To which extent do electoral rules provide incentives to favor special interests or the interests of the broad population? This question is being asked by scholars who analyze whether electoral institutions influence economic performance. This is mostly a function of whether these institutions encourage the candidates to develop personal constituencies or to stimulate their career on collective party results. Actually, the direct interaction between electoral systems and economic performance has not been actively discussed in the literature. The relationship has been rather discussed indirectly via accountability mechanisms, corruption and rent-seeking (PEREIRA; TELES, 2009).

Electoral rules for electing the legislature differ in many dimensions. There are three features of electoral rules: district magnitude, electoral formula and ballot structure (PERSSON; TABELLINI, 2003). “District magnitude simply determines the number of legislators (given the size of the legislature) acquiring a seat in a typical voting district. One polar case is that all legislators are elected in districts with a single seat, the other that they are all elected in a single, all-encompassing district” (PERSSON; TABELLINI, 2003, p. 22). The translation from votes into seats in the legislature is given by the electoral formula. If citizens vote for individuals or different party lists is determined by the ballot structure.<sup>2</sup>

The majoritarian system is identified by the first-past-the-post principle which means that the winner takes all the seats of a relevant electoral district. The majoritarian system creates a “manufactured majority” (NORRIS, 1997), an overrepresentation of the party with the most votes. This means more seats in parliament than votes in the election (ABOAL, 2009) and penalizes minor parties (NORRIS, 1997). Countries with majoritarian systems are often

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<sup>1</sup> For detailed information about populist policies in Latin American countries see Kaufman and Stallings (1991).

<sup>2</sup> In the case of Latin American only Brazil and Panama have open list systems. That is why the ballot structure is not considered in this research (verify the Political Institutions Database variable “closed list”).

divided into large number of districts. Proportional electoral systems create a distribution of seats in parliament that is closer to the proportion of votes that each party gained in the elections<sup>3</sup> (ABOAL, 2009).

The trade-off between governability and representation is an inherent characteristic of electoral systems (PEREIRA; TELES, 2009). More governability is given in plurality voting systems in single-member districts, while in proportional systems a better representation is provided. Many electoral systems try to attain both objectives - representation and accountability – choosing small multi-member districts or “parallel mixed-member systems, where the proportional seats do not compensate for disproportional outcomes in the single-member seats” (CAREY; HIX, 2009, p. 3). Such systems give up the pure proportional character in order to increase the accountability (CAREY; HIX, 2009).

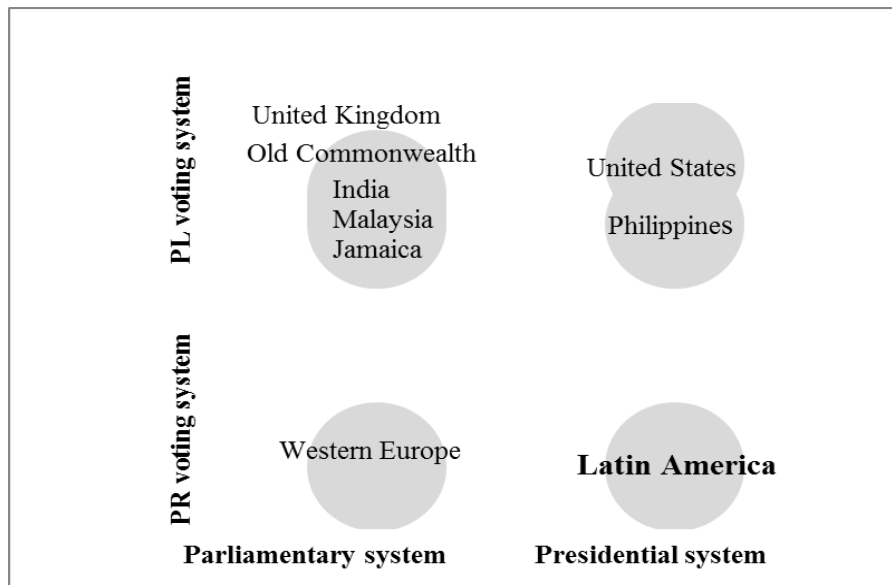
Persson and Tabellini (2000, 2006) predict that corruption is higher in a list voting system than in a system where an individual is selected. Further, they found that open list systems where the party’s order of candidates can be changed lead to better political behavior than closed lists. Persson and Tabellini (2003) also find that the corruption is smaller when individual voting is implemented by the plurality voting system, rather than by using preferential voting or open list in proportional electoral systems. Persson and Tabellini (2006) argue moreover that individual accountability under plurality voting system strengthens the incentives of politicians to satisfy the voters and incentivizes good behavior. Knutsen (2011) on the other side found a positive substantial effect of proportional representation electoral rules on economic growth claiming that proportional electoral systems induce broad-interest policies in relation to education, property rights and free-trade.

Correspondent to Lijphart’s matrix (1991) in figure 1 about the four basic types of democracy, the worst outcome emerges from the combination of presidential system and proportional representation in the legislature; the main characteristic of most of Latin American countries. This combination includes not just gridlock but also the bargaining of the president with disorganized and fragmented parties what has been emphasized by Mainwaring (1993) as well.

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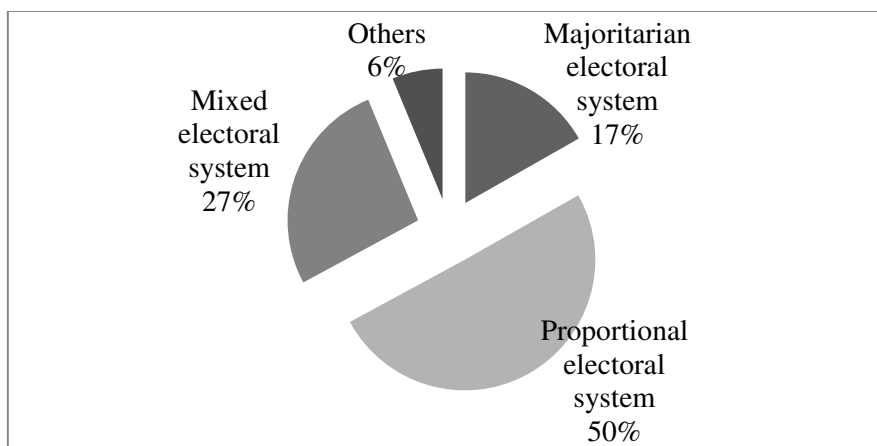
<sup>3</sup> Throughout the whole research majoritarian electoral system and plurality voting system are utilized synonymously. And proportional electoral system is utilized synonymously with proportional representation voting system.

Figure 1 - Four basis types of democracy<sup>4</sup>, adapted from Lijphart (1991, p. 74)



Mainwaring (1993) is right inasmuch as there is a high percentage share of proportional electoral systems in Latin American countries. 50% of the Latin American countries have proportional electoral systems. 27% of these countries have mixed electoral systems, 17% have majoritarian electoral systems and 6% others, visualized in figure 2.

Figure 2 – Electoral systems in Latin America, percentage shares in 2016 (Source: Database of Inter-Parliamentary Union)<sup>5</sup>



<sup>4</sup> PR voting system: Proportional representation voting system, PL voting system: Plurality voting system

<sup>5</sup>The Inter-Parliamentary Union calculated the percentage shares separately for Central America and South America. The total of each region is 100%. For figure 2 the values for each electoral system have been summarized, amounting consequently to 200%. Thus, all percentage values have been divided by 2 in order to obtain a total of 100% for the figure.

Nevertheless, the rough global comparison of the four basis types of democracy (MAINWARING, 1993) must be put in a relative perspective when analyzing the data of the Inter-Parliamentary Union in 2016 about the share of proportional, majoritarian and mixed electoral systems in Latin America. 21.05% of the South American countries have majoritarian electoral systems, 15.79% mixed and 63.16% have a proportional electoral system, whereas in Central America 12.5% of the countries have a majoritarian electoral system, 37.5% a mixed, 37.5% proportional systems and 12.5% others.<sup>6</sup>

### **3.3. Federalism**

Federalism can be defined as a process of political decentralization leading to greater distribution of power and resources between different levels of government (GIBSON, 2004). The principle emerged as a possible solution for intransigent political problems in countries with high levels of ethnic, cultural and language fractionalizations (MENG, 2008). In developing countries decentralization as a public sector reform and linked to democratization with its enhanced voice for citizens in shaping public resource allocation has been supported by academics and practitioners to enhance government performance and economic development (MENG, 2008). Notwithstanding, one has to recognize that little empirical evidence, respectively ambiguous results, have been provided due to the complex diverse mechanisms of federalism in different countries (SMOKE, 2006).

In the context of federalism it is important to mention second generation theories like the “market-preserving federalism” (WEINGAST, 1995). A market-based approach assumes new theory of firm behavior by political and economic actors, on all decision levels, as political jurisdictions can be defined as pseudo-firms that provide services (WEINGAST, 1997). Weingast (1997) declares the economic success of England, the United States or Switzerland and recently of China as the legacy of federalism. Competition among subnational governments provides incentives to accomplish economic growth where policies are adapted to local conditions and necessities (WEINGAST, 2006). The second generation of fiscal federalism is rather a positive than normative approach and stresses the importance of local tax revenue. Weingast (2006) argues that there are differences in economic outcomes across

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<sup>6</sup>South America: [http://www.ipu.org/parline-e/ElectoralSystem.asp?LANG=ENG&REGION\\_SUB\\_REGION=S17&typesearch=1&Submit1=Launch+query](http://www.ipu.org/parline-e/ElectoralSystem.asp?LANG=ENG&REGION_SUB_REGION=S17&typesearch=1&Submit1=Launch+query)  
Central America: [http://www.ipu.org/parline-e/ElectoralSystem.asp?LANG=ENG&REGION\\_SUB\\_REGION=S13&typesearch=1&Submit1=Launch+query](http://www.ipu.org/parline-e/ElectoralSystem.asp?LANG=ENG&REGION_SUB_REGION=S13&typesearch=1&Submit1=Launch+query)

federal regimes. While Switzerland and the United States, as rich federal countries, and recently China experienced positive effects of federalism, Mexico, Argentina and Brazil had recorded inferior results. During the 1980's the debt crises caused changes in economic and political organization in many Latin American countries where the governments transitioned towards subnational fiscal and administrative management (AVRITZER, 2002). In the early 1980's the reforms incorporated transfers from the central government to the sub-national level and devolution of resources and responsibilities but the policies failed to consider market-based principles as public choice theory and incentives. The decentralization resulted in random government spending with little regard for budget constraints and generated serious fiscal problems in Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico and Venezuela in the early 1990's. Macroeconomic budget constraints and an overall market-based system of fiscal decentralization were reached after these crises maximizing the efficiency of local public goods (WIESNER, 2003). On the overall effect of decentralization in developing and transition countries has not been reached consensus. In general, some scholars argue that decentralization is beneficial (QIAN; WEINGAST, 1996; MASKIN; QIAN; XU, 2000; GADENNE; SINGHAL, 2014) whereas others disagree (BARDHAN, 2002; CAI; TREISMAN, 2004). Meng (2008) concludes the federalism results often in mixed results in relation to economic performance in Latin American countries, "especially in the light of the constant tension between centralization and decentralization of central government involvement in the economy and the complexity of ascertaining political capital in a federation to promote macroeconomic reform" (MENG, 2008, p. 49).

### **3.4. Party system**

As studied by Enikolopov and Zhuravskaya (2007) the effect of fiscal decentralization strongly depends on the strength of national party system and subordination, whether local and state executives are appointed or elected. The relevant theoretical argument has been made by Riker (1964) arguing that party systems influence political incentives of the local governments. In strong national party systems the careers of politicians depend on their party support on local and national level. National governing parties in turn will support local politicians with policies that will not have negative externalities on the overall national performance. Therefore, local politicians will produce efficient policies. In the 1990 's there has been observed a decay in party systems across many Latin American countries

(HAGOPIAN, 1998). Strong party systems have been recognized as important actors in the political consolidation and economic reforms in new democracies (HAGGARD; KAUFMAN, 1995). The comparison between Chile and Argentina, which both experienced fiscal decentralization, shows that a strong national party system has positive implications of the effect of fiscal decentralization on economic performance. While in Chile party affiliation is important not only for elections it has experienced better economic outcomes with the decentralization than Argentina, where national political parties are weak (LONDREGAN, 2000; CORRALES 2002). The creation of representative institutions is still a challenging task in new democratic regime in developing countries (ROBERTS; WIBBELS, 1999). Blanchard and Shleifer (2000) illustrated that the same difference can be found between China and Russia. Whereas China's decentralization has occurred under control of the communist party, the Russian fiscal decentralization happened with a large political decentralization, which affected negatively the Russian economy.

### **3.5. Single party versus coalition government**

Usually, coalition governments were associated with parliamentary systems, due to institutional reasons, because presidents do not need to form a legislative majority to take office nor they need a parliamentary majority to avoid political difficulties. But this view is changing since the 1980's as most countries in the Americas have to some degree a multiparty coalition government. However, there is little theoretical discussion about government formation and coalition stability in presidential systems which are in contrast to the existing extensive research about coalition governments in parliamentary systems. Parties in a government in a presidential system are not inevitably veto players<sup>7</sup> (the concept comes from the idea of checks and balances in the American constitution see Lijphart, 1984) as they can vote against a bill and remain in government (ALEMÁN; TSEBELIS, 2011). Parties that are ideologically closer to the president should have a higher probability to participate in a government coalition (ALEMÁN; TSEBELIS, 2011). Presidents are concerned about policies, may it be intrinsically or due to electoral reasons and they try to achieve policy outcomes that are close to their own ideologies. Extremist presidents, that defend more leftist or rightist ideologies, are less likely to form cabinets with a majority in congress and produce

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<sup>7</sup> Distinction between institutional veto players, which are specified by the Constitution, and partisan veto players, defined as parties that are members of a government coalition in multi-party parliamentary systems and possibly in presidential systems (TSEBELIS, 1995).



less partisan ministers, (and have for example more technocrats) (ALEMAN; TSEBELIS, 2011). Coalition governments consisting of politicians of different parties have become common in countries like Brazil, Chile and Uruguay (ALEMÁN; TSEBELIS, 2011). In multiparty parliamentary system and presidential system, there exist the possibility of majority coalition formation and a formation of a minority government supported by a majority in parliament. The only difference is that in presidential system there is no option for new elections when a government formation is unsuccessful, as it is the case in parliamentary system when a majority does not support the government. And highly fragmented parliaments favor coalitions in both systems (CHEIBUB; PRZEWORSKI; SAIEGH, 2002). In the existence of a weak congress a president is not required to build a coalition while strong congresses provoke coalition building because in such a situation a president may be concerned about the approval of his policy proposal in congress (ALEMÁN, TSEBELIS, 2011). Tsebelis (1995) bases his analysis about the capacity of policy change on the concept of veto players, which are categorized into institutional (president, chambers) and partisan (partisan) veto players. Veto players are defined as individual or collective actors whose approval is important for a policy change. While Westminster systems, dominant party systems and single-party minority governments consist of only one veto player, federal and presidential systems have several veto players (TSEBELIS, 1995). In multi-party parliamentary and presidential systems the partisan veto players are the parties that are members of a government coalition. An agreement between partisan veto players in a coalition government is not sufficient for a policy change as parliamentary approval is needed. The author argues that the policy stability depends on the characteristics of veto players: their number, their congruence<sup>8</sup> and their cohesion<sup>9</sup> (TSEBELIS, 1995). In the existence of institutional and partisan veto players the distance between veto players is relevant for policy change, both the distance of institutional veto players and the distance of partisan veto players. Students of political institutions in Latin America argue that divided government (when the president's party has a minority of seats in a unicameral or bicameral legislature) leads almost always to gridlock when there is an increased number of parties sharing legislative seats (increased level of party fractionalization congress) (NEGRETTO, 2006). Thus, an extreme multi-party system is not favorable in presidential regimes (MAINWARING, 1993). Nevertheless, most of the Latin American presidential regimes

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<sup>8</sup> Difference of policy positions among veto players (TSEBELIS, 1995).

