
Thesis submitted to obtain the Degree of Master in Economics from Graduate School of Economics – EPGE, Getulio Vargas Foundation – FGV.

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Supervisor: Octavio Amorim Neto

Rio de Janeiro
December 2006
Graduate School of Economics – EPGE
Getulio Vargas Foundation


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Abstract

This thesis tests some hypotheses regarding the impact of voter turnout on inflation on the assumption that macroeconomic policies depend on voters’ and politicians’ preferences. The work’s empirical basis includes data from 111 nations from the developing world, covering the period from 1978 to 2000. Its main finding indicates that increases in voter turnout co-vary with higher inflation rates, *all else held constant*. 
Introduction

Democracy is considered by many as the best political method to choose efficient economic policies. Most developed countries nowadays have democratic elections to choose their rulers. Moreover, in the past decades there has been a growing number of developing nations adopting democratic norms to select their governmental authorities. As we can see on Figure 1, we have 39 developing countries with elections in 1978; it increased to 122 countries in 1996. This trend is the key motivating factor of our analysis of whether and how voter turnout affects economic performance.

![Figure 1: Countries adopting democratic election.](source: Computed from IDEA (2006))

Traditionally, the older literature on macroeconomics provides little guidance for thinking about the effect of politics on policy outcomes. For decades, this narrow-minded, strictly economic view was paramount. It has changed since Roubini and Sachs (1989), but as with the market reform literature, its focus has been on political instability, timing of elections, the ideological orientation of governments, competition among political parties, the effects of constitutional rules, and federalism. Alesina et al. (1996); Alesina, Roubini and Cohen (1997); Persson and Tabellini (2003); Wibbels (2005); and Amorim Neto and Borsani (2004) are examples of such lines of research. Here we will follow upon them. Our work hopes to contribute to a more solid and wider understanding of the economic consequences of politics.

As far as the scholarly literature is concerned, Quinn et al. (2001) show that democracies produce stable growth in national income. They analyze voter preferences and hypothesize that the
mechanism generating economic stability is a result of risk aversion by voters. They find that when growth and volatility are jointly examined, democracies reveal favorable figures as compared to autocracies.

However, politicians often run headlong into their survival instincts. Thus they tend to be averse to budget cuts, tax increases, and all issues related to macroeconomic reforms. As a result, questions about the ability of nations to adjust their economies have assumed tremendous importance. No wonder the precise conditions under which governments are able to carry through politically difficult macroeconomic reforms have been the subject of heated scholarly and political debates. What are the key political and economy institutions that successfully insert a nation into the global economy? What are the political conditions for the implementation of successful market-oriented reforms? This thesis discusses the hypothesis that the inclusiveness of democratic elections has serious implications for some macroeconomic outcomes.

There are several articles with divergent conclusions about how the democratic process would influence macroeconomic outcomes. This lack of consensual findings has motivated a great amount of empirical work aimed at analyzing how the democratic process correlates with an important economic goal, namely the maintenance of the money’s value. This is also the motivation of this thesis. Thus, the next section assesses recent works showing how the subject is controversial, focusing on the impact of formal institutions and voter preferences on inflation. Note that we will not try to cover all the books and articles on such a vast subject, but only the most related to our work. The third section will endeavor to come up with analytical mechanisms and hypotheses regarding the relationship between voter turnout and inflation, a topic that has not yet been thoroughly explored by the extant scholarship. The fourth section deals with data, the operationalization of variables, and econometric methods. Our main finding is that voter turnout positively co-varies with inflation in the developing world, *ceteris paribus*. This is because increases in the former can lead to higher budget deficits, which, by their turn, are generally conducive to higher prices. The fifth section concludes.
II. Democracy and Macroeconomic Performance: A Controversial Subject

The recent literature on political institutions and macroeconomic performance offers widely divergent views on how democratic elections influence macroeconomic results. There are pessimistic and positive strains. The pessimistic one is represented by Keech (1995), Rodrik and Alesina (1994) and Persson and Tabellini (1994). This literature argues that democracies are vulnerable to demands of redistribution as elections give voice to disadvantaged groups. Redistribution may divert resources from productive investment and thus harming economic growth. Olson (1993) predicts stagnation due to unbound interest groups’ rent-seeking activities. Nordhaus (1975) predicts costly economic manipulation for short-run electoral gain. Barro and Gordon (1983) describe a time-inconsistency problem which makes inflation more likely.

Positive arguments about how democracies work well abound too. Wittman (1989; 1995) and others argue that democratic competition is inherently effective as a mechanism for revealing information. The more developed is a democracy; the more developed are the institutions that guarantee transparency in policymaking. Such a feature enables citizens to monitor elected officials more effectively and reduces the rent-seeking probability. Przeworski (1991) and North (1989) argue that critical institutions to growth are better developed in democratic countries. Lohmann (1999) proposes that elections serve to select competent leaders and that, over time; democracy should be correlated with better economic output. In what follows we purport to organize the different claims of the literature.

Political Institutions with Positive Economic Effects

Armijo and Gervasoni (2006a) summarizes six theoretical models relating political regime type with economic growth. The article also comments on some empirical evidences for each model. The six models are divided in first and second generation ones. The first generation consists of the

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2 There are incentives for governmental authorities to choose a suboptimal monetary policy.
Economic Populism Model\textsuperscript{3} and Rule of Law Model. These do not reach definite empirical conclusions. On average, democracies or selectorate size would not be better or worse than autocratic states. The selectorate theory is detailed in Mesquita, Smith, Siverson, Morrow (2003). It is a set of people whose endowments include the qualities or characteristics institutionally required to choose the government’s leadership and necessary for gaining access to private benefits doled out by the government’s leadership. All selectorate members within a polity, therefore, share certain common characteristics. Those characteristics, however, can differ across political systems, so that an individual can qualify for selectorate membership in one polity and yet have no possibility of qualifying in another.

The second generation is constituted by Veto Players, Cautious Voter, Partisan Mutual Adjustment and Median Selector Models. This generation empirically associates institutional measures of democracy with lower economic growth volatility. The Model of Economic Populism is based on the medium voter hypothesis. This model compares which choice would be made by a central planner in relation to the outcome chosen by a majority election. As the medium voter has a preference for a tax rate that does not maximize economic growth, democracy leads to lower economic growth.

The Rule of Law Model is premised on the principal-agent model. Voters are the principal and politicians are their agents. In dictatorships, mandates would not reflect citizens’ preferences. Those in power behave in such a way as to extract the maximum of resources for private use, without being concerned about property rights. In democracy people can express their preferences, moreover, democracy enacts laws protecting property rights. The result is an environment that encourages investment and steady growth.

The empirical conclusions for the first generation models after innumerable studies are still ambiguous in establishing direct relations between democracy and inflation. The empirical evidence strongly depends on how quality of democratic is measured, on how the sample is chosen, and on how models are specified.

\textsuperscript{3} The models names are not standard within the literature.
The models of the second generation are more generic, with each new model featuring more logical details. The Veto Players Model is based, as its very name indicates, on the role of veto points. Veto players are political actors in national politics with power to block decisions. If any public policy is to be implemented, it must be approved by all veto players. The essence of the model is the necessity of coordination between multiple veto players for the enactment of public policy. Its main hypothesis is as follows: the higher the number of veto players, the slower is the policy process. The theoretical forecast is lower economic growth associated with lower volatility.

The fourth model is an elaboration on the Median Voter theorem. The Cautious Voter Model is based on the idea that incumbent political leaders face electoral incentives when choosing economic policies. The latter reflect the preferences of the median voter. This framework is detailed in Persson and Tabellini (2000). They discuss how the Median-Voter Equilibrium emerges from electoral competition, and how there is a policy convergence dependent on the nature of the political regime. This model considers the delivery of promises made during electoral contests. The authors predict that the median voter, in a democracy, possesses preference for a safe and predictable growth in per capita income. This is an implication of the fact that the medium voter in a fully-fledged democracy has a lower income when compared to average income. Therefore, as the individuals are risk averse; they reject variability. Thus, we have a prediction of lower volatility in the economic growth for democracies.

The Partisan Mutual Adjustment Model is predicated on the proposition that all election winners will be losers in the future. Politicians expect that in the future the opposition will be in power; therefore the ones currently in office will be in opposition. Considerations derived from iterated games will lead to cooperation between rivals, thus inspiring moderation in public policy. Policies would then gravitate around an average position. In contrast with previous models, when politicians are assumed to be myopic, politicians in the Partisan Mutual Adjustment Model look forward to implement policies that make them election winners. The implementation of proper policies would keep them in power. The Partisan Mutual Adjustment Model is a process of continuous
bargain between party politicians. The forecast of this model is that democracies would present stable economic figures.

The sixth and last is the Medium Selector Model, developed by Armijo and Gervasoni (2006a), as an elaboration of Armijo (2005). MS Model assumes that all political agents with a mandate are accountable to a core of partisan ideas and a selectorate. This model is similar to that of Mesquita (2000). The model argues that variations in the breadth and inclusiveness of the selectorate imply that the chosen policies will impact on macroeconomic results. The selectorate chooses policies that maximize their income. Therefore, winning politicians act opportunistically to receive a mandate; they represent the Median Selector⁴. The model predicts better policies with a wider selectorate, as there is a progressive narrowing of macroeconomic policies options. Table 1 presents the main conclusions of the MS Model.

<table>
<thead>
<tr>
<th>Political Regime</th>
<th>Size of the selectorate</th>
<th>Macroeconomic constraints in incumbent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elite</td>
<td>&lt; 20% of households</td>
<td>The selectorate must be satisfied with economic growth or with redistribution. The resources are extracted from people excluded from the political process. The possibility of government with or no economic growth exists.</td>
</tr>
<tr>
<td>Median Sectors</td>
<td>30-60% of households</td>
<td>Necessity of growth. Crises and volatility are bearable if and only if costs are passed to non-participants.</td>
</tr>
<tr>
<td>Mass Democracy</td>
<td>&gt; 75% of households</td>
<td>Economic growth is mandatory. Crises and volatility must be minimized, as the selectorate bear their costs.</td>
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Feng (2003) uses political and economic analyses to study the effects of political institutions on economic performance. His ideas are spurred by the political democratization and international economic liberalization that have taken place in the recent years. The book relates some political

⁴ It works as the medium voter, here expressing the group of individuals that participate of the political choice of regime’s officeholders. Regimes can represent an extended set of political ideas.
determinants of economic growth. The author studies three variables of political systems – political freedom, political stability, and policy certainty – and relates them to economic development. He examines the political factors that may affect patterns of growth. Using theory and country-specific studies, the author states that political conditions and institutions do matter for economic growth.

The book has a chapter analyzing the details of the political environment underlying inflation. The effect of inflation on growth is not statically significant. But while the impact of inflation on growth may not be as consequential as investment in reproducible capital on growth, price stability greatly affects economic behavior and imposes political consequences. Together with economic growth, external balances, and employment, inflation policies are a major concern of any nation. This is because taxation through inflation is one of the political mechanisms that governments can manipulate to transfer social wealth to reward particular groups.

Feng finds no statistical evidence that democracies are more likely to generate inflation than autocracies. A multivariate model show statistical evidence that semi-democratic countries are no better fighting inflation than autocracies. The author also finds that political instability has a great impact on inflation, following the work of Barro (1991). The last finding goes against the grain of the findings of Arbetman and Kugler (1995), and Al-Marhubi (1997). Feng finds no evidence that a country with high politically determined rent-extraction rates has high inflation. All told, Feng believes that no single political institution-based model offers a complete explanation for inflation.

Knack and Keefer (1995) contribute to the positive strain by checking the importance of property rights\(^5\) to economic performance. The authors argue that stability of property and contractual rights, government efficiency in the provision of public goods, and efficient public policies are significant determinants of macroeconomic performance. Knack and Keefer predict that a lower level of steady state income implies a slower rate of convergence to the steady state from a given initial level of income\(^6\). In countries with unprotected property rights, the steady state level of income to

\[^5\] Property Right here has a broad interpretation; it includes political and intellectual rights.
\[^6\] As described in Barro and Sala-i-Mattin (1992).
which they can aspire should be lower. Countries that make inefficient public investment and bad economic policy decisions would also be expected to have lower steady state levels of income.

Quinn and Woolley (2001) argue that democracies differ from autocracies, which goes against Feng (2003). They set out to prove that democracies produce stable growth in national income. They analyze selectorate preferences and hypothesize that the mechanism generating democratic stability is a reflection of risk aversion by voters. They test their hypothesis with three models. First, following the comparative economic voting literature, they find that voters penalize incumbents when economic volatility increases. Second, they use regression analyses to show that democracies, as compared to autocracies, are characterized by less volatility in the economy. Third, they build a model in which democratic stability emerges to reduce social inequality, another mechanism that might explain democratic stability, which, however, is not corroborated empirically. They find that when growth and volatility are jointly examined, democracies reveal positive figures, i.e. stable growth in national income.

Spanakos and Rennó (2006) argue that in emerging markets voter and investor\textsuperscript{7} preference congruence must occur so that elections do not cause economic turbulence and inflation. They also argue that in such market there exists an inverted Philips curve before price stability takes place. The authors point that in emerging markets political uncertainty and the perception that economic reforms are not forthcoming highlight political risk. The latter is considered by investors particularly during elections. If investors perceive high political risk, this would lead to capital evasion, with negative effects on macroeconomic performance. When politicians propose policies that can convince voters and investors, elections may have a positive effect on the economy, and indicators such as inflation would present lower values.

Table 2 summarizes the literature that argues that democratic political institutions have a positive effect on economic figures. Below we set out to review the negative strain.