<sup>9</sup> Similarity of policy positions among the constituent units of each veto player (TSEBELIS, 1995).

coexist with multiparty systems and minority presidents were not associated with massive failures of democracies in the region. It can be concluded that it depends on the president's ability to overcome those formal obstacles, relying for example on informal legislative coalitions. Further, the location of the president's party in the policy needs to be considered, if the parties care about policy and how deep the ideological polarization is between the president's party and the legislative parties (NEGRETTO, 2006).

#### **4. Methodological considerations and model specification**

This study is designed to apply a time series cross sectional (TSCS) analysis comprising 18 Latin American countries, namely Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela for 1975-2010.<sup>10</sup> The TSCS is temporal dominant ( $T > N^{11}$ ) (STIMSON, 1985). Most of the political institutions variables are extracted from the Database of Political Institutions from the World Bank (BECK; CLARKE; GROFF et al., 2001) providing data from 1975 onwards. The economic control variables come from the World Bank Data. A demanding challenge is that an unbalanced TSCS dataset is used. Not all variables are available for all countries during the same period. This leads to a significant loss of the observation number and in some cases to the loss of the number of countries included in the sample. For these reasons different models are estimated to preserve the highest possible number of countries in the sample. Further, it is important to take into account the consideration whether using levels or differences, how to treat serial correlation in the error terms, contemporaneous correlation across units and heteroscedasticity.

In order to account for non-stationarity of real GDP per capita the variable is first differenced and for all the regressions is used the GDP per capita growth as dependent variable.<sup>12</sup> Real GDP per capita series in Latin America are non-stationary while GDP per capita growth series are stationary. For each model are conducted heteroscedasticity tests, serial autocorrelation tests, as errors tend to be not independent from a period to the next, and contemporaneous

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<sup>10</sup>Puerto Rico is excluded from the sample as its inclusion might distort the results concerning the fact that it is a United States territory. The same applies to Cuba. Cuba with its communist regime for the last three decades is not considered to be adequate to study political institutions.

<sup>11</sup>  $T=36$ ,  $N$  varies between 14 and 18.

<sup>12</sup> The same applies for the variable population growth and gross primary school enrollment, which are also non-stationary and needed to be first differenced for the model estimations.

correlation test, as errors tend to be correlated across nations. When heteroscedasticity, first order autocorrelation and contemporaneous correlation are detected ordinary least squares (OLS) is not appropriate.<sup>13</sup> Then OLS standard errors shall be substituted by panel-corrected standard errors (PCSEs) as proposed by Beck and Katz (1995)<sup>14</sup> and feasible generalized least squares (FGLS) procedure for contemporaneously correlated and panel heteroskedastic errors.

The basic model takes the following form<sup>15</sup>:

$$\Delta(\log)GDPpercapita_{c,t} = \alpha + \beta_1 D_{c,t} + \beta_2 * M_{c,t} + \beta_3 * PL_{c,t} + \beta_4 * MU_{c,t} + \beta_5 * ST_{c,t} + \beta_6 * ALL_{c,t} + \beta_7 * CH_{c,t} + \beta_8 * POL_{c,t} + \beta_9 * \Delta(\log)FRAC_{c,t} + \beta_{10} * \Delta(\log)PAR_{c,t} + \beta_{11} * (\log)TENSYS_{c,t} + \beta_{12} * CONTROL^{16} + u_{c,t} + \epsilon_{c,t}$$

## 5. Variables

Variables	Definition	Data source
<b>Dependent variable</b>		Data World Bank
$\Delta$ (log) real GDP per capita <sup>17</sup>	First differenced log of real GDP per capita (constant 2005 US\$), or GDP per capita growth, measuring the economic performance	
<b>Independent variables</b>		Database of Political Institutions

<sup>13</sup> OLS regression estimates when applied to pooled data are likely to be biased, inefficient and/or inconsistent. Errors tend to be not independent from a period to the next, correlated across nations, and heteroskedastic (PODESTÀ, 2002).

<sup>14</sup> According to Beck and Katz (1995) the best method to treat autocorrelation is via the inclusion of lagged dependent variables. The parameters are then estimated by OLS and their standard errors by PCSE's in order to take into account contemporaneous correlation of the errors and heteroscedasticity. Maddala (1997) however argues that with lagged dependent variables OLS estimators are inconsistent in the presence of serial correlation in errors.

<sup>15</sup>  $\Delta$  indicates the first differenced value (to stationarize the variable) of (log) GDP per capita on the left-hand side of the equation. The between-entity error is expressed in  $u_{c,t}$  and the within-entity error in  $\epsilon_{c,t}$ .

<sup>16</sup> Control variables are: yrsoffc, WG, GrCapFor,  $\Delta$ PopGr,  $\Delta$ GrEnrol, (log)GDPpc65

<sup>17</sup> (see DRURY; KREICKHAUS; LUSZTIG, 2006; ENIKOLOPOV; ZHURAVSKAYA, 2007; DOUCOULIAGOS; ULUBASOGLU, 2008; ACEMOGLU; NAIDU; RESTREPO et al., 2014; CAVALCANTI; MAGALHÃES; TAVARES, 2008).

Democracy, D <sup>18</sup>	Measuring the political regime. Dummy variable: D=1=Democracy, D=0=Non-Democracy. The political regime that is the democracy variable causes several challenges as existing democracy indices succumb to measurement errors which lead to doubtful democracy score changes of a country although its institutions do not really change. Democratic and nondemocratic institutions vary considerably in many historical and cultural aspects which turns the analysis about the effect of democracy on economic performance difficult. For these reasons it is used a dichotomous political regime variable.
Military, M <sup>19</sup>	“Is Chief Executive a military officer?” Dummy variable: M=1=Yes, M=0=No. Due to the fact that many Latin American countries have been military dictatorships at some point in their history the variable M, military, (“Is Chief Executive a military officer?”) from the Political Institutions Database is included as a second dummy variable measuring the political regime.
Plurality, PL <sup>20</sup>	When legislators are elected through a winner-take all/first past the post rule, the majoritarian electoral system, the variable PL, plurality, assumes the value=1, when not it equals=0. “1” if there is a competition for the seats in a one-party state (LIEC is 4) (KEEFER, 2012, p. 16). <sup>21</sup>
Municipal, MU <sup>22</sup>	Federalism (administrative subordination) at the municipal level is measured by MU: no local elections=1, Elections for legislature and appointment of executive=2, Elections for legislature and the executive=3.
State, ST <sup>23</sup>	Federalism (administrative subordination) at the state level (or provincial) is

<sup>18</sup> Dct ∈ {0,1}, for country c at time t: A country/year observation is coded democratic (Dct = 1) if the Freedom House status is “Partially Free” or “Free” and its Polity score (see MARSHALL; GURR; JAGGERS, 2014) is positive (ACEMOGLU; NAIDU; RESTREPO et al., 2014). For the case that polity assumes values as -88 or -77 (transitions stage) there is applied the Mainwaring, Brinks and Pérez-Liñán (2008) classification which is the case for El Salvador. The polity classification of -88 for the period 1979-1983 is classified as an authoritarian regime that is why this period is coded nondemocratic (Dct = 0). Semi-democracy classifications of some years are coded as democratic (Dct=1). The same applies to Guatemala for 1985, Honduras 1980-1981, Nicaragua for 1979-1980, Peru 1978-1979, for 2000 Peru is coded as democratic as it is classified as semi-democratic. Mexico has a polity value of 0 for 1988-1993, is classified as a semi-democracy and is coded as democratic (Dct = 1).

<sup>19</sup> “If chief executives were described as officers with no indication of formal retirement when they assumed office, they are always listed as officers for the duration of their term. If chief executives were formally retired military officers upon taking office, then this variable gets a 0 (KEEFER, 2012, p. 5). Otherwise the variable assumes the value 1.

<sup>20</sup> The variable measuring proportional electoral system of the database is not applied due to the lack of variance, as only Chile appears to have a non-proportional electoral system. One has to be aware of the measurement of the variable for the purpose of reality simplification, especially in the moment of interpreting results of plurality. The chapter with the results summarizes plurality across Latin American countries. A “1” in plurality does not mean that a country has entirely a majoritarian electoral system, a “1” in plurality can occur even when a country applies in each chamber a different electoral system (as Brazil for example) or has in general a mixed electoral system (as Mexico for example). In this sense the variable plurality is only an approximation.

<sup>21</sup> Blank if it is unclear whether there is a competition for seats in a one-party state (LIEC is 3.5) and “NA” is there is no competition for seats in a one-party state of if legislators are appointed (LIEC is 3 or lower)” (KEEFER, 2012, p. 16). LIEC Legislative IEC Scale:

No legislature: 1

Unelected legislature: 2

Elected, 1 candidate: 3

1 party, multiple candidates: 4

multiple parties are legal but only one party won seats: 5

multiple parties DID win seats but the largest party received more than 75% of the seats: 6

largest party got less than 75%: 7

<sup>22</sup> -999 responses and NA are replaced by missing in the dataset (see ENIKOLOPOV; ZHURAVSKAYA, 2007; KEEFER, 2012).

	measured by ST: no local elections=1, Elections for legislature and appointment of executive=2, Elections for legislature and the executive=3.
Allhouse, ALL	“Does party of executive control all relevant houses? Does the party of the executive have an absolute majority in the houses that have lawmaking powers? The case of an appointed Senate is considered as controlled by the executive. A senate made up along the lines of ethnic or tribal representation is not controlled by the executive, as these groups nominate their own representatives” (KEEFER, 2012, p. 8). Dummy variable. The value 1 means that the party of executive controls all relevant houses while the value 0 means that the party of the executive does not have an absolute majority in the houses that have lawmaking powers.
Checks and Lax, CH	Measuring checks and balances. In presidential systems: “CH is incremented by one:  for each chamber of the legislature unless the president’s party has a majority in the lower house and a closed list system is in effect  for each party coded as allied with the president’s party and which has an ideological (left-right-center) orientation closer to that of the main opposition party than to that of the president’s part” (KEEFER, 2012, p. 19).
Polariz, POL <sup>24</sup>	The ideological polarization between the president’s party and its allied parties is measured by polarization: polariz” “is the maximum difference between the chief executive’s party’s value and the values of the three largest government parties and the largest opposition party” (KEEFER, 2012, p. 19). The variable takes values of 0 (=the chief executive’s party has an absolute majority in the legislature), 1 (intermediate difference between the chief executive’s party’s value and the values of the three largest government party and the largest opposition party, 2 (=maximum difference).
$\Delta(\log)$ FRAC	F, fractionalization (log, in order to normalize the data), measuring the party fractionalization of the parliament. “The probability that two deputies picked at random from the legislature will be of different parties” (KEEFER, 2012, p. 13). <sup>25</sup> First differenced due to unit root.
$\Delta(\log)$ PAR	A proxy for the party system (and the strength of institutionalization of the party system) is PAR, party age (log, in order to normalize the data) defined as the average of the ages of the 1st government party, 2nd government party and 1st opposition party. <sup>26</sup> First differenced is used due to unit root.
(log) TENSYS <sup>27</sup>	“How long has the country been autocratic or democratic, respectively?” (for more information see KEEFER, 2012, p. 18) Political regime stability, measuring how long a country has been autocratic or democratic, respectively measuring the political regime stability (in years). Aisen and Veiga (2011) found in their research that political instability is associated with lower growth

<sup>23</sup> -999 responses and NA are replaced by missing in the dataset (see ENIKOLOPOV; ZHURAVSKAYA, 2007; KEEFER, 2012).

<sup>24</sup> POLARIZ is zero if the chief executive’s party has an absolute majority in the legislature. Otherwise: POLARIZ is the maximum difference between the chief executive’s party’s value and the values of the three largest government parties and the largest opposition party  
See Stasavage and Keefer (2003).

<sup>25</sup> NA (in the case of no parliament or no parties in the legislature) and blank spaces (in the case of any government or opposition party seats) are treated as missing.

<sup>26</sup> The variable may be the second-best choice, as the Database of Political Institutions does not provide any better variable to substitute it.

<sup>27</sup> See Dutta, Leeson and Williamson (2013), Aisen and Veiga (2011).

	rates of GDP per capita.	
<b>Political control variable</b>		
Yrsoffc	Measures the number of years that the chief officer is in office in year t and country c (DAHL, 1957)	
<b>Economic control variables<sup>28</sup></b>		Data World Bank
(log)GDPpc65	GDP per capita from 1965, measuring the initial economic performance. It is used in order to catch the impact of history on economic performance (BARRO, 1991). World Bank data is available since 1960, but only for 1965 there are data available for all relevant countries.	
WG <sup>29</sup>	The world growth (annual %) in order to capture the impact of world economy on the Latin American economic performance.	
GrCapFor <sup>30</sup>	Gross capital formation (% of GDP)	
$\Delta$ GrEnrol <sup>31</sup>	Gross primary school enrolment, both sexes (%). First differenced due to unit root.	
$\Delta$ PopGr <sup>32</sup>	Population growth (annual %). First differenced due to unit root.	

<sup>28</sup> Aisen and Veiga (2011) use in their model further variables as the inflation rate, the government size and trade (as % of GDP). These variables are not used in this research due to the theoretical background on which this research is based on. It is assumed that political institutions affect these variables. For example, Hielscher and Markwardt (2012) found that the quality of political institutions has an impact on inflation. And so is trade policy endogenous (RODRIK, 1992). And Persson, Roland and Tabellini (2007) concluded that political institutions affect the government spending. Thus, this research relies on the logic of Pereira and Teles (2009). They use in their model the average years of schooling and the investment rate as the economic control variables.

<sup>29</sup> See POWELL (2015).

<sup>30</sup> Definition: Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress." According to the 1993 SNA, net acquisitions of valuables are also considered capital formation (World Bank: <http://data.worldbank.org/indicator/NE.GDI.TOTL.ZS>). See AISEN and VEIGA (2011), PEREIRA and TELES (2009).

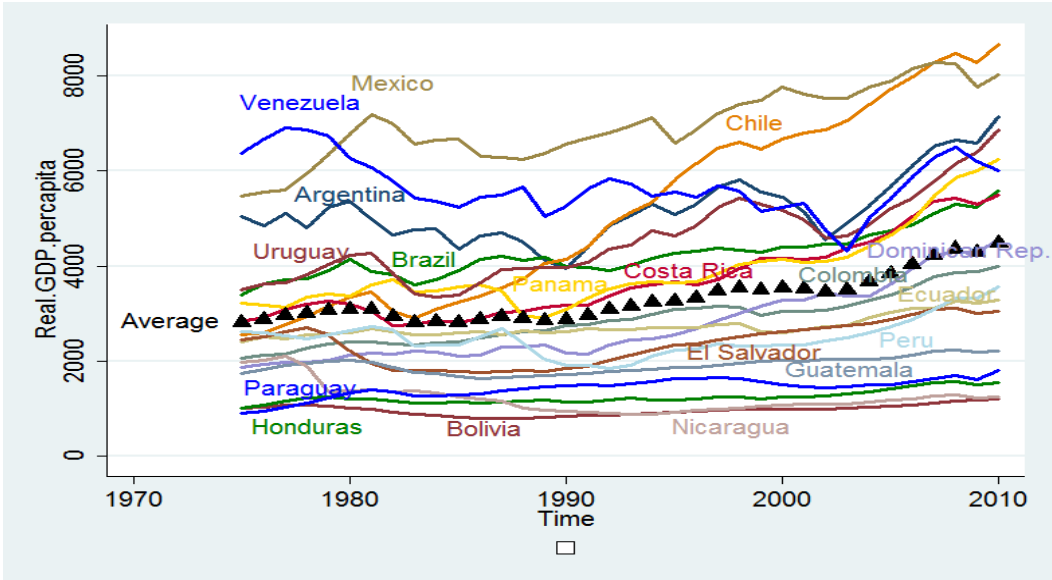
<sup>31</sup> Definition: Total enrollment in primary education, regardless of age, expressed as a percentage of the population of official primary education age. GER can exceed 100% due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition (World Bank: <http://data.worldbank.org/indicator/SE.PRM.ENRR>). See AISEN; VEIGA (2011). Pereira and Teles (2009) use average years of schooling to measure human capital stock. Due to unit root first differenced.

<sup>32</sup> Definition: Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of the country of origin (World Bank: <http://data.worldbank.org/indicator/SP.POP.GROW>). See AISEN and VEIGA (2011). Due to unit root, first differenced.

# 6. Results

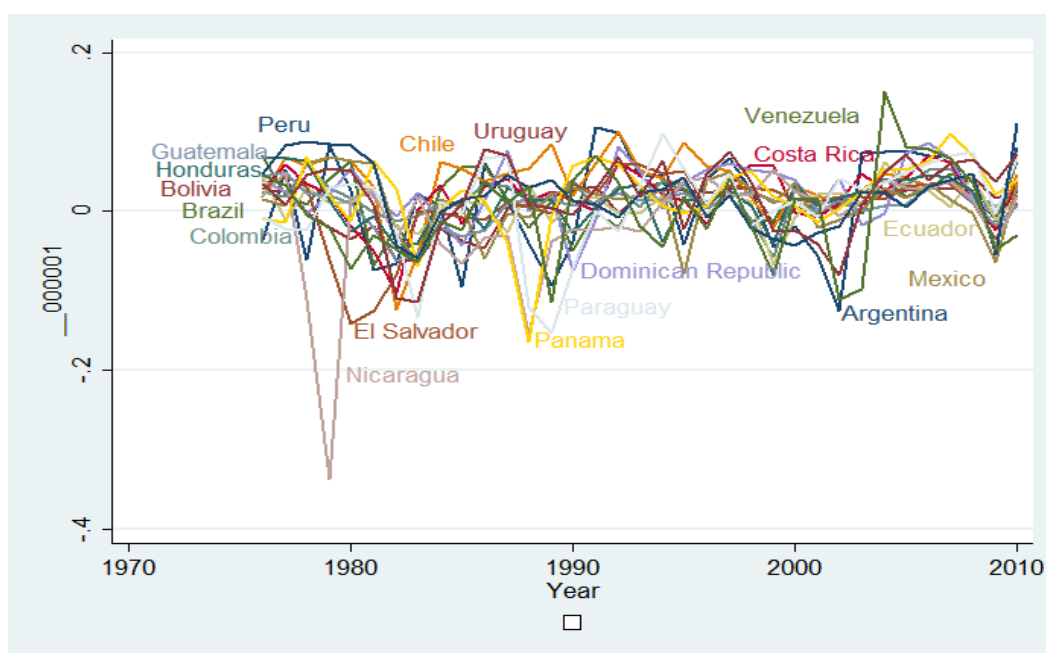
## 6.1. Descriptive statistics

Figure 3 - Timeline of GDP per capita over 1975-2010



The timeline of real GDP per capita depicted in figure 3 reveals a certain time trend with exponential values since 1990's for the average value of all sample countries. Peru, El Salvador, Guatemala, Ecuador, Paraguay, Honduras, Bolivia and Nicaragua have lower values as the average GDP per capita values, whereas countries as Mexico, Venezuela, Argentina, Chile, Costa Rica, Uruguay, Panama, Brazil and Dominican Republic have values above the average over the period of 1975-2010. In the 1980's an average decline in economic performance can be observed due to negative external shocks, particularly external debt crisis and the second oil shock which is also pictured in figure 4 with the GDP per capita growth evolution over the period 1975-2010. The GDP per capita decline observed in figure 3 in the 1980's is reflected likewise in figure 4 where most of the countries experienced a decrease in GDP per capita growth. Extreme fluctuations captured until the 1990's diminished since then while in the early 2000's some countries as Uruguay, Argentina and Mexico had some remarkable relapse.

Figure 4 – Timeline of GDP per capita growth over the period 1975-2010



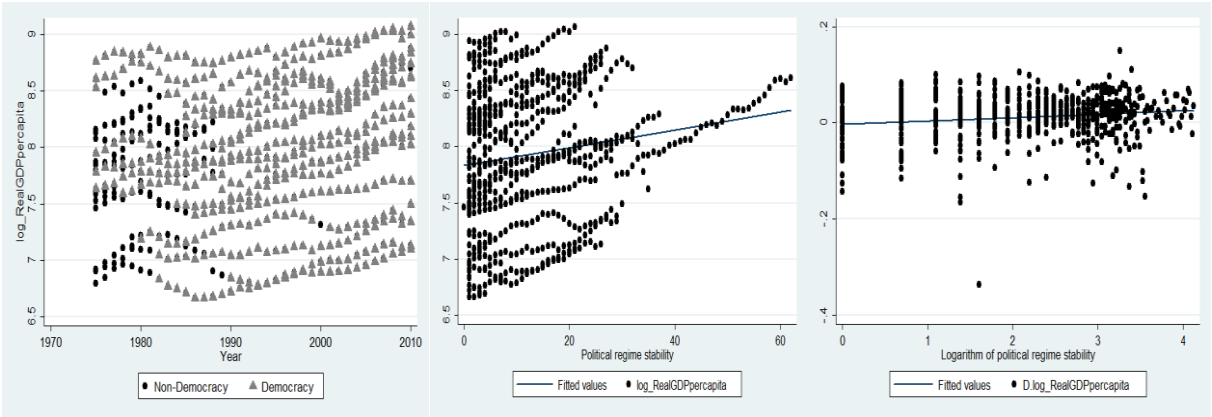
This slowdown in the economic growth rate and financial imbalance in the public sector explain the rise in unemployment and high inflation rates in the 1980's and much of the 1990's.<sup>33</sup> Simultaneously these two decades were marked by the switch from autocratic regimes to democratic regimes in Latin American countries. Nevertheless, the experiences across the Latin American differed in a significant matter. As Edwards (2007) claims the last 35 years Latin America's economic performance has been mediocre. Most Latin American countries implemented market-oriented reforms during the late 1980's and early 1990's with the intention to reduce fiscal imbalances and inflation, privatize public enterprises develop capital markets, to mention a few of these policy goals, the so-called Washington Consensus (see WILLIAMSON, 1990). Countries as Argentina, Chile and Peru experienced an improved economic performance in the years following the reforms. The early 2000's were marked by traumatic crises. Many countries suffered from balance of payment crises as Brazil in 1999, Argentina in 2001, Uruguay in 2002 and the Dominican Republic in 2003. Mexico experienced repeatedly currency devaluations in 1976, 1982, 1994, Chile in 1982, Brazil in 1999, Argentina in 1989, 2001 and Uruguay in 2002. The next elections were marked by a shift to left oriented governments which were critical of the Washington Consensus. In

<sup>33</sup>To describe Nicaragua's situation: "In the late 1970s and the entire 1980s, natural and man-made disasters resulted in Nicaragua's economic output shrinking by almost 40 percent and debt soaring to 400 percent of GDP." See: <http://siteresources.worldbank.org/IDA/Resources/IDA-Nicaragua.pdf>



Bolivia, Ecuador and Venezuela the new political leaders implemented policies that reverted the reforms of the 1990's (EDWARDS, 2007). Edwards (2007) predicts that in the future Latin American countries will not experience major improvements in economic performance while some countries might do relatively well and catch up with developed nations. Rodriguez (2004) argues that the economic performance of Latin American countries cannot be understood properly without the analysis of its politics. Since the independence the economic performance of Latin American countries has been influenced by the levels of social, political and economic conflicts.

Figure 5 - Political regime, regime stability and economic performance in Latin America, 1975-2010



Most of the Latin American countries have undergone political regime transitions from autocracies to democracies, except Colombia, Costa Rica and Venezuela<sup>34</sup> with no autocratic historical legacies during the analyzed period. The two-sample t test with equal variances for the means of the economic performance values in Latin American autocracies and democracies reveals a clear rejection of the null hypothesis that the mean difference is zero. The mean value (of 1975-2010) of economic performance in democratic regimes is higher (6267.59, constant 2005 US\$) than in autocratic regimes (5104.11, constant 2005 US\$). The same test for the second measure of the political regime, military, demonstrates a significant difference between the economic performance in regimes where the chief executive is a military officer (4932.682, constant 2005 US\$) and where not (6285.118, constant 2005 US\$). The mean economic performance for 1975-2010 was higher in political regimes

<sup>34</sup> However, Venezuela has been classified as non-democracy in 2009 and 2010.

without a military officer as a chief executive. The second figure of figure 5 reveals a positive correlation between political regime stability and real GDP per capita.

Table 1 - Electoral systems and subnational government/federalism by country, 1975-2010

Electoral system			Subnational government/Federalism					
Country	Non-maj.	Maj.	Municipal level			State level		
			No election	Leg. elected	Ex. and Leg. elected	No election	Leg. elected	Ex. and Leg. elected
Argentina	27	0				7	0	27
Bolivia	0	28	3	0	23	31	0	0
Brazil	0	36	0	0	22	0	6	30
Chile	0	21	8	18	0	26	0	0
Colombia	36	0	0	4	22	0	17	19
Costa Rica	36	0	0	0	36	36	0	0
Dominican Republic	0	36	0	0	36	36	0	0
Ecuador	29	2	0	0	36	36	0	0
El Salvador	13	20	3	0	33	31	0	0
Guatemala	0	25	26	0	0	26	0	0
Honduras	0	29	0	0	26	26	0	0
Mexico	3	33	0	0	36	0	0	36
Nicaragua	24	0	10	0	16	26	0	0
Panama	0	36	8	28	0	8	28	0
Paraguay	36	0				10	0	0
Peru	30	0	0	23	0	27	0	0
Uruguay	26	0				10	0	26
Venezuela	32	4	0	0	26	0	36	0
No. Observations	292	270	58	73	312	336	87	138
Percentage	51.96%	48.04%	13.09%	16.48%	70.43%	59.89%	15.51%	24.60%
	100%		100%			100%		

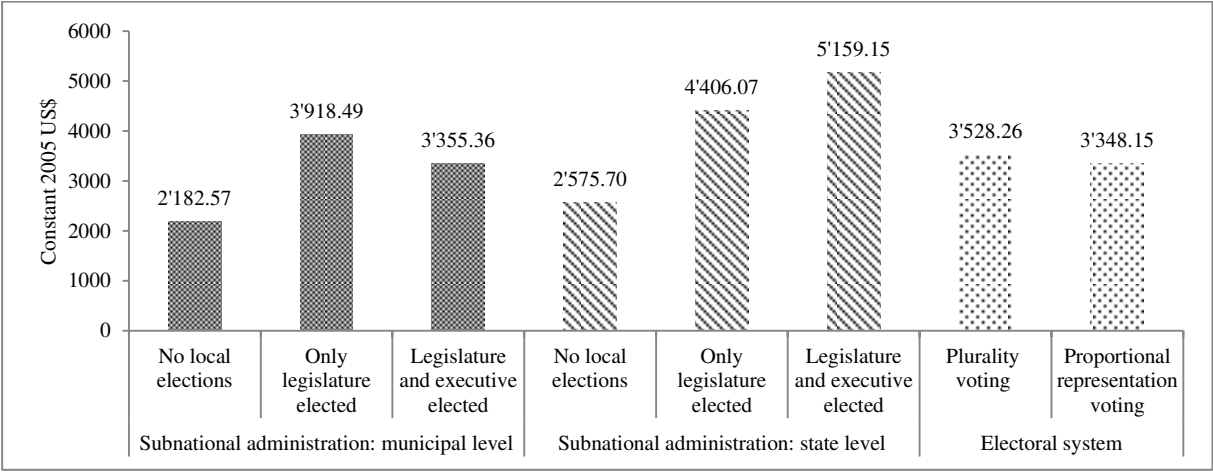
Table 1 shows that 51.96% of the observations are for non-majoritarian electoral systems and 48.04% for majoritarian electoral systems. The electoral system variable assumes values=1 if the representatives of the House of Representatives or the Senate are elected by majoritarian rule and =0 if not. The variable values present variation among the countries. Few cases where a change from one system to another occurred are observed for the period 1975-2010. Ecuador, El Salvador, Mexico and Venezuela have experienced shifts from one system to another. “Experience teaches that political change is most difficult when it must confront a well-structured and robust institutional context” (BLUM, 1997, p. 29). Ecuador switched in 2008 from a proportional to a majoritarian electoral system. El Salvador switched in 1997 from a majoritarian to a proportional electoral system. Mexico switched in 1977 from a proportional to a majoritarian electoral system and Venezuela in 2006 from a proportional to a majoritarian electoral system. Figure 6 illustrates the difference between the average real GDP

per capita values over the period 1975-2010. While the average value of 3528.255 (constant 2005 US\$) is associated with an majoritarian electoral system and an average value of 3348.151 (constant 2005 US\$) with a proportional electoral system. However, the two-sample t test with equal values for the means of the economic performance (between 1975-2010) in proportional and majoritarian electoral systems reveals no significant difference of the mean values (6199.869, constant 2005 US\$, for proportional electoral system and 6183.573, constant 2005 US\$, for majoritarian electoral system).

Table 1 depicts additional information about subnational government/federalism. 70.43% of the observations are made for elections on municipal legislative and executive level, 16.48% for legislative elections and 13.09% for no elections at all on municipal level. Guatemala is the only country that had no municipal elections at all during 1975-2010. Bolivia, Chile, Colombia, El Salvador , Nicaragua and Panama have undergone changes from a system with no elections at all or only elections on legislative level to elections on legislative level or elections for executives and legislators.