\textsuperscript{7} Investors are considered as a group of foreigners, whom acts diversely. Investors includes all private individuals, institutions and corporations that through the purchase of property, license, title, bonds or other assets, invest in the considered market.
Table 2: Articles arguing that democracy has a positive effect on the economy

<table>
<thead>
<tr>
<th>Work</th>
<th>Conclusion</th>
<th>Model</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armijo et al. (2006)</td>
<td>Size of selectorate influences positively public polices.</td>
<td>Median Selector</td>
<td>analyzes 5 other models</td>
</tr>
<tr>
<td>Feng (2003)</td>
<td>Political factors do not explain inflation.</td>
<td>various</td>
<td></td>
</tr>
<tr>
<td>Armijo (2005)</td>
<td>Higher voter turnout leads to better public policies and ends chronic inflation.</td>
<td>empirical</td>
<td>Opposed to Hibbs (1977)</td>
</tr>
<tr>
<td>Knack et al. (1995)</td>
<td>Efficient Institutions protecting property right are key to economic growth.</td>
<td>empirical</td>
<td>new measure of institutions</td>
</tr>
<tr>
<td>Spanakos et al. (2006)</td>
<td>Preference congruence between voters and investors are likely to happen during high inflation.</td>
<td>Preference-Congruence Model</td>
<td>Extends the work of Remmer (1993)</td>
</tr>
</tbody>
</table>

**Political Institutions with Negative Economic Effects**

This section presents the state of the literature arguing that democracy generates negative economic effects when compared to other regimes.

Keefer (2005) studies the persistent differences in economic performance between younger and older democracies. Younger democracies are more corrupt, possess worse law enforcement, lower levels of bureaucratic efficiency, lower school registration, and spend more on public investments and government workers. An explanation for this is that politicians in younger democracies have less credibility. Keefer and Stasavage (2003) argue that politician’s inability to carry through credible promises to citizens leads to a worse provisions of public goods. Those politicians also exaggerate the transferences for small groups of voters. Also, government officials in younger democracies engage more in financial extraction. Empirically, the effect of democracy age is statistically strong throughout many tests. The authors conclude that elections and political checks and balances are not enough to ensure good government performance.

Most models assume either that all pre-electoral promises are credible to all voters, or none are as in Persson and Tabellini. (2000). There is, however, no democracy in which these polar cases apply. Keefer and Stasavage (2003) argue that when political competitors are less able to make credible
promises, they attempt either to build their credibility among smaller groups of voters or to rely on patrons, who, in turn, can make credible promises to clients, in low-credibility countries – where politicians are reliant on patrons or have succeeded in establishing credible relationships with a few voters. Scott (1972) characterizes patron-client relations in Southeast Asia as ones “in which an individual of higher socioeconomic status (patron) uses his own influence and resources to provide protection or benefits, or both, for a person of lower status (client) who, for his part, reciprocates by offering general support and assistance, including personal services, to the patron.” The implications for young democracies are clear. Political competitors in younger democracies have less chance to develop policy reputations with voters and their political parties are likely to be less well-established as vehicles for conveying credible policy stances. As a consequence, they should be more susceptible to reliance on patrons as a means to establish credible bonds with voters. This implies that the policy choices of young democracies have lower levels of public goods provision, higher levels of private, targeted goods, and higher rent-seeking. Empirical evidence supports the contention that politicians in younger democracies prefer transfers to narrow groups of voters, thus engaging in greater rent-seeking and under providing public goods. Seven variables are used to represent these different dimensions of government policy. A common measure of corruption captures rent-seeking tendencies; measures of bureaucratic quality, the rule of law, secondary school enrollment and government ownership of newspapers are employed to track government incentives to provide public goods or goods that are difficult to target to particular groups of voters; and public investment and the central government wage bill are used to capture policies that are easy for politicians to target to specific voters at the expense of general voters. The authors conclude that the number of continuous years of competitive elections has a statistically significant impact on seven policy areas associated with economic development.

Treisman (2000) studies how political and fiscal decentralization affects inflation control. The author performs a statistical analysis of average annual inflation rates in a panel of 87 countries, during the 1970s and 1980s and found no clear relationship between decentralization and the level of inflation. Political decentralization, however, does appear to reduce change in countries’ relative inflation rates.
over time. By creating additional veto players, federal structures may keep existing patterns of monetary policy, whether inflationary or strict. Among the countries that started with low inflation, it tended to increase more slowly in federations than in unitary states.

Different meanings of decentralization are vigorously debated, supported by different empirical examples, there are various predictions. According to one view, inflation is essentially the result of a commitment problem. Policymakers have an incentive to renego on promises of stable growth of monetary reserves because unanticipated inflation has a positive real effect. Only when politics can restrict their future actions their promises can be credible and a low inflation equilibrium can be achievable. A second argument attributes inflation to a collective action problem. Stable prices are a public good that will tend to be underprovided when the number of actors who must agree to its provision is large. Although the advantages of low inflation are felt by all, the public spending and money creation that cause it can accrue to particular beneficiaries. The more are actors with leverage over fiscal or monetary policy, the weaker will be the incentive for each to exercise restrain. Under this logic, decentralization, by dividing authority among different levels of government and increasing the number of relevant actors, is likely to increase inflation.

A third theory suggests that decentralization will not directly affect inflation but will lock it in a certain rate, whether high or low, by making it hard to change monetary or fiscal policies and institutions. A federal structure increases the number of veto players whose agreement is required for a change in the status quo. The macroeconomic effect of federal institutions will depend in this case on which initial policies are being reinforced. In countries with relatively high inflation, federal institutions will tend to perpetuate fiscal pressures or a politicized monetary system that causes inflation, thus rendering an efficient process of stabilization difficult to achieve. In countries with relatively depoliticized monetary systems and low inflation, federal structures will help to perpetuate the positive status.

Treisman (2000) continues the study of decentralization and inflation presenting a statistical analysis. The hypothesis that federal structures enhance the stability of inflation rates is corroborated by
VOTER TURNOUT AND THE POLITICS OF MACROECONOMIC POLICY

the data. A model of how different political and economic conditions should affect fiscal and monetary policies and how they affect inflation rates is tested. The key relationships postulated in the model are statistically significant. Two variables that help determine inflation rates have significantly more stability over time in federal than in unitary states. They are the practical independence of central banks, and net government lending as a share of central government outlays.

Empirical analysis provides support for the third hypothesis. In decentralized countries, average inflation rates tend to stay either consistently high or consistently low over quite long periods. In centralized states, by contrast, it appears easier for low inflation economies to slip into macroeconomic imbalance and for high inflation economies to stabilize. In five of the six tests, the difference is significant, whether an indicator of political decentralization, federal structure, or indicators of fiscal decentralization are used. In some countries decentralization appears to lock in macroeconomic stability. In other countries decentralization has preserved high inflation. Evidence from the 1970s and 1980s-identifies two points in the fiscal and monetary policy process at which decentralization creates stickiness.

Wibbels (2000) analyzes the impact of political federalism in the developing world, using measures of national economic adjustment volatility, and crisis. Using economic data for the period between 1979 and 1995 for forty-six large federal and unitary developing nations, the work suggests that federalism in the ten nations where it operates has a negative effect on macroeconomic performance, and on passing reforms. This article continues the work of Cameron (1984), which emphasize the importance of national institutions as mediators between the international economy and domestic politics. Wibbels defines federalism as a political system in which two conditions are present: first, provinces are represented in the national legislative body; and, second, provinces have an elected legislature of their own. This definition captures distinctions between federal and unitary systems: the interests of provinces are incorporated into the national decision-making of a federal nation, and that sub-national governments have autonomy relative to the central government. This idea follows the work of Duchacek (1970) and
Watts (1996). The relative autonomy and influence implied by such institutional arrangements contrast with dependent local governments in unitary systems.