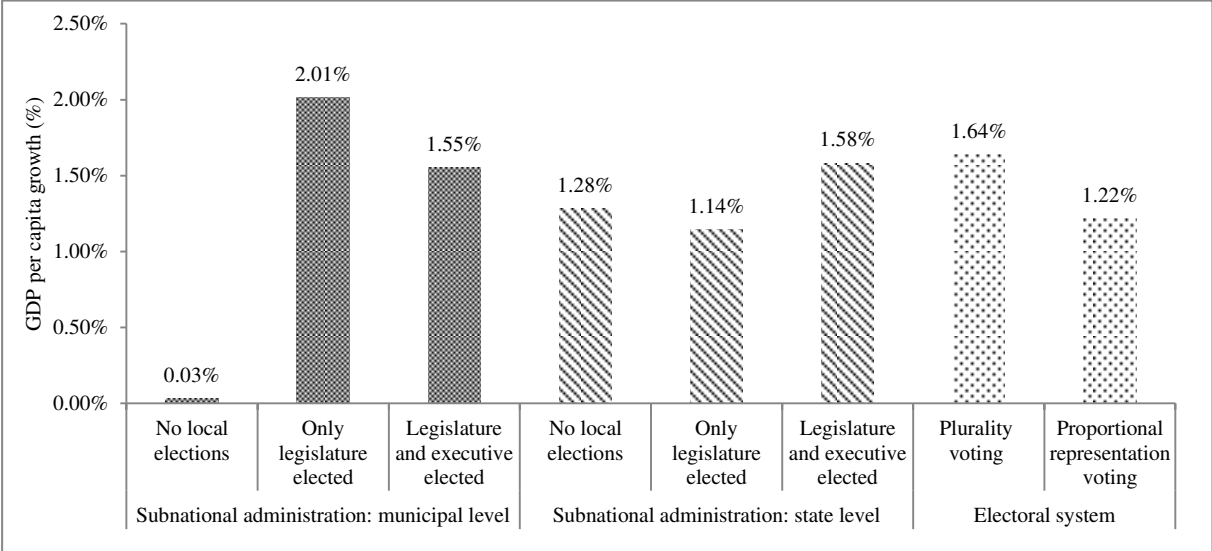
The highest level of subnational government is represented by states/provinces. On the state level 59.89% of the observations show no election on the state level. 15.51% for legislative elections and 24.60% for legislative and executive elections. Argentina, Brazil, Colombia, Panama and Uruguay shifted during 1975-2010 from less state level subnational administration to more, respectively from no elections to legislative elections or from legislative elections to legislative and executive elections (see table 1).

Figure 6 – Subnational administration, electoral system and average real GDP per capita, 1975-2010



The calculated average real GDP per capita (figure 6) and GDP per capita growth (figure 7) rates for each distinct governmental shape<sup>35</sup> on the subnational administration level over the period 1975-2010 point to differences among them.

Figure 7 - Subnational administration, electoral system and average GDP per capita growth, 1975-2010

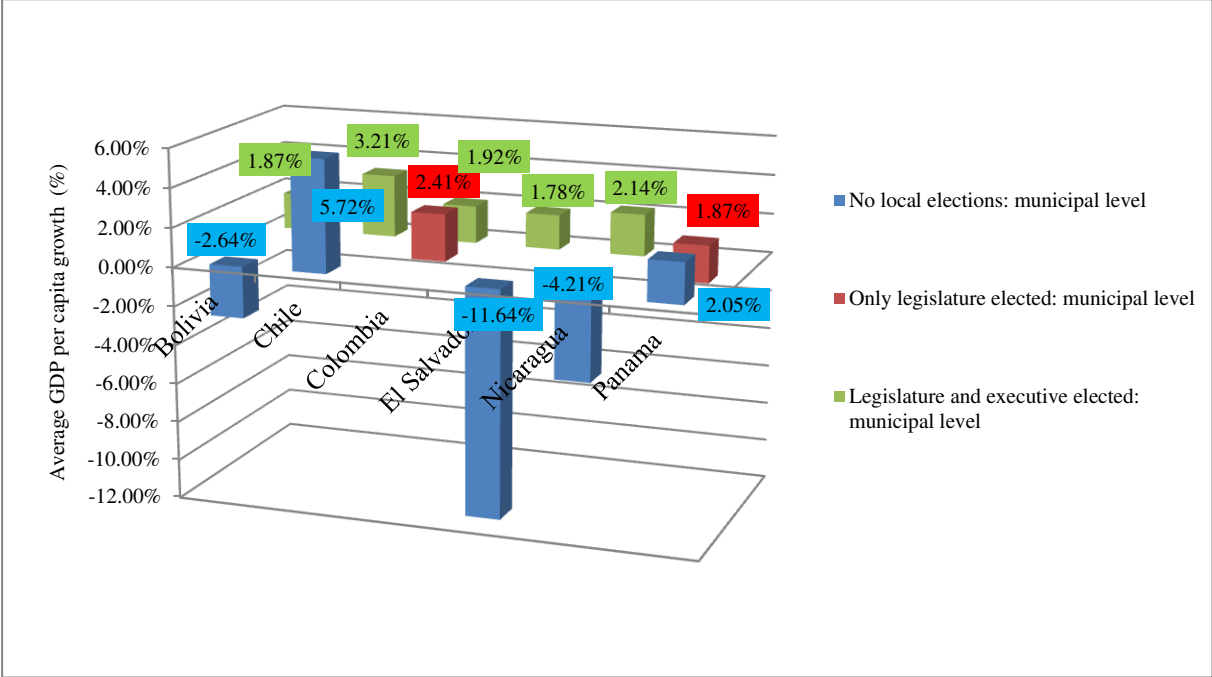


While on the municipal level the highest average real GDP per capita value is observed in the case where only the legislature is elected and the executive is appointed (3918.49 constant 2005 US\$, figure 6, or 2.01% GDP per capita growth, figure 7), the highest value of GDP per capita/GDP per capita growth rate on the state level is found where the legislature and executive both are elected (5159.145 constant 2005 US\$/1.58% GDP per capita growth). On municipal level the second highest value can be found in the case where both, the legislature and executive are elected (3355.355 constant 2005 US\$, figure 6, or 2.01% GDP per capita growth, figure 7) and the lowest value is associated with no local elections (2182.566 constant 2005 US\$, figure 6, or 0.03% GDP per capita growth, figure 7).

In order to obtain within country information about the GDP per capita growth before and after a change of governmental shape on subnational administration level (municipal and state/provincial) average GDP per capita growth values are calculated before and after a switch. These results are documented in the consequent figures 8 and 9.

<sup>35</sup>With 1=no local elections, 2=only legislature elected and executive appointed and 3=both, legislature and executive elected (both on municipal and state level)

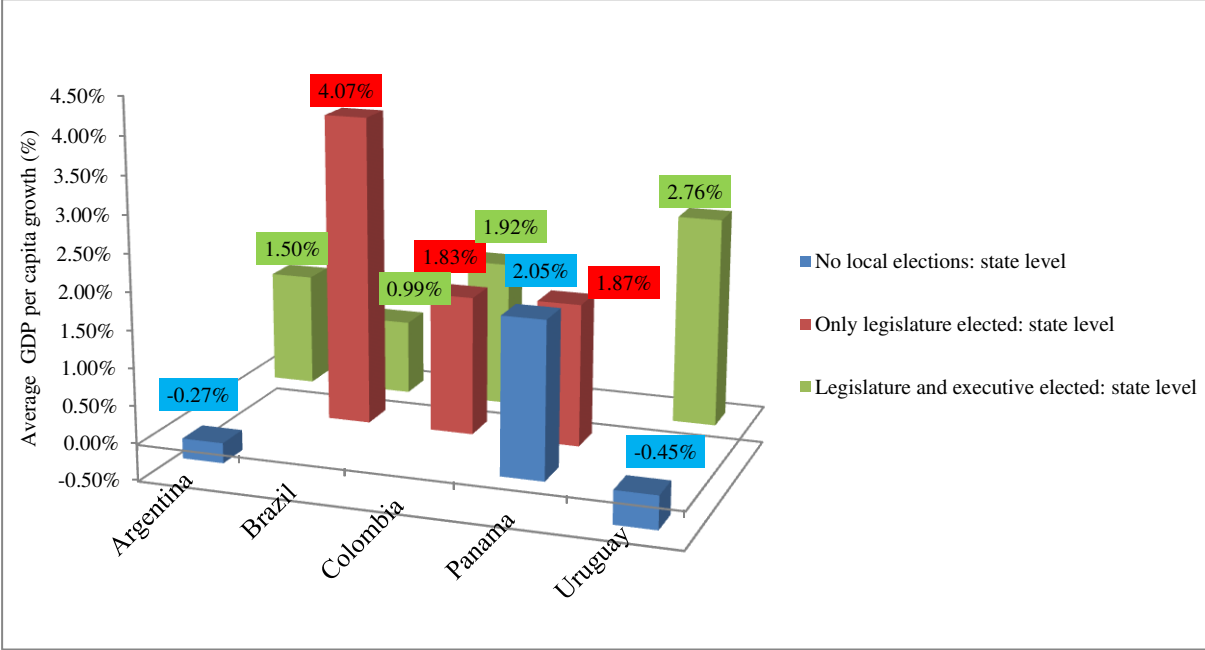
Figure 8 – Average GDP per capita growth and subnational government on municipal level<sup>36</sup> - before and after change country comparison



Countries as Bolivia, El Salvador and Nicaragua suffered negative average GDP per capita growth rates when the countries had no local elections on the municipal level. In all three cases a switch from no local elections to elections for the legislature and the executive was accompanied by an increase of average GDP per capita growth rates. Chile, on the other hand, experienced an opposite effect. A higher rate of average GDP per capita growth was observed when no local elections on municipal level were the case. The same observation is made for Colombia and Panama where a higher rate is revealed when the countries had less subnational government, concretely no local elections in Panama and only elections for legislature in Colombia.

<sup>36</sup> El Salvador had until 1979 legislative and executive elections on the state level before it switched in 1980 to no elections at all on state level, which endured for three years. Since 1983 the country established legislative and executive elections on the state level again. For figure 8 the values of GDP per capita growth have been added up from the cases where El Salvador had elections for the executive and legislative, namely from 1975-1979 and from 1983-2010. From this value have been calculated the average of GDP per capita growth.

Figure 9 –Average GDP per capita growth and subnational government on state level - before and after change country comparison



On state level higher average GDP per capita growth rates are detected in Argentina, Colombia and Uruguay after a switch from no local elections in Argentina and Uruguay and legislature elections in Colombia to elections both for legislature and the executive. In the Brazilian case a higher average GDP per capita growth rate is observed when only the legislature is elected (when compared to the average growth rate in the case of legislature and executive elections). Similarly, Panama experienced a higher average GDP per capita growth rate when it had a lower level of subnational administration, concretely when it had no local elections than when it had only legislature elections.

Figure 10 – (Log) political party age, real GDP per capita and GDP per capita growth

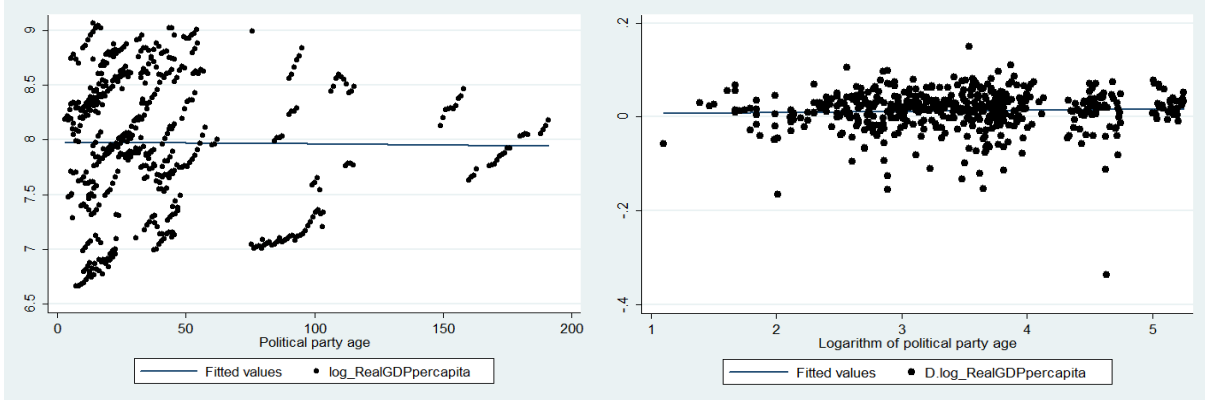
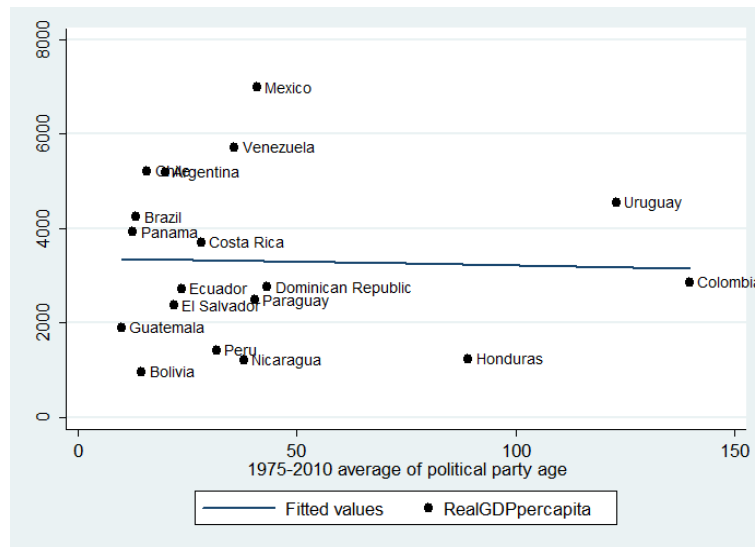


Figure 11 – 1975-2010 average political party age and real GDP per capita by country



The scatter plot of political party age and GDP per capita (figure 10) shows a slightly negative correlation between political party age and GDP per capita. It is notable that the majority of Latin American parties are younger than/or 50 years. Only a few countries have political parties with an existence since more than 100 years. Uruguay, Colombia and Honduras show the highest average age of the political parties. Colombia has an average of almost 150 years, and thus has the highest value (figure 11). By contrast, the slight negative correlation in the first figure in figure 10 cannot be confirmed in the second figure where the logarithm of political party age is used and the GDP per capita growth instead of GDP per capita level. Figure 12 illustrates no correlation between the first difference of the (log) of political party and GDP per capita growth.

Figure 12 – Logarithmized political party age and GDP per capita growth

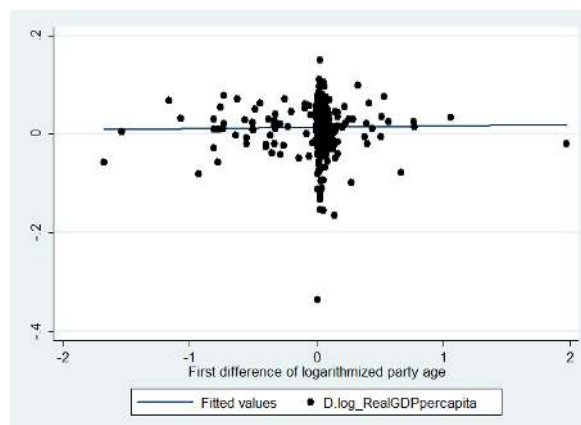
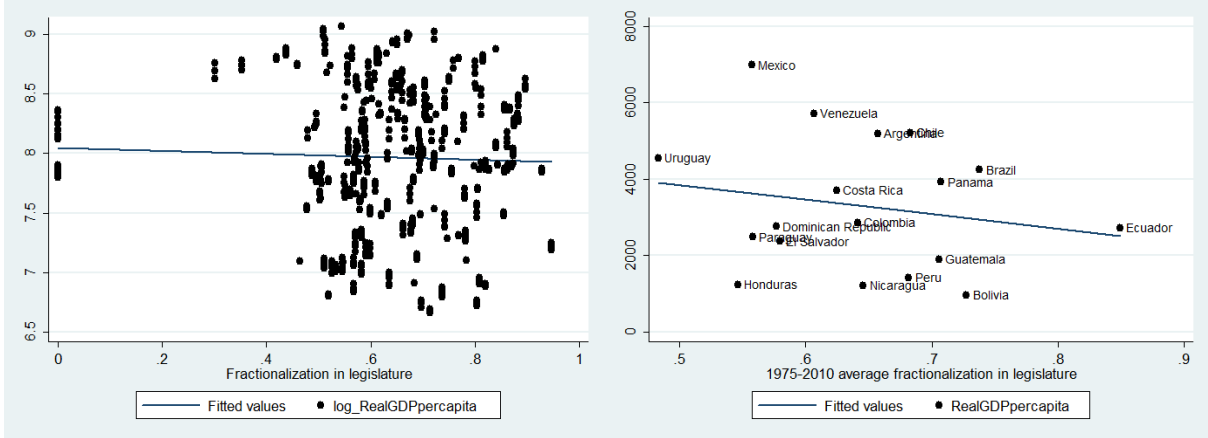


Figure 13 – Fractionalization in legislature and (log) GDP per capita



The correlation between the party fractionalization in the legislature and the (log) real GDP per capita has a negative sign. Only a few observations are found for little fractionalization in legislature. A deeper look into the database provides the information that from 1975-1979 El Salvador and from 1975-1984 Uruguay had no party fractionalization in the legislature. Both countries had during these years a non-democratic political regime. Most of the countries demonstrate a fractionalization in legislature between 0.5 and 0.8. Figure 13 with average real GDP per capita per country and fractionalization in legislature illustrates a stronger negative correlation. While the smallest average fractionalization is observed in Uruguay, followed by Honduras and Mexico, Ecuador has by far the highest average fractionalization value in legislature, followed by Brazil and Bolivia. Figure 14 visualizes no correlation between (log) of fractionalization in legislature and GDP per capita growth.

Figure 14 – Fractionalization in legislature and GDP per capita growth

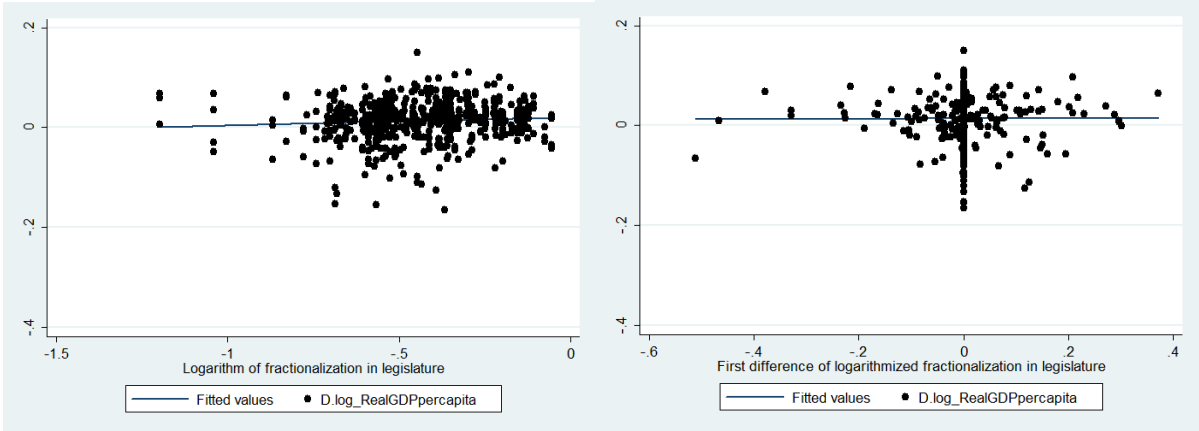




Figure 15 – Ideological polarization and average real GDP per capita and GDP per capita growth



Figure 15 depicts the calculated average of real GDP per capita and GDP per capita growth for the case where the chief executive’s party has an absolute majority in the legislature (called no polarization in the figure). In this case the average real GDP per capita value is 3122.496, constant 2005 US\$, for the period 1975-2010, which is the lowest value among the three groups. The highest average value is 4159.112 (constant 2005 US\$) when there is an intermediate difference between the chief executive’s party’s value and the values of the three largest government parties and the largest opposition party. A maximal ideological polarization is associated with the value 3327.708 (constant 2005 US\$) constituting the second highest value. The same ratios between the ideological polarization levels are demonstrated in the figure with average GDP per capita growth rates.

The correlation matrix (see appendix 2) demonstrates clearly that the democracy and military variables are correlated (5% level) with most of the variables measuring other political institutions. But none of the correlation coefficients points out a concern about multicollinearity between these independent variables. Democracy correlates positively and significantly with real GDP per capita, (log) real GDP per capita and  $\Delta$  (log) real GDP per capita while military correlates negatively and significantly with these variables.

## 6.2. Regression results

Tables 2 and 3 illustrate the regression results from a sample of 15 countries without Argentina, Paraguay and Uruguay (these countries do not have any data available for *MU*). Table 4 shows regression results from a sample of 14 countries excluding Argentina, Paraguay and Uruguay due to the aforementioned data lack and additionally Brazil as the data for gross primary school enrollment are not available for this country for the entire period 1975-2010. Table 5 includes all 18 countries as the variables *MU*, *GrEnrol* and *GrCapFor* have been dropped from the model. Further, the results in table 2 include only political institutions variables. Tables 3, 4 and 5 summarize the results from estimated models with economic control variables.

For all estimated models have been detected serial autocorrelation and heteroskedasticity.<sup>37</sup> The significance levels at which the null hypotheses are rejected are: 1 percent, 5 percent and 10 percent (see AISEN; VEIGA, 2011). Each table (2, 3, 4 and 5) presents results from estimated models with random effects with robust standard errors (RE), panel corrected standard errors (PCSE's) and feasible generalized least squares (GLS). For each method have been estimated two models, one model without first differenced values of (log) party age and (log) fractionalization and one regression with first differenced values of these variables for comparison reasons.<sup>38</sup>

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<sup>37</sup> The Wooldridge test for autocorrelation in panel data identified first-order autocorrelation in the estimated model and the Likelihood-ratio test after estimation for heteroscedasticity in panel data revealed a heteroscedasticity problem in the model. Beck and Katz (1995) argue that the GLS (Generalized least squares) estimates lead to extreme overconfidence, therefore proposing the use of the panel-corrected standard errors (BECK; KATZ, 1995).

<sup>38</sup>A unit root has been detected for (log) party age and (log) fractionalization

Table 2 – Political institutions and economic performance

Methodology	RE		PCSE		GLS	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	<b>0.0473***</b> (0.0075)	<b>0.0667***</b> (0.0079)	<b>0.0457**</b> (0.0163)	<b>0.0642***</b> (0.0186)	<b>0.0372***</b> (0.0123)	<b>0.0637***</b> (0.0157)
Military	-0.0074 (0.0073)	<b>-0.0098*</b> (0.0051)	-0.0073 (0.0171)	-0.0094 (0.0178)	-0.0103 (0.0129)	-0.0084 (0.0136)
Plurality	<b>0.0079**</b> (0.0033)	<b>0.0088***</b> (0.0033)	<b>0.0080*</b> (0.0043)	<b>0.0087*</b> (0.0045)	<b>0.0073*</b> (0.0039)	<b>0.0074*</b> (0.0040)
Municipal 2	<b>0.0242***</b> (0.0062)	<b>0.0177***</b> (0.0030)	<b>0.0241***</b> (0.0069)	<b>0.0176**</b> (0.0075)	<b>0.0191***</b> (0.0065)	<b>0.0155**</b> (0.0069)
Municipal 3	<b>0.0198***</b> (0.0062)	<b>0.0140***</b> (0.0047)	<b>0.0198***</b> (0.0063)	<b>0.0141**</b> (0.0063)	<b>0.0163***</b> (0.0055)	<b>0.0122**</b> (0.0056)
State 2	0.0034 (0.0029)	0.0024 (0.0027)	0.0029 (0.0115)	0.0018 (0.0121)	0.0055 (0.0083)	0.0033 (0.0084)
State 3	<b>-0.0054*</b> (0.0030)	-0.0078 (0.0036)	-0.0054 (0.0038)	<b>-0.0075*</b> (0.0041)	-0.0037 (0.0041)	-0.0067 (0.0041)
Allhouse	<b>-0.0118***</b> (0.0037)	<b>-0.0065*</b> (0.0037)	<b>-0.0114*</b> (0.0063)	-0.0062 (0.0064)	<b>-0.0104**</b> (0.0050)	-0.0060 (0.0050)
Checks_Lax	-0.0012 (0.0013)	-0.0010 (0.0017)	-0.0012 (0.0021)	-0.0008 (0.0022)	-0.0009 (0.0019)	-0.0007 (0.0019)
Polarization 1	<b>0.0214***</b> (0.0067)	<b>0.0177***</b> (0.0057)	<b>0.0214***</b> (0.0071)	<b>0.0176**</b> (0.0069)	<b>0.0181***</b> (0.0067)	<b>0.0128**</b> (0.0064)
Polarization 2	0.0025 (0.0047)	-0.0033 (0.0049)	0.0023 (0.0066)	-0.0037 (0.0060)	0.0029 (0.0062)	-0.0031 (0.0056)
(log)Fractionalization	<b>-0.0361***</b> (0.0080)		<b>-0.0350**</b> (0.0151)		<b>-0.0331**</b> (0.0131)	
$\Delta$ (log) Fractionalization		0.0192 (0.0268)		0.0168 (0.0254)		0.0176 (0.0193)
(log)Party age	-0.0034 (0.0029)		-0.0032 (0.0027)		-0.0032 (0.0025)	
$\Delta$ (log) Party age		-0.0024 (0.0069)		-0.0019 (0.0058)		0.0023 (0.0056)
(log)Political regime stability	<b>0.0068***</b> (0.0019)	<b>0.0067**</b> (0.0024)	<b>0.0069***</b> (0.0026)	<b>0.0069**</b> (0.0029)	<b>0.0070***</b> (0.0018)	<b>0.0063***</b> (0.0020)
Years in office	<b>0.0012***</b> (0.0005)	<b>0.0014***</b> (0.0004)	<b>0.0012*</b> (0.0007)	<b>0.0014*</b> (0.0007)	<b>0.0010*</b> (0.0006)	<b>0.0011*</b> (0.0006)
(log)GDPpc65						
World growth						
Gross capital formation						
( $\Delta$ ) Population growth						
( $\Delta$ )School enrollment						
_cons	<b>-0.0742***</b> (0.0125)	<b>-0.0837***</b> (0.0077)	<b>-0.0734***</b> (0.0191)	<b>-0.0819***</b> (0.0226)	<b>-0.0619***</b> (0.0154)	<b>-0.0776***</b> (0.0181)
Sigma_u	0	0				
Sigma_e	0.0322	0.0324				
rho	0	0	0.0588	0.0828		
Within R <sup>2</sup>	0.1702	0.1793				
Between R <sup>2</sup>	0.7251	0.6794				
Overall R <sup>2</sup>	0.2000	0.2055	0.1840	0.1830		
Prob > F						
Nr. observations	334	323	334	323	334	323
Nr. groups	15	15	15	15	15	15
Wald Chi2			88.93	70.93	84.28	72.12
Prob > chi2			0.0000	0.0000	0.0000	0.0000

\*\*\*p&lt;0.01, \*\*p&lt;0.05, \*p&lt;0.1

Standard errors in parentheses

The regressions showed in table 2 have a number of groups of 15 and the number of observations is 323 (where party age and fractionalization are first differenced) and 334 in the regressions where party age and fractionalization are not first differenced (only logarithmized). Regression (1) has a within R2 of 17.02%, a between R2 of 72.51% and an overall R2 of 20%. Regression (2) has a within R2 of 17.93%, a between R2 of 67.94% and an overall R2 of 20.55%. The PCSE's regressions have overall R2 of 18.40% (3) and 18.30% (4).

The coefficient of *democracy* has a positive sign, is significant in all six regressions and varies between 3.72% and 6.67% depending on the model and estimation methodology. In the case of a switch from non-democracy to democracy the real GDP per capita growth ( $\Delta$  (log) real GDP per capita) increases by 4.73% or 6.67% in the RE estimation, 4.57% or 6.42% in the PCSE's estimation and 3.72% or 6.37% in the GLS estimation. The coefficient of the *military* is invariably not significant (with the exception of regression 2).

The coefficient of *plurality* has a positive sign (significance level of 10%, 5% and 1%) in all regressions. A switch from a proportional electoral system to a majoritarian electoral system leads to an increase of 0.79% or 0.88% in the RE estimation, of 0.80% or 0.87% in the PCSE's estimation and from 0.73% to 0.74% in the GLS estimation.

The coefficient of *municipal* is significant in all regressions. A switch from no elections on municipal level (*municipal*=1) to local elections of the legislature (*municipal*=2) leads to an increase of real GDP per capita growth of 2.42% (1), 1.77% (2), 2.41% (3), 1.76% (4), 1.91% (5) and 1.55% (6). A switch from no elections on municipal level (*municipal*=1) to local elections of legislature and the executive (*municipal*=3) leads to an increase of real GDP per capita growth of 1.98% (1), 1.40% (2), 1.98% (3), 1.41% (4), 1.63% (5) and 1.22% (6). These findings correspond to the content of figures 6 and 7 in the descriptive statistics part where the average GDP per capita/GDP per capita growth of the 18 Latin American countries over the period 1975-2010 is higher both in the case of local elections for legislature (3918.49 constant 2005 US\$/2.01% GDP per capita growth) and where local elections are held for legislature and the executive (3355.355 constant 2005 US\$/1.55% GDP per capita growth) than in the case of no local elections (2182.566 constant 2005 US\$/0.03% GDP per capita growth) at all. However, the average GDP per capita (figure 6)/GDP per capita growth (figure 7) is the highest where elections are hold only for the legislature and the executive is appointed. This

finds support in the model estimations as the coefficients of *municipal=2* are higher than those of *municipal=3*.

The coefficients of *state* are not significant but show for *state=3* (elections are held for legislature and the executive) significant negative coefficients in regressions (1) and (4). The coefficients of *state=2* are positive and not significant. According to Kennedy (2002) a wrong sign can ground on different reasons. Here an omitted variable bias is presumed as there have not been included economic control variables yet.

The coefficient of the variable *allhouse* has a negative sign in all six regressions with no significance in (4) and (6). A switch from the case where the party of the executive does not control all relevant houses (*allhouse=0*) to the case where the party of executive has an absolute majority in the houses that have lawmaking powers leads to a decrease of real GDP per capita growth of 1.18% (1), 0.65% (2), 1.14% (3) and 1.04% (5).