Wibbels develops and statically confirms three hypotheses. The first is that federal nations are less successfully in passing reforms when compared to unitary nations. The second is that federal nations implement adjustments with greater volatility. The third hypothesis is that federal nations’ economic crises happen more frequently.

There are five points Wibbels makes on the basis of his findings. First, he suggests that political institutions matter for macroeconomic policy and performance. Federal institutional arrangements negatively affect the capacity of national governments to implement macroeconomic reforms. Empirical results show a tendency toward macroeconomic fragility, volatility, and crisis. Second, to the extent that these findings point to the significance of provincial economic policy, they also suggest the need for comparative analyses of how variations in federal institutions shape economic adjustment policies. Clearly, tremendous variations exist in the nature of federal institutions across the developing world. Differences in the degree of fiscal decentralization, the representation of political units, and the number and size of provinces can all be expected to influence macroeconomic policies. Third, there are important differences between federations in the developing and developed worlds. While there is some evidence of occasional policy inconsistency in the OECD federations, it is considerably more pronounced in developing federations. While the developed federal systems seem to overcome the collective action problems inherent to this state structure, the same cannot be said about the developing world, raising questions about the latter’s ability to move toward fiscal decentralization.

The fourth point is that national governments in federal systems are forced into extensive processes of macroeconomic adjustment because provincial governments avoid adjustment efforts. Even in nations such as Mexico and Argentina, where market reforms are firmly established at the national level, solid macroeconomic figures mask fragilities at the sub-national level.

Finally, Wibbels’ research points to the need of more systematic models, so as to incorporate the array of variables identified by the literature on economic adjustment. Even with plenty of theoretical
propositions, most analyses of reform in developing nations have focused on the insights provided by small samples. Given the market-oriented reforms being implemented throughout the developing world, there is a need to elaborate a more systematic explanation of economic adjustment. Our work follows these premises.

Table 3 presents a summary of the articles advocating that democratic political institutions have a negative effect on the economy. Keefer (2005), Treisman (2000), and Wibbels (2000; 2006) particularly emphasize that more democratic politics are associated with higher inflation.

<table>
<thead>
<tr>
<th>Work</th>
<th>Conclusion</th>
<th>Model</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keefer (2005)</td>
<td>Weak commitments by politicians in young democracies lead to bad economic performance.</td>
<td>empirical</td>
<td>Young democracies have worse economic performance.</td>
</tr>
<tr>
<td>Treisman (2000)</td>
<td>Federal structure may keep existing patterns of monetary policy.</td>
<td>empirical</td>
<td>87 countries</td>
</tr>
<tr>
<td>Wibbels (2000)</td>
<td>Political institutions matter for macroeconomic policy and performance.</td>
<td>empirical</td>
<td>45 countries</td>
</tr>
<tr>
<td>Wibbels (2006)</td>
<td>Federal structures have a negative impact on macroeconomic performance and on the likelihood of reforms.</td>
<td>empirical</td>
<td>83 countries</td>
</tr>
</tbody>
</table>

III. Voter Turnout and Inflation

Common to the so far discussed literature is that political processes and institutions affect macroeconomic policies and outcomes. This section will specifically study how voter turnout influences the choice of public policies, and, consequently, their macroeconomic results, especially inflation. The mechanism underlying the impact of voter turnout is meditated by many intervening variables that affect a range of public policies. This proposition follows from the assumption that officials in some democratic systems have incentives to implement policies less likely to generate macroeconomic stability. This comes from that idea that politicians in some democracies have less credibility, as argued
by Keefer and Stasavage (2003). That is, there exists a mechanism that leads governments to pursue more goals than is possible. This behavior thus conduces to the choice of non-optimal policies.

In order to understand and verify the effect of voter turnout on macroeconomic results, we develop the hypothesis that voter turnout do influence observed macroeconomic figures on average for democracies in the developing world. We specifically test the following hypothesis: increase in voter turnout statistically correlates with more inflation. Figure 2 below presents a scheme of how the tested model works.

Figure 2: Pathway of the Impact of Voter Turnout on Inflation

How does voter turnout and inflation relate? To explain the proposed relationship between selectorate size and consumer price index variations, we proceed to explain Figure 2. It is a scheme of a very simple model of how particular economic and political conditions as well as fiscal and monetary policies translate into inflationary outcomes. Later on, this work will show that the relationships posited by this model are consistent with systematic evidence based on an extensive dataset.

Firstly, the model deals with the mechanism that connects selectorate size, as measured by voter turnout, with the set of macroeconomic policies. Studying tax relations in democratic countries, Roberts (1977) has demonstrated that the median voter is the decisive voter on matters of public policy. Variation in voter turnout implies changes in the median voter preferences, on the assumption that voter

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8 Several papers show that median voter theorems require strong restriction on preferences.
preferences are heterogeneous. Caplin and Nalebuff (1991) provide a theoretical approach in which social choice follows the preferences of the median voter: the median voter’s most-preferred outcome beats any alternative in a multi-dimensional analog of the median voter theorem.

The next step is the degree to which elected authorities implement their campaign promises, which had elected them. Brender and Drazen (2005a) has shown that higher growth rates of income raise the probability of reelection only in the developing countries and in new democracies, but voters are affected by growth over the leader’s term in office rather than in the election year itself. Low inflation is rewarded by voters only in the developed countries. They find no evidence that deficits help reelection in any group of countries developed and less developed, new and old democracies, countries with different government or electoral systems, and countries with different levels of democracy. In developed countries, especially old democracies, election-year deficits actually reduce the probability that a leader is reelected, with similar negative electoral effects of deficits in the earlier years of an incumbent’s term in office. So we posit that changes in voter turnout influences the applied macroeconomic policies towards more growth. Note that this mechanism does not assume that elected politicians will deliver on their promises once in government. This work only assumes that there is a relationship between the preferences of the decisive voter and the set of applied public policies. And these policies pursue economic growth.

Meltzer and Richard (1983) study how the median voter influences the central government deficit. They estimate an equation derived from the theoretical model developed in Meltzer and Richard (1981). The former article statistically tests that the logarithm of a hypothetical tax on income multiplied by the accumulative function of the share of Americans receiving any minimum income. This dependent variable is regressed against two variables; the first is the inverse of the decisive voter income, which is assumed to be equal to the average American income. The second variable is the logarithm of the ratio of mean to median income minus one.

Meltzer and Richard (1981) have developed a general equilibrium model in which people choose consumption and leisure and, as voters, decide on wealth transfers or tax rates. The model implies that
the size of government changes with the ratio of mean income to the income of the decisive voter, and voters preferences. Extensions of selectorate that increase the number of voters who benefit from income redistribution increase pressure for redistribution. The model relates political institutions with macroeconomic results, using the decisive voter theorem. Voters’ demand for education, health care, fire protection, redistribution in kind; the provision of other services, all rise and fall with the ratio of mean to median income. Furthermore, their study suggests that voters’ choice of the nature of redistribution affects tax rate. Also, the decisive voter is fully cognizant of the costs and benefits that befall society. That is, Meltzer and Richard elaborate a theoretical model in which voters influence government size.