The results for *polariz* show partly some congruence with figure 15 in the descriptive statistics. The coefficient of intermediate polarization (*polariz=1*) is positive and significant in all six regressions. A change from the situation that the chief executive's party does not have an absolute majority in the legislature to the situation where there is an intermediate polarization between the chief executive's party's value and the values of the three largest government parties and the largest opposition party (see KEEFER, 2012, p. 19) implicate an increase of real GDP per capita growth of 2.14% (1), 1.77% (2), 2.14% (3), 1.76% (4), 1.81% (5) and 1.28% (6). The average real GDP per capita (for all 18 Latin American countries over the period 1975-2010) is 3122.496 constant 2005 US\$/1.18% GDP per capita growth for the case of no ideological polarization and 4159.112 constant 2005 US\$/2.5% GDP per capita growth for the situation of intermediate polarization (figure 15) The coefficients of *polariz=2*, standing for maximum polarization shows positive signs where the models do not include first differenced values of *party fractionalization* and *party age* and negative signs in models that include first differenced values of *party fractionalization* and *party age*, while not significant.

While the (not first differenced) coefficients of *fractionalization* are negative and significant the first lagged logged coefficients of *fractionalization* in regressions (2), (4) and (6) are positive and not significant. The coefficients *party age* have partly positive and negative

signs, while not being significant. The coefficients variable *years in office* are in all six regressions positive and significant (1% and 10% level).

Table 3 – Political institutions and economic performance

Methodology	RE		PCSE		GLS	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	<b>0.0512***</b> (0.0110)	<b>0.0710***</b> (0.0040)	<b>0.0463***</b> (0.0156)	<b>0.0659***</b> (0.0174)	<b>0.0363***</b> (0.0121)	<b>0.0648***</b> (0.0148)
Military	-0.0047 (0.0115)	-0.0061 (0.0091)	-0.0043 (0.0177)	-0.0049 (0.0185)	-0.0048 (0.0127)	0.0005 (0.0129)
Plurality	<b>0.0079*</b> (0.0048)	<b>0.0111***</b> (0.0039)	<b>0.0083*</b> (0.0045)	<b>0.0107**</b> (0.0047)	<b>0.0094**</b> (0.0043)	<b>0.0118***</b> (0.0042)
Municipal 2	<b>0.0246***</b> (0.0066)	<b>0.0165***</b> (0.0036)	<b>0.0238***</b> (0.0083)	<b>0.0157*</b> (0.0087)	<b>0.0154**</b> (0.0065)	<b>0.0119*</b> (0.0068)
Municipal 3	<b>0.0201***</b> (0.0062)	<b>0.0114***</b> (0.0043)	<b>0.0196***</b> (0.0071)	<b>0.0110</b> (0.0074)	<b>0.0168***</b> (0.0053)	<b>0.0137**</b> (0.0055)
State 2	0.0059 (0.0065)	0.0019 (0.0051)	0.0050 (0.0103)	0.0019 (0.0111)	0.0083 (0.0086)	0.0052 (0.0085)
State 3	-0.0032 (0.0052)	<b>-0.0082*</b> (0.0046)	-0.0033 (0.0055)	-0.0072 (0.0052)	-0.0045 (0.0052)	<b>-0.0089*</b> (0.0048)
Allhouse	<b>-0.0139**</b> (0.0058)	<b>-0.0095*</b> (0.0056)	<b>-0.0131**</b> (0.0063)	-0.0086 (0.0062)	<b>-0.0114**</b> (0.0051)	-0.0068 (0.0051)
Checks_Lax	-0.0016 (0.0018)	-0.0014 (0.0019)	-0.0016 (0.0022)	-0.0013 (0.0023)	-0.0016 (0.0020)	-0.0011 (0.0020)
Polarization 1	<b>0.0203**</b> (0.0081)	<b>0.0174***</b> (0.0064)	<b>0.0201***</b> (0.0072)	<b>0.0175**</b> (0.0075)	<b>0.0167**</b> (0.0070)	<b>0.0135**</b> (0.0068)
Polarization 2	0.0037 (0.0058)	-0.0004 (0.0056)	0.0037 (0.0070)	0.0003 (0.0069)	0.0035 (0.0067)	0.0004 (0.0060)
(log)Fractionalization	<b>-0.0327***</b> (0.0112)		<b>-0.0279*</b> (0.0158)		<b>-0.0229*</b> (0.0135)	
Δ(log) Fractionalization		0.0246 (0.0250)		0.0226 (0.0231)		0.0187 (0.0172)
(log)Party age	<b>-0.0061*</b> (0.0036)		-0.0054 (0.0033)		-0.0044 (0.0028)	
Δ(log) Party age		-0.0005 (0.0063)		0.0005 (0.0054)		0.0035 (0.0050)
(log)Political regime	<b>0.0068***</b> (0.0020)	<b>0.0070***</b> (0.0027)	<b>0.0070***</b> (0.0023)	<b>0.0070***</b> (0.0027)	<b>0.0080***</b> (0.0019)	<b>0.0082***</b> (0.0021)
Years in office	0.0011 (0.0007)	<b>0.0012*</b> (0.0006)	0.0011 (0.0007)	<b>0.0011*</b> (0.0007)	0.0009 (0.0006)	0.0008 (0.0006)
(log)GDPpc65	-0.0014 (0.0054)	0.0020 (0.0006)	-0.0010 (0.0063)	0.0016 (0.0061)	0.0019 (0.0052)	0.0045 (0.0050)
World growth	<b>0.0060***</b> (0.0011)	<b>0.0064***</b> (0.0010)	<b>0.0063***</b> (0.0015)	<b>0.0068***</b> (0.0016)	<b>0.0058***</b> (0.0009)	<b>0.0061***</b> (0.0009)
Gross capital formation	<b>0.0013***</b> (0.0005)	<b>0.0012**</b> (0.0006)	<b>0.0016***</b> (0.0005)	<b>0.0016***</b> (0.0005)	<b>0.0012***</b> (0.0003)	<b>0.0011***</b> (0.0004)
(Δ) Population growth	0.0149 (0.0489)	0.0062 (0.0511)	0.0168 (0.0539)	0.0129 (0.0549)	0.0328 (0.0455)	0.0367 (0.0446)
(Δ)School enrollment _cons	<b>-0.1008***</b> (0.0307)	<b>-0.1463***</b> (0.0276)	<b>-0.1051**</b> (0.0528)	<b>-0.1449***</b> (0.0526)	<b>-0.1060**</b> (0.0416)	<b>-0.1578***</b> (0.0410)
Sigma_u	0	0				
Sigma_e	0.030	0.0299				
rho	0	0	0.1480	0.1718		
Within R <sup>2</sup>	0.2740	0.2919				
Between R <sup>2</sup>	0.4919	0.4345				
Overall R <sup>2</sup>	0.2838	0.2953	0.2603	0.2701		
Prob > F						
Nr. observations	334	323	334	323	334	323
Nr. groups	15	15	15	15	15	15
Wald Chi2			99.07	93.42	140.49	143.55
Prob > chi2			0.0000	0.0000	0.0000	0.0000

\*\*\*p<0.01, \*\*p<0.05, \*p<0.1  
Standard errors in parentheses

The within, between and overall R2 in table 3 where the models have economic control variables included differ from the R2 shown in table 2. The within and overall R2 are higher than in table 2, while the between R2 is higher for the results registered in table 2. For the results in table 3 the within R2 is 27.40% and 29.19%, the between R2 49.19% and 43.45% and the overall R2 28.38% and 29.53%. These differences can be explained by the inclusion of the economic control variables.

The coefficients of *democracy* have positive signs and are significant in all six regressions (as in table 2). Thus, a switch from non-democracy to democracy leads to an increase of GDP per capita growth. As illustrated in table 2 and 3, the coefficients of political regime stability, (log)*Tensys*, are significant in all regressions.

The same results as in table 2 are found for the coefficients of *plurality*, being positive and significant (1%, 5% and 10% level). A switch from a proportional electoral system to a majoritarian electoral system is associated with an increase of GDP per capita growth.

For the variable *Municipal* are found the same results (significant and positive coefficients) as in the regressions illustrated in table 2. Likewise, the results for the coefficients of state correspond roughly to those in table 2. The coefficients of *allhouse* are negative and significant (except in (4) and (6)) and for *polariz=1* they are positive and significant. The coefficients of checks and lax (both in table 2 and 3) show no statistical significance.

The coefficients of *fractionalization* are negative and significant in (1), (3) (5) while the signs change in (2), (4) and (6) and the coefficients become statistically insignificant. Where the first differenced values of *fractionalization* and *party age* are taken into the regression the coefficients are not significant.

The control variables coefficients of *world growth* and *gross capital formation* are positive and throughout significant. Figure 16 resumes the statistically significant regression coefficient estimates (PCSE model, regression (3))

Figure 16 – Summary of statistically significant regression coefficients of political institutions variables, PCSE model estimation, regression (3)

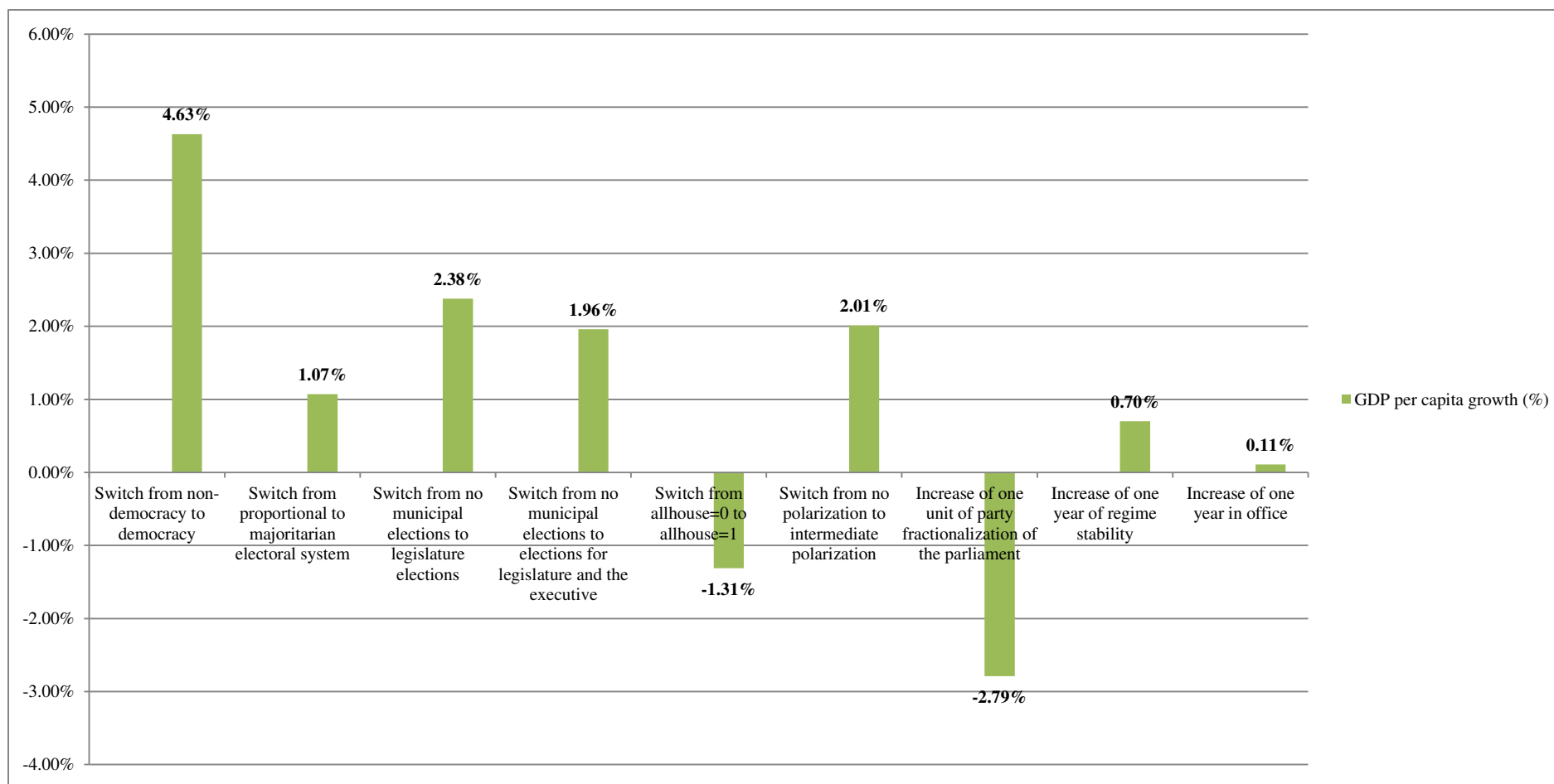




Table 4 – Political institutions and economic performance

Methodology	RE		PCSE		GLS	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	<b>0.0536***</b> ( <b>0.0111</b> )	<b>0.0716***</b> ( <b>0.0044</b> )	<b>0.0478***</b> ( <b>0.0163</b> )	<b>0.0660***</b> ( <b>0.0184</b> )	<b>0.0383***</b> ( <b>0.0125</b> )	<b>0.0655***</b> ( <b>0.0153</b> )
Military	-0.0057 (0.0122)	-0.0086 (0.0105)	-0.0053 (0.0188)	-0.0071 (0.0195)	-0.0089 (0.0134)	-0.0064 (0.0136)
Plurality	0.0053 (0.0051)	<b>0.0093**</b> ( <b>0.0039</b> )	0.0064 (0.0053)	<b>0.0094*</b> ( <b>0.0055</b> )	0.0046 (0.0050)	<b>0.0083*</b> ( <b>0.0048</b> )
Municipal 2	<b>0.0234**</b> ( <b>0.0091</b> )	<b>0.0145**</b> ( <b>0.0057</b> )	<b>0.0222**</b> ( <b>0.0094</b> )	0.0139 (0.0096)	0.0119 (0.0076)	0.0066 (0.0076)
Municipal 3	<b>0.0182**</b> ( <b>0.0087</b> )	0.0093 (0.0058)	<b>0.0175**</b> ( <b>0.0085</b> )	0.0092 (0.0082)	<b>0.0108*</b> ( <b>0.0064</b> )	0.0077 (0.0061)
State 2	0.0057 (0.0072)	0.0024 (0.0049)	0.0047 (0.0111)	0.0024 (0.0117)	0.0039 (0.0096)	0.0029 (0.0093)
State 3	-0.0033 (0.0070)	-0.0076 (0.0051)	-0.0040 (0.0092)	-0.0071 (0.0077)	-0.0051 (0.0078)	-0.0102 (0.0071)
Allhouse	<b>-0.0158***</b> ( <b>0.0060</b> )	<b>-0.0093*</b> ( <b>0.0055</b> )	<b>-0.0148**</b> ( <b>0.0070</b> )	-0.0085 (0.0068)	<b>-0.0167***</b> ( <b>0.0058</b> )	-0.0080 (0.0059)
Checks_Lax	0.0002 (0.0022)	0.0001 (0.0025)	-0.0001 (0.0026)	-0.0001 (0.0028)	0.0007 (0.0022)	0.0007 (0.0023)
Polarization 1	<b>0.0150*</b> ( <b>0.0087</b> )	<b>0.0150*</b> ( <b>0.0083</b> )	<b>0.0162*</b> ( <b>0.0089</b> )	<b>0.0164*</b> ( <b>0.0095</b> )	0.0109 (0.0083)	0.0133 (0.0086)
Polarization 2	-0.003 (0.0053)	-0.0046 (0.0055)	0.0004 (0.0092)	-0.0031 (0.0093)	-0.0027 (0.0081)	-0.0064 (0.0078)
(log)Fractionalization	<b>-0.0409***</b> ( <b>0.0155</b> )		<b>-0.0359**</b> ( <b>0.0177</b> )		<b>-0.0391***</b> ( <b>0.0150</b> )	
$\Delta(\log)$ Fractionalization		0.0230 (0.0388)		0.0242 (0.0363)		0.0464 (0.0292)
(log)Party age	-0.0071 (0.0045)		-0.0062 (0.0046)		-0.0060* (0.0036)	
$\Delta(\log)$ Party age		0.0004 (0.0072)		0.0009 (0.0069)		0.0040 (0.0058)
(log)Political regime stability	<b>0.0052**</b> ( <b>0.0025</b> )	<b>0.0067**</b> ( <b>0.0029</b> )	<b>0.0055**</b> ( <b>0.0027</b> )	<b>0.0066**</b> ( <b>0.0032</b> )	<b>0.0047**</b> ( <b>0.0023</b> )	<b>0.0071***</b> ( <b>0.0025</b> )
Years in office	0.0013 (0.0008)	<b>0.0014*</b> ( <b>0.0008</b> )	<b>0.0013*</b> ( <b>0.0007</b> )	<b>0.0014*</b> ( <b>0.0007</b> )	<b>0.0011*</b> ( <b>0.0006</b> )	<b>0.0012*</b> ( <b>0.0006</b> )
(log)GDPpc65	-0.0031 (0.0055)	0.0006 (0.0050)	-0.0024 (0.0072)	0.0003 (0.0067)	-0.0013 (0.0004)	0.0023 (0.0009)
World growth	<b>0.0055***</b> ( <b>0.0012</b> )	<b>0.0059***</b> ( <b>0.0013</b> )	<b>0.0060***</b> ( <b>0.0016</b> )	<b>0.0065***</b> ( <b>0.0017</b> )	<b>0.0052***</b> ( <b>0.0010</b> )	<b>0.0056***</b> ( <b>0.0009</b> )
Gross capital formation	<b>0.0014**</b> ( <b>0.0006</b> )	<b>0.0013**</b> ( <b>0.0007</b> )	<b>0.0016***</b> ( <b>0.0005</b> )	<b>0.0016***</b> ( <b>0.0005</b> )	<b>0.0013***</b> ( <b>0.0004</b> )	<b>0.0013***</b> ( <b>0.0004</b> )
( $\Delta$ ) Population growth	0.0278 (0.0551)	0.0066 (0.0574)	0.0269 (0.0612)	0.0115 (0.0618)	0.0346 (0.0518)	0.0230 (0.0505)
( $\Delta$ )School enrollment	0.0007 (0.0006)	<b>0.0009*</b> ( <b>0.0005</b> )	0.0005 (0.0007)	0.0007 (0.0007)	0.0005 (0.0006)	0.0006 (0.0006)
_cons	<b>-0.0859**</b> ( <b>0.0370</b> )	<b>-0.1354***</b> ( <b>0.0234</b> )	-0.0926 (0.0610)	<b>-0.1356**</b> ( <b>0.0554</b> )	-0.0737 (0.0472)	<b>-0.1382***</b> ( <b>0.0452</b> )
Sigma_u	0	0				
Sigma_e	0.0309	0.0310				
rho	0	0	0.1606	0.1806		
Within R <sup>2</sup>	0.2835	0.3060				
Between R <sup>2</sup>	0.4480	0.3770				
Overall R <sup>2</sup>	0.2938	0.3071	0.2658	0.2776		
Prob > F						
Nr. observations	276	266	276	266	276	266
Nr. groups	14	14	14	14	14	14
Wald Chi2			92.24	91.98	113.63	127.17
Prob > chi2			0.0000	0.0000	0.0000	0.0000

\*\*\*p<0.01, \*\*p<0.05, p\* <0.1  
Standard errors in parentheses

What distinguishes the results of table 4 from table 3 is the fact that the number of groups respectively the countries is 14 instead of 15 (Brazil has been dropped from the statistical

program due to data lack for the variable gross primary school enrollment) affecting the number of observations resulting in 276 and 266 observations. While the within R2 is 28.35% and 30.60% the overall R2 is 29.38% and 30.71% (slightly higher than for the results in table 3), the inclusion of the gross primary school enrollment into the models does not lead to a higher between R2 when compared to the results in table 3.

Regarding the signs of the coefficients of the variables no significant disparity from the previous results (table 2 and 3) can be observed. The variables behave basically in the same way when compared to table 2 and 3. Nevertheless, the statistical significances are fewer. While the coefficients of *democracy* have a positive sign and are significant in all six regressions, the coefficients of *plurality*, even if being continuously positive, are significant only in regression (2), (4) and (6). Fewer significant coefficients are observed as well for the variable *Municipal*: while being positive throughout the regressions, not in all cases the coefficients are significant. The coefficients of *allhouse* are negative and significant on a 1%, 5% and 10% level except in (4) and (6) where the coefficients do not show statistical significance. *Polariz=1* have positive significant coefficients except in (5) and (6). While the coefficients of *fractionalization* and *party age* are negative in (1), (3) and (5) (and significant for *fractionalization*) the opposite is the case for the coefficients of the variables in (2), (4) and (6) where the model estimations have been performed with first differenced values of these variables. Conforming to prior results the coefficients of the control variables *years in office*, *world growth* and *gross capital formation* are positive and significant in almost all regressions with exception of the coefficients of *years in office* in (1) where no significance can be observed.

Table 5 – Political institutions and economic performance

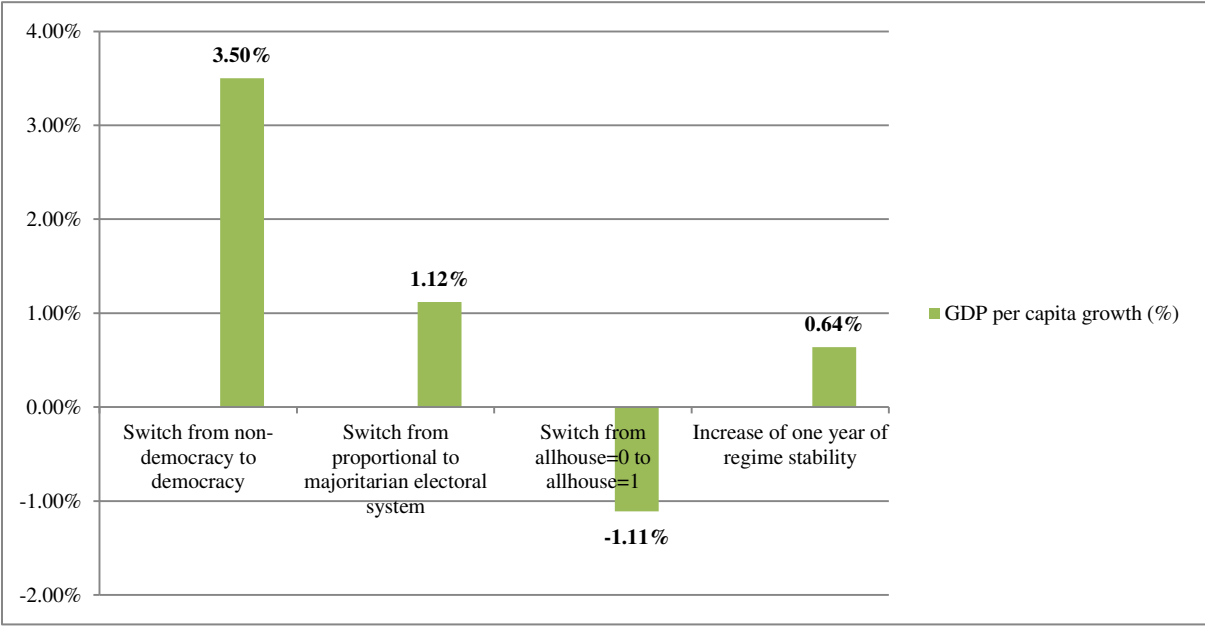
Methodology	RE		PCSE		GLS	
	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	<b>0.0424***</b> ( <b>0.0099</b> )	<b>0.0532***</b> ( <b>0.0136</b> )	<b>0.0350***</b> ( <b>0.0133</b> )	<b>0.0480***</b> ( <b>0.0162</b> )	<b>0.0254**</b> ( <b>0.0109</b> )	<b>0.0423***</b> ( <b>0.0130</b> )
Military	0.0015 (0.0105)	0.0077 (0.0124)	0.0010 (0.0141)	0.0067 (0.0154)	0.0004 (0.0108)	0.0082 (0.0119)
Plurality	<b>0.0121***</b> ( <b>0.0046</b> )	<b>0.0118**</b> ( <b>0.0046</b> )	<b>0.0112**</b> ( <b>0.0057</b> )	<b>0.0099*</b> ( <b>0.0051</b> )	<b>0.0091**</b> ( <b>0.0043</b> )	<b>0.0084**</b> ( <b>0.0040</b> )
Municipal 2						
Municipal 3						
State 2	0.0080 (0.0092)	0.0109 (0.0083)	0.0038 (0.0079)	0.0057 (0.0082)	0.0044 (0.0069)	0.0067 (0.0068)
State 3	-0.0026 (0.0048)	-0.0012 (0.0051)	-0.0012 (0.0063)	0.0015 (0.0061)	-0.0056 (0.0053)	-0.0036 (0.0052)
Allhouse	<b>-0.0107**</b> ( <b>0.0044</b> )	<b>-0.0104***</b> ( <b>0.0040</b> )	<b>-0.0111*</b> ( <b>0.0060</b> )	<b>-0.0109*</b> ( <b>0.0062</b> )	<b>-0.0116**</b> ( <b>0.0047</b> )	<b>-0.0095**</b> ( <b>0.0047</b> )
Checks_Lax	-0.0019 (0.0024)	-0.0018 (0.0029)	-0.0023 (0.0026)	-0.0020 (0.0026)	-0.0008 (0.0019)	-0.0004 (0.0019)
Polarization 1	0.0027 (0.0157)	-0.0017 (0.0151)	0.0058 (0.0089)	0.0013 (0.0086)	0.0111 (0.0069)	0.0033 (0.0066)
Polarization 2	-0.0003 (0.0068)	-0.0036 (0.0066)	0.0011 (0.0080)	-0.0021 (0.0073)	-0.0008 (0.0063)	-0.0067 (0.0057)
(log)Fractionalization	-0.0138 (0.0204)		-0.0076 (0.0187)		-0.0164 (0.0139)	
$\Delta(\log)$ Fractionalization		0.0143 (0.0280)		0.0113 (0.0244)		0.0203 (0.0173)
(log)Party age	0.0025 (0.0031)		0.0030 (0.0028)		0.0023 (0.0026)	
$\Delta(\log)$ Party age		0.0067 (0.0073)		0.0080 (0.0055)		0.0068 (0.0048)
(log)Political regime stability	<b>0.0069***</b> ( <b>0.0017</b> )	<b>0.0078***</b> ( <b>0.0024</b> )	<b>0.0064**</b> ( <b>0.0032</b> )	<b>0.0070*</b> ( <b>0.0036</b> )	<b>0.0063***</b> ( <b>0.0020</b> )	<b>0.0066***</b> ( <b>0.0022</b> )
Years in office	0.0005 (0.0005)	0.0004 (0.0005)	0.0007 (0.0007)	0.0006 (0.0007)	0.0008 (0.0006)	0.0006 (0.0006)
(log)GDPpc65	0.0038 (0.0057)	0.0012 (0.0046)	0.0034 (0.0063)	-0.0002 (0.0058)	0.0091* (0.0047)	0.0067 (0.0046)
World growth	<b>0.0060***</b> ( <b>0.0009</b> )	<b>0.0063***</b> ( <b>0.0009</b> )	<b>0.0068***</b> ( <b>0.0020</b> )	<b>0.0071***</b> ( <b>0.0020</b> )	<b>0.0061***</b> ( <b>0.0009</b> )	<b>0.0064***</b> ( <b>0.0009</b> )
Gross capital formation						
( $\Delta$ ) Population growth	0.1214 (0.0860)	0.1319 (0.0891)	<b>0.1299**</b> ( <b>0.0523</b> )	<b>0.1445***</b> ( <b>0.0543</b> )	<b>0.0926**</b> ( <b>0.0443</b> )	<b>0.1067**</b> ( <b>0.0451</b> )
( $\Delta$ )School enrollment _cons	<b>-0.0976**</b> ( <b>0.0422</b> )	<b>-0.0763*</b> ( <b>0.0412</b> )	<b>-0.0863</b> ( <b>0.0531</b> )	<b>-0.0598</b> ( <b>0.0496</b> )	<b>-0.1233***</b> ( <b>0.0391</b> )	<b>-0.1063***</b> ( <b>0.0368</b> )
Sigma_u	0.0089	0.0010				
Sigma_e	0.0359	0.0360				
rho	0.0585	0.0715	0.2277	0.2491		
Within R <sup>2</sup>	0.1430	0.1550				
Between R <sup>2</sup>	0.5063	0.4320				
Overall R <sup>2</sup>	0.1455	0.1525	0.1337	0.1415		
Prob > F						
Nr. observations	416	402	416	402	416	402
Nr. groups	18	18	18	18	18	18
Wald Chi2	21675.74	10798.62	44.55	39.56	95.27	90.63
Prob > chi2	0.0000	0.0000	0.0002	0.0009	0.0000	0.0000

\*\*\*p&lt;0.01, \*\*p&lt;0.05, \*p&lt;0.1

Standard errors in parentheses

The results from the sample of 18 Latin American countries are very similar to the previous but the coefficients of the models show fewer statistical significances. The coefficients of *democracy*, *plurality*, *allhouse* and *political regime stability* have the same previous signs and are significant in all regressions. In the RE models the within R2 is 14.30% and 15.50%, the between R2 is 50.63% and 43.20% and the overall R2 is 14.55% and 15.25%. In the PSCE models the overall R2 assumes the value 13.37% and 14.15%. These regressions provide 416 and 402 observations. The other political institutional variables are not significant. The coefficients of the variable measuring the initial GDP per capita in 1965,  $(\log)GDPpc65$ , are not significant in any model. Figure 17 summarizes the statistically significant coefficient estimates of the variables *democracy*, *plurality*, *allhouse* and *political regime stability* in regression (3) with PCSE model estimation.

Figure 17 – Summary of statistically significant regression coefficients of political institutions variables, PCSE model estimation, regression (3)



## 7. Summary and critical discussion

Political institutions matter for economic performance in Latin America as could be outlined, at least for the period 1975-2010 and for the selected samples of countries. The restriction on Latin American countries caused methodological challenges, producing an unbalanced panel and consequently missing values, but at the same time it allowed to comprehend better

political institutions and economic performance in the Latin American region. Further research could include additional criteria to select countries for comparison in order to create more complex models.

While for some political institutions - such as the political regime, electoral system, federalism on municipal level (but not on state level), partly the party ideology distance between the chief executive and the three largest government parties and the largest opposition party (*polariz*), the legislature control by the executive (*allhouse*) and the stability of political regime - the results are preponderantly clear, other political institutions struggle to present unambiguous results - such as federalism/subnational government on state level, party fractionalization in legislature, party age and checks and lax with respect to their interaction with economic performance.