Thus policies implemented by democratic governments affect the government’s deficit. This proposition is well known and is widely accepted. Also there is pressure for anti-inflationary policies. Gordon (1975) studies the equilibrium on public polices. He concludes that accelerations in money and prices represent the vote maximizing response of governments to the political pressure exerted by potential beneficiaries of inflation. Economists making the facile judgment that inflation would end if governments would simply reduce the growth rate of money supply ignore the reaction of voters willing to go against politicians who carry out such a policy. Thus, politicians consider the preferences of the decisive voter, hoping that such preferences will eventually lead to a favorable macroeconomic scenario.

The next mechanism is that the government’s budget deficit will affect inflation. The pressure to monetize the budget deficit and how it relates to central bank independence has been studied by many scholars. There is an extensive literature investigating relations between budgets, deficit monetization, and inflation. The extent to which the deficit is monetized depends on how independently the central bank sets monetary policy. Independent central banks presumably work better and are more likely to achieve optimal macroeconomic results. They would ignore political pressure to use monetary mechanisms on any purpose other than protect the money’s value. Cukierman, Webb and Neyapti (1992) have the most accepted measure of central bank independency. Gutierrez (2003) explores the relationship between the constitutional entrenchment of central bank independence and inflation performance. Empirical studies of developing countries have not found a relationship between central
bank independence proxied by the *de jure* independence and inflation. But Gutierrez (2003) argues that the constitution is likely to be better enforced than ordinary statutes owing to its higher legal rank.

So we have hypothesized on a sequence of mechanisms through which variation in voter turnout changes the median voter preferences; then the executive sets public policies depending on the decisive voter. The government’s policies have consequences for the budget and deficit. The extent of deficit monetization and further economic conditions determines the inflation.

All told, the main hypothesis to be tested is the following: voter turnout correlates with inflation, all else held constant.

**IV. Data and Methods**

The economic data was kindly provided by Eric Wibbels, covering 155 nations between 1979 and 2000, allowing the construction of a time-series cross-section data set. We have added a series of new variables into this dataset to test the hypothesized Voter Turnout mechanism. At least all large developing nations are included. The analysis is aimed at being as broad as possible, but there are limitations. First, the growing interest in the effect of the democratic process on developing nations and how political mechanisms relate to relevant economic figures is fairly recent. Probably due to the influence of research on developed countries, i.e. OECD cases, there is no work with conclusive arguments on the influence of selectorate size on inflation for developing nations. Possibly due to the uniformity of their democratic institutions, we can find no difference in developed nations. But when more nations are included, decisive results emerge. Finally, we focus the study on democracies, so authoritarian states are not considered. During the research, we tried to incorporate dictatorships, but the results in that respect were mostly not statistically significant.

Figure 1 shows the acceptance of democratic elections in developing nations. The positive path for countries holding elections is a clear sign of the importance of studying their consequences. Looking at Figure 3 below, we can see the surge of voter turnout in developing nations over the period sampled.

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9 See Appendix I for nations included in the analysis.
The research to build a model that would represent the appropriate mechanisms describing the democratic process of authority selection was an ongoing process. Indeed, we evaluated a series of theoretically different and plausible mechanisms. In order to attribute values to the Voter Turnout mechanism, we evaluated several variables, including concepts related to the number of actual voters, number of registered voters, voting systems, guarantees of civil liberties and democratic institutions, and the voting age population (VAP)\(^{10}\). We found relevant correlations for other definitions, but decided to work with the most statistically promising variable.

We give precedence to presidential elections. This simplifying assumption is that where presidential elections are held, they better represent the selectorate’s preference than do parliamentary elections happening in the same year. We consider parliamentary elections when they are not conducted in the same year as presidential ones. This procedure aims to represent the preferences of the nation’s selectorate. It is a simplifying assumption, since differences of each government type and electoral systems are not accounted for. The Voter Turnout in any given year is repeated until the next election, either presidential or parliamentary, up to four years. Where there was a rupture in the democratic process, we start to consider that nation as authoritarian in the same year.

We define the variable Voter Turnout as the ratio between the total number of voters\(^{11}\) in that year divided by the total population. To overcome the problem associated with the different elections

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\(^{10}\) Appendix III has all the variables evaluated describe Voter Turnout.

\(^{11}\) As presented in IDEA (2006)
intervals among countries, a uniform and homogenous process of voter turnout is considered for all the nations included in this study. This definition allows yearly treatment of the data. Because many seemingly democratic nations have undergone periods of authoritarian rule or suspensions of constitutional rights to fully democratic participation, it is necessary to allow for a measure of how voter turnout can vary over nations.

Of course, any formal definition of Voter Turnout has drawbacks. In particular, it is difficult to ascertain to what extent each country’s figures are an accurate reflection of how the selectorate chooses the desired public policies. In thinking about how a political system works, the idea of Voter Turnout evolved in our minds, although we also considered other variables trying to account for mechanisms related to other political institutions that affect Inflation. Indeed, anyone with even cursory knowledge of political systems would suggest that until recently the degree of voter turnout in a nation would be more closely related only to a pure political process with no power to influence the policy decision making. Nevertheless, if the crucial analytic issue is the political bargain over feasible action, electoral systems on average are likely to influence the process in the same way. To suggest otherwise is to question the relevance of decades, even centuries, of democratic elections. Clearly, individuals consciously adopt democratic systems to solve important political problems via the creation of relatively fair politics and the formal capacity of the selectorate to influence national policy. Though each researcher is likely to identify a slightly different definition of voter turnout, it is worth emphasizing that the findings are not dependent on this particular definition of Voter Turnout, and the results apply to other concepts found in the literature.

Regression Controls

We included a series of economic and political control variables. Ideally, we could have controlled for several other aspects of domestic political and economic context, but due to the research conducted, we use the following controls over the main mechanism of the model.
As discussed, a variable defined as Federalism is capable of representing a series of political mechanisms that influence Inflation results just as Voter Turnout does. We therefore use Federalism to control for these effects.

Following Wibbels (2005), Federalism is defined restrictively as a political system in which: provinces are represented in the national legislative body; and provinces have an elected legislature of their own. Both conditions must apply for a nation to be defined as fully federal. This way the variable Federal should fulfill two criteria: it should account for dynamic characteristics across time; and it should be simple enough to be suitable for broad cross-national comparisons. Where both conditions have been present in the past, but where one or the other have been suspended by a military dictatorship or other constitutional rupture, the respective nation is called partially federal. As such, Federalism is defined using a trichotomous variable where fully federal systems are assigned a value 2, federal-like or partially federal systems that do not meet one of the conditions to be fully federal receive 1, and unitary systems get 0.

This definition has three benefits. First, it captures the key features of federalism. The analysis of how common institutions should influence policy decision is considered as most federalism researchers suggest. Second, this definition limits the importance of contingent judgments about the relevance of provincial politics at the national level, while simplifying cross-national comparisons. Various researchers have proposed more complex definitions of Federalism, but in most cases these definitions imply relatively arbitrary judgments regarding various features of regional-center relations. In a broadly comparative study, a combination of analytical directness and empirical testability recommends against such an approach. This definition does not require subtle evaluations of the relative power of central versus regional governments. We considered other approaches, like that presented in Adserà, Boix and Paine (2001), but feel our choice has more dimensions to its definition, presenting a better fit to the models studied.
There are two additional variables for political control. The first tests the insight summarized by Stallings (1995)\textsuperscript{12}, in which regional blocks tend to share general economic characteristics. The second is a measure of democracy, to assess the extent to which a lack of democratic accountability is reflected in macroeconomic outcomes. Brender and Drazen (2005b) find a political deficit cycle in a large cross-section of countries, but show that this result is driven by the experience of “new democracies”. The political deficit cycle in new democracies accounts for findings in both developed and less developed economies. We use the same Polity IV Dataset, controlling the effect defined as “new democracies”. The democracy measure is taken from the Polity dataset. We analyzed other definitions, but the Polity IV Project presented the most significant results. The data collection of this project dates from as far back as 1800\textsuperscript{13}. Currently the index considers 161 countries, including all those with populations over a half million. This work uses the version published by Marshall and Jaggers (2002). Besides having been used in many articles, in our particular study this definition presents the best fit over the tested models and available data.

In order to measure the institutionalization of democracy, we use a definition with three basic elements. The first is the presence of institutions and procedures through which the selectorate can express effective preferences about alternative policies and leaders. The second is the existence of institutionalized constraints on the exercise of power by the executive. The third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. Other aspects of plural democracy, such as the rule of law, systems of checks and balances, freedom of the press, and so on are means of ensuring these general principles.

The DEMOCRACY\textsuperscript{14} index uses an additive eleven-point scale. The operational indicator of democracy is derived from codes for institutional mechanisms, assigning values for the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive.

\textsuperscript{12} See Appendix I with the countries block divisions.
\textsuperscript{13} The initial set of countries included China, Denmark, France, Iran, Japan, Korea, Morocco, Nepal, Oman, Portugal, Prussia, Russia, Spain, Sweden, Thailand, Turkey, United Kingdom, United States, and Wuerttemberg.
\textsuperscript{14} See Appendix III to a detailed access of the procedure to define DEMOCRACY.
We added an interactive term that multiplies Voter Turnout and Democracy to further explore the relationship between political participation and political accountability. It provided no additional explanatory leverage on the results. We also introduce a trend, as with many pooled time-series designs. This variable is an attempt to control for any spurious correlation over time.

**Economic controls** include logged per capita GDP, the GDP growth rate, and the world inflation rate. Per capita GDP reflects the expectation that wealthier nations will tolerate inflation less than their poorer counterparts, as described in Nelson (1993). The poorer countries suffer less pressure from the international markets to adopt better policies. GDP growth controls for economic performance. Strong economic performance should be negatively related to inflation. The world inflation measure controls for global economic conditions that are likely to have a macroeconomic impact on the developing world, as argued in Romer and Romer (1997). We also introduce a control to account for the evidence that greater integration in the global economy generates incentives for marketing conforming macroeconomic policies, along with Garret and Lange (1995). This measure also accounts to the insight of Romer (1997), that under discretionary policy-making, money grow and inflation will be lower in more open economies. We call it OPENNESS. It is a percentage of GDP All the additional economic controls are consistent with the current literature.

Many would inquire about the relation of our main hypothesis and the level of central bank independence. The literature investigating relations between measurements of central bank independence and inflation follows from the idea that central banks with independent staff would work better and achieve optimal macroeconomic results. This article uses the measure of Cukierman, Webb and Neyapti (1992) of central bank independence, along with the Jacome and Vasquez (2005) update of the CUKIERMAN LEGAL Index of Central Bank Independence (CBI) for Latin America countries. The missing values from Jacome and Vasquez come from Cukierman et al. In this article we also create two new variables trying to adapt the Rate Central Bank Governor Turnover, a variable put forward by many authors as the best measure for real central bank independence in developing countries. The first is the ANNUAL TURNOVER Rate, which measures how many times in a particular year the central bank
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governor has been replaced. This article also uses a dummy variable for years when a governor was replaced, called CBGT DUMMY, for Central Bank Governor Turnover. We use these variables to analyze the statistically significant results found for Latin America countries in Table 8.

**Empirical Results**

The methodology to test the hypothesis is conducted as suggested by Beck and Katz (1995), and Beck (2001). The first article had concluded that many studies on comparative political economy and international relations which had estimated models using generalized least squares with Parks approach, had produced standard errors that lead to extreme overconfidence, often underestimating variability by half or more. To correct for heteroskedasticity and autocorrelation panel-corrected standard errors are used. The method to estimate the effect of Voter Turnout also includes an ARt correction.

Due gaps in the data there are corrections for the heteroskedasticity, this is modeled by controlling for the average value of the dependent variable in all other countries. To correct for serial correlation and endogeneity within each country, it is included a lagged value of the dependent variable. Beck and Katz (1996) show with Monte Carlo experiments that ordinary least squares with panel-corrected standard errors, including a lagged dependent variable to correct for serial correlation, is generally preferable to either the Parks generalized least squares or Kmenta's approach to analyzing time-series cross-section data sets. Kmenta (1997) argue that the improvement in power using Feasible Generalized Least Squares – FGLS with such data is small and that the standard error estimates from FGLS are unacceptably optimistic.

The model of Voter Turnout is structured in what have been called Temporally Dominated Time-Series Cross-Section Data – TSCS models; where some variables have a limited range for a relatively long period of time together with variables with continuum range. These models are also characterized by pooling; which is the estimation of the same equation through time. Given this we have the generic TSCS model with the general Equation 1.
\[ y_{i,t} = x_{i,t} \beta + \epsilon_{i,t}; \quad i = 1, \ldots, N; \quad t = 1, \ldots, T \]

Equation 1

Where \( x_{i,t} \) is a vector of exogenous variables and observations are indexed by both \( i \) and \( t \).

TSCS can be difficult to estimate because the error process of such models may be more complicated than is typical of either time-series or cross-sectional models. If the errors term presents any of the usual heteroscedastic process than the method of Prais-Winsten estimates with Panel-Corrected Standard Errors – PCSE is advised. This correction can take into account the contemporaneous correlation of the errors, i.e. any serial correlation of the errors are eliminated before the panel-corrected standard contemporaneous errors are calculated. So the disturbances are assumed to be panel-level heteroscedastic and that there is no contemporaneous error across panels as each country has endless political and economic differences from each other. The entire covariance matrix is computed only on the time periods where are information for all the panels. It assures that the estimated covariance matrix will be full rank and will be positive definite.