It can be argued that the coefficient of democracy may be significant due to political regime stability as it is relevant for economic performance (the correlation coefficient between political regime stability and democracy is 0.2639. See appendix 2). Gerring, Bond, Barndt et al. (2005) debate that as longer a country remains democratic the greater will be its investments and consequently its wealth level. Stable democracies are more able to guarantee good economic policies that are favorable to economic performance. That is why a stable democratic country in Latin America should yield fruits in the long run.

The positive effect of plurality voting system on economic performance revealed in most of the presented regressions can be questioned when including Aboal's argument (2009). The mechanisms about how electoral systems affect economic performance have not yet been fully understood, particularly as the theoretical debates have been focused on the indirect relationship via accountability mechanisms, corruption and rent-seeking (PEREIRA; TELES, 2009). According to Aboal (2009) the worst economic outcomes are expected from poor class dictatorships and proportional representation voting system with relative majority of the poor class. As one out of five Latin Americans lives in chronic poverty being an issue in urban as in rural areas (VAKIS; RIGOLINI; LUCCHETTI, 2015), it would be relevant to control for the class distribution in Latin American countries in order to see whether the positive effect of plurality voting system on economic performance would diminish or disappear.

*Allhouse* provides the information that a control of the chief executive's party over all relevant houses is unfavorable for economic performance (in most of the regressions). This counters the widespread argument among scholars of political institutions in Latin America that a divided government (when the president's party has a minority of seats in legislature) produces gridlock and a failure of democracies in the region, even if the theory is not directly developed to interpret the consequences on economic performance. In this case, one would have to analyze the capacity of the president to overcome formal obstacles in order to get detailed and qualitative information about the president's behavior. *Polariz* provides the information about the degree of ideological polarization between the president's party and the three largest government parties and the largest opposition party. The results showed partly that a certain degree of ideological polarization can be beneficial for economic performance. Here, too, the results helped only one small step further ahead and need to be complemented in future with information about the ability of the president to overcome formal drawbacks. The variables measuring checks and lax, party fractionalization in legislature and party age have failed to deliver unambiguous results as they might be subject to considerable measurement errors.

In relation to subnational government/federalism, it would be useful to analyze on the basis of case studies and/or theory why federalism on the municipal level is relevant for economic performance and why the state level not. One possible problem could be a measurement error. Another explanation could rest upon the market-preserving federalism in order to argue that on the municipal level the degree of the decentralization of authority might be higher than on the state level. This enhances the competition between political jurisdictions, defined as pseudo-firms that provide services (WEINGAST, 1997).

The dynamics of GDP per capita have been captured with a lagged (log) GDP per capita in the models of interest. This has not been the objective in most of the studies as stated by ACEMOGLU; NAIDU; RESTREPO et al., 2014. The endogeneity issue could not have been approached in an appropriate way as the search after instrumental variables for the Latin American region remained unsuccessful. ACEMOGLU; NAIDU; RESTREPO et al., 2014 applied an instrumental-variable strategy exploiting exogenous variation in regional waves of democratization, using a sample of all countries. They found further little support for the argument that democracy confines economic growth for less developed economies. The

current research about Latin America comes to similar results in relation to democracy and economic performance. However, in order to obtain a clear causal relationship one needs to take into account the endogeneity problem of all the analyzed political institutions.

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## APPENDIX

### Appendix 1 - Descriptive statistics, all variables

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
RealGDPpercapita	648	3303.56	1838.82	780.58	8677.94
(log)RealGDPpercapita	648	7.94	0.60	6.66	9.07
$\Delta(\log)$ RealGDPpercapita	630	0.01	0.04	-0.34	0.15
Democracy	648	0.80	0.40	0.00	1.00
Military	648	0.21	0.41	0.00	1.00
Plurality	562	0.48	0.50	0.00	1.00
Municipal	443	2.57	0.71	1.00	3.00
State	561	1.65	0.85	1.00	3.00
Allhouse	579	0.41	0.49	0.00	1.00
Check_lax	626	2.96	1.45	1.00	7.00
Polariz	598	0.65	0.88	0.00	2.00
Frac	567	0.64	0.16	0.00	0.95
(log)Frac	552	-0.44	0.19	-1.20	-0.06
$\Delta(\log)$ Frac	529	0.00	0.07	-0.51	0.37
PartyAge	523	43.77	40.71	3.00	191.00
(log)PartyAge	523	3.43	0.84	1.10	5.25
$\Delta(\log)$ PartyAge	497	0.01	0.24	-1.67	1.97
Tensys	648	13.21	11.68	0.00	62.00
(log)Tensys	647	2.13	1.05	0.00	4.13
Yrsoffc	648	3.92	4.46	-3.56	0.69
GDPpc65	648	2235.19	1356.21	640.10	6173.20
(log)GDPpc65	648	7.55	0.57	6.46	8.73
WG	648	2.95	1.43	-2.07	5.12
GrCapFor	627	20.37	5.04	-5.74	43.92
GrEnrol	573	106.28	10.60	62.47	133.40
$\Delta$ GrEnrol	526	0.35	2.68	-17.34	15.45
PopGr	648	1.87	0.65	-0.06	3.17
$\Delta$ PopGr	630	-0.03	0.04	-0.18	0.18

## Appendix 2 – Correlation matrix of all variables

	RealGDPpc	(log)RealG DPpc	$\Delta(\log)$ Real GDPpc	D	M	PL	MU	ST	ALL	CH	POL
RealGDPpc	1.0000										
(log)RealGDPpc	<b>0.9557*</b>	1.0000									
$\Delta(\log)$ RealGDPpc	<b>0.1208*</b>	<b>0.1286*</b>	1.0000								
D	<b>0.1827*</b>	<b>0.1471*</b>	<b>0.1796*</b>	1.0000							
M	<b>-0.1791*</b>	<b>-0.1661*</b>	<b>-0.0866*</b>	<b>-0.6997*</b>	1.0000						
PL	0.0480	-0.0264	0.0531	<b>-0.1162*</b>	-0.0025	1.0000					
MU	<b>0.1387*</b>	<b>0.1447*</b>	<b>0.1021*</b>	<b>0.3623*</b>	<b>-0.3005*</b>	<b>-0.1816*</b>	1.0000				
ST	<b>0.6028*</b>	<b>0.5999*</b>	0.0266	<b>0.1668*</b>	<b>-0.1367*</b>	-0.0827	<b>0.2505*</b>	1.0000			
ALL	0.0596	0.0069	<b>-0.0982*</b>	<b>-0.2012*</b>	<b>0.2163*</b>	-0.0579	<b>-0.2040*</b>	0.0325	1.0000		
CH	<b>0.1729*</b>	<b>0.1740*</b>	0.0460	<b>0.4865*</b>	<b>-0.5123*</b>	-0.0759	<b>0.2929*</b>	<b>0.1824*</b>	<b>-0.5522*</b>	1.0000	
POL	0.0681	<b>0.0938*</b>	0.0273	<b>0.3652*</b>	<b>-0.3701*</b>	<b>-0.1396*</b>	<b>0.1977*</b>	-0.0234	<b>-0.5504*</b>	<b>0.7215*</b>	1.0000
FRAC	-0.0378	-0.0337	<b>0.0967*</b>	<b>0.3990*</b>	<b>-0.1922*</b>	-0.0696	-0.0896	0.0759	<b>-0.4760*</b>	<b>0.4843*</b>	<b>0.5209*</b>
(log)FRAC	-0.0690	-0.0276	<b>0.0852*</b>	<b>0.1717*</b>	<b>-0.1881*</b>	-0.0436	-0.842	-0.0084	<b>-0.4681*</b>	<b>0.4663*</b>	<b>0.5739*</b>
$\Delta(\log)$ FRAC	0.0152	0.0325	0.0010	0.0651	<b>-0.1183*</b>	-0.0721	0.0592	<b>0.1046*</b>	<b>-0.0902*</b>	0.0753	<b>0.1137*</b>
PA	-0.0546	-0.0128	0.0423	<b>0.1230*</b>	<b>-0.1328*</b>	<b>-0.2525*</b>	<b>0.2341*</b>	<b>0.2794*</b>	-0.0391	-0.0151	<b>-0.1505*</b>
(log)PA	-0.0092	0.0140	0.0454	<b>0.1776*</b>	<b>-0.1503*</b>	<b>-0.3215*</b>	<b>0.4043*</b>	<b>0.1992*</b>	0.0339	-0.0000	<b>-0.1276*</b>
$\Delta(\log)$ PA	-0.0368	-0.0438	0.0156	-0.0195	-0.0581	0.0251	0.0058	-0.0125	0.0064	-0.0043	-0.0055
Tensys	<b>0.1061*</b>	<b>0.1567*</b>	<b>0.1152*</b>	<b>0.2639*</b>	<b>-0.2357*</b>	<b>-0.4066*</b>	<b>0.2032*</b>	<b>-0.1125*</b>	<b>-0.1895*</b>	<b>0.2276*</b>	<b>0.2351*</b>
(log)Tensys	-0.0006	<b>0.1468*</b>	<b>0.1651*</b>	<b>0.3541*</b>	<b>-0.2992*</b>	<b>-0.3886*</b>	<b>0.1731*</b>	-0.0543	<b>-0.2042*</b>	<b>0.2917*</b>	<b>0.2528*</b>
Yrsoff	-0.0655	<b>-0.0995*</b>	<b>0.0877*</b>	<b>-0.0961*</b>	<b>0.3586*</b>	-0.0744	<b>-0.1044*</b>	0.0140	<b>0.2853*</b>	<b>-0.2432*</b>	<b>-0.1700*</b>
GDPpc65	<b>0.7210*</b>	<b>0.6678*</b>	-0.0313	<b>0.0895*</b>	0.0102	<b>-0.1920*</b>	<b>0.0971*</b>	<b>0.4784*</b>	<b>0.2728*</b>	0.0604	-0.0316
(log)GDPpc65	<b>0.7153*</b>	<b>0.6817*</b>	-0.0045	<b>0.0775*</b>	0.0127	<b>-0.1691*</b>	0.0089	<b>0.5131*</b>	<b>0.2368*</b>	0.0324	0.0224
WG	-0.0404	-0.0307	<b>0.1933*</b>	-0.0668	0.0559	-0.126	-0.0009	0.0031	0.0703	-0.0560	-0.0757
GrCapFor	<b>0.1765*</b>	<b>0.1319*</b>	<b>0.2557*</b>	0.0421	0.0490	0.0422	<b>0.1606*</b>	<b>-0.0928*</b>	<b>0.1477*</b>	<b>-0.0951*</b>	<b>-0.1201*</b>
GrEnrol	<b>0.1351*</b>	<b>0.1647*</b>	<b>0.1579*</b>	<b>0.4021*</b>	<b>-0.3011*</b>	<b>-0.3128*</b>	<b>0.3664*</b>	<b>0.1776*</b>	0.0324	<b>0.1047*</b>	<b>0.2195*</b>
$\Delta$ GrEnrol	-0.0811	<b>-0.1012*</b>	0.0431	0.0377	-0.0153	0.0351	0.0230	-0.0425	0.0574	-0.0783	-0.0300
PopGr	<b>-0.3449*</b>	<b>-0.3528*</b>	<b>-0.1536*</b>	<b>-0.2413*</b>	<b>0.3181*</b>	<b>0.1161*</b>	<b>-0.1614*</b>	<b>-0.2763*</b>	<b>0.1916*</b>	<b>-0.2837*</b>	<b>-0.3045*</b>
$\Delta$ PopGr	0.0571	0.0531	<b>0.1078*</b>	<b>-0.1460*</b>	<b>0.0938*</b>	-0.0083	<b>-0.1153*</b>	-0.0229	-0.0120	<b>-0.0997*</b>	<b>-0.1436*</b>

	Frac	(log)Frac	$\Delta(\log)$ Frac	PA	(log)PA	$\Delta(\log)$ PA	Tensys	(log)Tensys	Yrsoffc	GDPpc65	(log)GDPpc65
Frac	1.0000										
(log)Frac	<b>0.9906*</b>	1.0000									
$\Delta(\log)$ Frac	<b>0.1719*</b>	<b>0.1731*</b>	1.0000								
PA	<b>-0.1577*</b>	<b>-0.1406*</b>	0.0301	1.0000							
(log)PA	<b>-0.2226*</b>	<b>-0.1994*</b>	0.0323	<b>0.8950*</b>	1.0000						
$\Delta(\log)$ PA	0.0027	0.0042	-0.0274	0.0726	<b>0.1198*</b>	1.0000					
Tensys	<b>0.1377*</b>	0.0529	-0.0224	0.0227	0.0664	-0.0502	1.0000				
(log)Tensys	<b>0.2153*</b>	<b>0.1135*</b>	-0.0215	0.0549	<b>0.0890*</b>	-0.0654	<b>0.8718*</b>	1.0000			
Yrsoffc	-0.0738	<b>-0.1179*</b>	-0.0498	-0.0527	0.0180	-0.0004	<b>-0.0788*</b>	-0.0020	1.0000		
GDPpc65	<b>-0.0975*</b>	<b>-0.0850*</b>	-0.0135	-0.0768	-0.0265	-0.0358	-0.0462	-0.0198	0.0675	1.0000	
(log)GDPpc65	-0.0433	0.0236	-0.0087	-0.0807	-0.0752	-0.0266	-0.0358	-0.0221	<b>0.0925*</b>	<b>0.9427*</b>	1.0000
WG	-0.0579	-0.0429	-0.0647	0.0370	0.0200	-0.0108	-0.0690	-0.0672	0.0361	-0.0008	-0.0014
GrCapFor	<b>-0.0931*</b>	<b>-0.1541*</b>	-0.0512	-0.0352	0.0465	-0.0132	0.0709	0.0612	<b>0.1076*</b>	<b>0.1438*</b>	<b>0.1053*</b>
GrEnrol	0.0871	0.0549	<b>0.1462*</b>	<b>0.1449*</b>	<b>0.1978*</b>	-0.0537	<b>0.2299*</b>	<b>0.3040*</b>	<b>0.1411*</b>	<b>0.0953*</b>	<b>0.1084*</b>
$\Delta$ GrEnrol	-0.0621	-0.0782	-0.0795	-0.0497	-0.0701	-0.0208	<b>-0.0911*</b>	<b>-0.0937*</b>	-0.0310	-0.0370	-0.0516
PopGr	-0.0651	<b>-0.2813*</b>	0.0012	<b>-0.1392*</b>	<b>-0.1012*</b>	0.0123	<b>-0.1833*</b>	<b>-0.2572*</b>	0.0738	<b>-0.2020*</b>	<b>-0.3072*</b>
$\Delta$ PopGr	-0.0757	0.0172	-0.0315	0.0061	-0.0219	-0.0302	-0.0317	0.0053	-0.0015	0.0331	0.0330

	WG	GrCapFor	GrEnrol	$\Delta$ GrEnrol	PopGr	$\Delta$ PopGr
WG	1.0000					
GrCapFor	-0.0040	1.0000				
GrEnrol	-0.0191	<b>0.1550*</b>	1.0000			
$\Delta$ GrEnrol	0.0653	0.0395	0.0038	1.0000		
PopGr	0.0642	<b>0.1806*</b>	<b>-0.2892*</b>	<b>0.1140*</b>	1.0000	
$\Delta$ PopGr	0.0214	-0.0137	-0.0206	0.0153	-0.0454	1.0000