The results have pointed a statistically significant relation between Voter Turnout and Inflation for developing countries from 1978 to 2000. Table 4 presents a summary of the main observed variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOTER TURNOUT</td>
<td>1695</td>
<td>0.34</td>
<td>0.13</td>
<td>0.01</td>
<td>0.69</td>
</tr>
<tr>
<td>lnINFLATION</td>
<td>2172</td>
<td>2.47</td>
<td>1.46</td>
<td>-4.19</td>
<td>10.08</td>
</tr>
<tr>
<td>FEDERAL</td>
<td>3565</td>
<td>0.12</td>
<td>0.47</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>DEMOCRACY</td>
<td>2307</td>
<td>3.07</td>
<td>3.74</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>GDP GROWTH</td>
<td>2968</td>
<td>2.83</td>
<td>7.01</td>
<td>-50.6</td>
<td>85.9</td>
</tr>
<tr>
<td>lnGDP Per Capita</td>
<td>2887</td>
<td>6.94</td>
<td>1.09</td>
<td>4.44</td>
<td>9.48</td>
</tr>
<tr>
<td>WORLD INFLATION</td>
<td>3565</td>
<td>25.07</td>
<td>20.18</td>
<td>6.65</td>
<td>66.36</td>
</tr>
</tbody>
</table>

Table 5 has time-series figures for the main Latin America countries, as it can be seen it presents a mixed behavior. If we analyze Colombia only we can see the much defended model where more democratic participation leads to lower inflation rates. Looking in Bolivia and Brazil we can also see the
negative correlation between Voter Turnout and logged inflation, but the coefficients are not statistically significant. Chile in particular presents the most significant result, where we observe the same general results as in Table 8.

### Table 5 – INFLATION and VOTER TURNOUT in Latin America

<table>
<thead>
<tr>
<th>Country</th>
<th>Average Inflation(^1)</th>
<th>Average Voter Turnout(^2)</th>
<th>Regression Coefficient(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>607.4</td>
<td>28%</td>
<td>-6.11</td>
</tr>
<tr>
<td>Brazil</td>
<td>581.5</td>
<td>44%</td>
<td>-5.72</td>
</tr>
<tr>
<td>Chile</td>
<td>17.7</td>
<td>52%</td>
<td>20.18**</td>
</tr>
<tr>
<td>Colombia</td>
<td>22.2</td>
<td>20%</td>
<td>-3.53*</td>
</tr>
<tr>
<td>Mexico</td>
<td>40.9</td>
<td>28%</td>
<td>2.51</td>
</tr>
</tbody>
</table>

\(^1\) Variable is the inflation rate presented by IMF-IFS (2006). The period covers from 1972 to 2002, when are available data.

\(^2\) Computed variable form IDEA (2006).

\(^3\) * indicates that the coefficient is significant on 10% level ** indicates that the coefficient is significant on 5% level *** indicates that the coefficient is significant on 1% level.

Figure 4 presents the histogram for VOTER TURNOUT over the whole set. This variable is distributed with a mean of 0.34 and a standard deviation of 0.13. The top value is observed for the Czech Republic, 69%, during a parliamentary election in 1990, where out of a total population of 15.7 million people, 10.8 million actually voted and 11.2 million were registered to vote. The next highest value is 68% for Uruguay in 1994 during a presidential election. We can see the definition of VOTER TURNOUT capturing the mechanism demonstrated in Neri and Xerez (2004), where even in fully democratic countries with compulsory voting there are differences due to younger citizens not old enough to vote. We allow each country to vary following its own characteristics.

The lowest value is repeated for two countries, Democratic Republic of Congo and Jamaica, with 1% of voters. From a population of 2.4 and 2.3 million only 33 and 27 thousand people actually voted in the elections of 1993 and 1983, respectively. The next lowest value is 5% for Senegal in 1996.
The next series of graphs presents a comparative behavior graph for the logarithm of the inflation rate – LINFIMF. In the graph we divide the countries with a base variable, first VOTER TURNOUT, then in the second graphic we divide by DEMOCRACY, and for each of these categories we present the average value of the logged inflation rate for that category alone. The graphs also indicate the maximum value for Inflation and its minimum value in that subset. We note that in each category the average value for LINFIMF is close to the average value for the whole set, which is 2.47. We also note the similar behavior of their higher and lower values. Even with no statistical significance, these plots point to the statistic found with regression tests. Note that from these figures we cannot differentiate observed Inflation by solely looking at Voter Turnout observations.
Next we have the results with few different specifications. We also discuss the inclusion different political and economic controls for the model; the results are presented in Table 6. For all regressed specification with different controls VOTER TURNOUT presents a positive and persistent effect on Inflation.

The estimates for the political and economic controls resemble other estimations with similar models, such as Wibbels (2000), Treisman (2000), and Wibbels (2005). We can see as well that no matter we try different specifications for the Voter Turnout Model, the coefficients remain significant. Among the other independent variables, the controls have consistent behave, with higher national growth and strong global performance having a negative effect on inflation. GDP per capita is also significant. The model estimated with the TREND variable and regional dummies is consistent with the similar models. The significance and direction of the Trend variable suggests that macroeconomic performance is improving trough time, which is a consistent finding with the increasingly market oriented policies pursued by most developing countries in response to globalization.

For the Models I, III and V an increase of Voter Turnout of 10% we observe an increase of 12%, 11% and 13% of inflation respectively, ceteris paribus.
We also present a square functional form of VOTER TURNOUT with logarithm of Inflation, it intend to capture different impact of VOTER TURNOUT on Inflation. When looking to estimates for all countries with models II or IV, from its mean, 34%, an increase of 1% of VOTER TURNOUT would lead to an increase of approximately 1.5% of Inflation. From 50% of Voter Turnout, following the estimated model in Table 6, it would increase the inflation rate over 2.7%. If we increase one percent from 20% we would have a decrease effect on Inflation of 0.7%. So even with the squared specification we note the positive effect of Voter Turnout. Above a minimum point of 23% both models point the positive effect.

In Table 6, where a regression with an iterated term is calculated, the addition of the variable DEMOCRACY with VOTER TURNOUT did not add much explanation. The iterated coefficient is not significant. We note that model V has fewer coefficients and presents better fit for the Wald test.

Our model do not accomplish with the idea that in more open economies the benefits of surprise monetary expansion are decreasing in the degree of openness. With very similar results that from Table
6 for the presented variables, we have Table 7. In this table we notice that the OPENNESS variable is not significant when calculated with the main controls. Even though the main model present similar coefficients in signal and value. In Table 7 notice how the OPENNESS variable captures the significance from the operationalized mean inflation over the world. From those estimations we can see that from model III, we have the expected result, which is negative reflecting the evidence that greater integration in the global reduces countries’ inflation.

Table 7 – Additional controls for Voter Turnout

<table>
<thead>
<tr>
<th>Model Type</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOTER TURNOUT</td>
<td>1.18***</td>
<td>1.21***</td>
<td>1.39***</td>
<td>1.35***</td>
</tr>
<tr>
<td></td>
<td>(.43)</td>
<td>(.44)</td>
<td>(.43)</td>
<td>(.43)</td>
</tr>
<tr>
<td>FEDERAL</td>
<td>0.23***</td>
<td>0.23***</td>
<td>0.23***</td>
<td>0.22***</td>
</tr>
<tr>
<td></td>
<td>(.08)</td>
<td>(.08)</td>
<td>(.08)</td>
<td>(.08)</td>
</tr>
<tr>
<td>GDP GROWTH</td>
<td>-.042***</td>
<td>-.04***</td>
<td>-.04***</td>
<td>-.04***</td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(.006)</td>
<td>(.006)</td>
<td>(.006)</td>
</tr>
<tr>
<td>lnGDP Per Capita</td>
<td>-.12***</td>
<td>-.13**</td>
<td>-.14**</td>
<td>-.12***</td>
</tr>
<tr>
<td></td>
<td>(.064)</td>
<td>(.070)</td>
<td>(.070)</td>
<td>(.064)</td>
</tr>
<tr>
<td>WORLD INFLATION</td>
<td>-.007***</td>
<td>-.007***</td>
<td>-.002</td>
<td>-.001</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.002)</td>
<td>(.003)</td>
<td>(.003)</td>
</tr>
<tr>
<td>OPENNESS</td>
<td>-</td>
<td>-.61</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.18)</td>
<td>(.18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TREND</td>
<td>-</td>
<td>-</td>
<td>-.046***</td>
<td>-.043***</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(.012)</td>
<td>(.012)</td>
</tr>
<tr>
<td>R²</td>
<td>0.20</td>
<td>0.21</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td>Wald Chi²</td>
<td>78***</td>
<td>74***</td>
<td>94***</td>
<td>97***</td>
</tr>
<tr>
<td>Observations</td>
<td>1384</td>
<td>1357</td>
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<tr>
<td>Groups</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

1 The dependent variable is the logarithm of the inflation rate presented by IMF, LINFIMF. Analysis uses OLS with panel-correct standard errors with an AR1 correction.
2 * indicates that the coefficient is significant on 10% level, ** indicates that the coefficient is significant on 5% level, *** indicates that the coefficient is significant on 1% level.
3 Entries are unstandardized regression coefficients: panel-corrected standard errors in parenthesis.
4 Group is defined as a country in which there are available data for the referred regression.

Following the research summarized in Stallings (1995), we obtain results that point to a statistically relevant model when Latin America is treated as a block. When compared to other political and economic blocks, Latin America presents more significant results than Africa, for example. When compared to the whole world, Latin America has similar results over all coefficients. The fact some observed regional blocks do not have significant results can indicate they cannot be grouped validly under the studied relations. For the Latin American block, the mean VOTER TURNOUT is 35% and the
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Sá (1998) proposes that the chance of passing anti-inflationary policies strongly depends on government preferences. The authorities must associate a higher payoff for stable anti-inflationary policies in order for stabilization plans to succeed. This argument offers an interpretation of the results found here: Where the selectorate’s preference for low inflation is predominant, it will lead to low inflation rates. But if voters also prefer policies that can result in an inflationary process, we must calculate where the new equilibrium would be. We have to remember the balance of available policies and real possibilities. Political authorities who decide which set is more convenient will do so to according to their preferences. They can adopt anti-inflationary policies, but these bring costs, such as budget constraints, a more independent central bank, looser monetary policy and/or artificial currency exchange rates. In a democratic process, policymakers adjust their policies looking for a majority of the selectorate, based on their access to information and own individual preferences. Lower classes can have a strong preference for low rates of inflation, but they also have preference for government wealth

standard deviation is 0.12. If we increase VOTER TURNOUT 1%, Inflation increases 1.9%. In the model with Latin American countries, all coefficients are statistically significant at 1.5% or better.

<p>| Table 8 – Determinants of Inflation over Regions¹ | |</p>
<table>
<thead>
<tr>
<th>Inflation Model²</th>
<th>All countries</th>
<th>Latin America</th>
<th>Eastern Block</th>
<th>East Asia</th>
<th>Middle East</th>
<th>South Asia</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOTER TURNOUT</td>
<td>1.18***</td>
<td>1.89***</td>
<td>1.10</td>
<td>1.10</td>
<td>3.51***</td>
<td>0.87</td>
<td>-0.72</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.43)</td>
<td>(1.30)</td>
<td>(0.93)</td>
<td>(1.66)</td>
<td>(0.62)</td>
<td>(0.96)</td>
</tr>
<tr>
<td>FEDERAL</td>
<td>0.23***</td>
<td>0.73***</td>
<td>0.61*</td>
<td>-0.16</td>
<td>Dropped³</td>
<td>0.05</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.16)</td>
<td>(0.36)</td>
<td>(0.16)</td>
<td></td>
<td>(0.07)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>GDP GROWTH</td>
<td>-0.042***</td>
<td>-0.046***</td>
<td>-0.07***</td>
<td>-0.02*</td>
<td>0.02</td>
<td>-0.04*</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(.009)</td>
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<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
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<tr>
<td>InGDP Per Capita</td>
<td>-0.12*</td>
<td>-0.71***</td>
<td>-0.24</td>
<td>-0.36***</td>
<td>-1.01***</td>
<td>-0.20</td>
<td>-0.27**</td>
</tr>
<tr>
<td></td>
<td>(.064)</td>
<td>(.26)</td>
<td>(0.25)</td>
<td>(0.13)</td>
<td>(0.34)</td>
<td>(0.13)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>WORLD INFLATION</td>
<td>-0.007***</td>
<td>-0.012***</td>
<td>-0.025***</td>
<td>-0.003</td>
<td>-0.02***</td>
<td>-0.006*</td>
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<td></td>
<td>(.005)</td>
<td>(.004)</td>
<td>(.007)</td>
<td>(.004)</td>
<td>(.005)</td>
<td>(.003)</td>
<td>(.004)</td>
</tr>
<tr>
<td>R²</td>
<td>0.20</td>
<td>0.20</td>
<td>0.50</td>
<td>0.15</td>
<td>0.45</td>
<td>0.11</td>
<td>0.14</td>
</tr>
<tr>
<td>Wald Chi²</td>
<td>78***</td>
<td>63***</td>
<td>55***</td>
<td>21***</td>
<td>15***</td>
<td>8</td>
<td>11*</td>
</tr>
<tr>
<td>Observations</td>
<td>1348</td>
<td>468</td>
<td>176</td>
<td>205</td>
<td>92</td>
<td>108</td>
<td>335</td>
</tr>
<tr>
<td>Groups⁵</td>
<td>111</td>
<td>25</td>
<td>22</td>
<td>13</td>
<td>8</td>
<td>6</td>
<td>37</td>
</tr>
</tbody>
</table>

¹The dependent variable is the logarithm of the inflation rate presented by IMF, LnINFLATION. Analysis uses OLS with panel-correct standard errors with an AR1 correction.
²Unbalanced heteroskedastic panels.
³Entries are unstandardized regression coefficients: panel-corrected standard errors in parenthesis.
⁴This variable is dropped as all the countries in this category have value 0.
⁵Group is defined as a country in which there are available data for the referred regression.
transfers. In the end, which policies will prevail? This work indicates that in the developing world a broader share of the population participating in democratic elections on average has lead to higher rates of inflation.

This process is more significant in Latin America. We believe this is the consequences of years of high inflation in these countries. People are more sensitive to inflation where it is, or has been, more relevant. We conclude that democratic elections have a significant impact on Inflation. Gordon (1975) shows that diverse motivations and different political actors can end up supporting policies with clear inflationary consequences. We also note the role that indexation could have on Latin America figures. After years of high inflation those countries have developed a system to maintain purchasing power parity.

In Figure 8 is shown the world inflation. We present this on order to test the robustness of our model in face of the world inflation behavior. World inflation as presented by IMF has a slightly different behavior than the average inflation of the countries included in the dataset.

![Figure 8: Controlling for World Inflation](image-url)


Our model is robust when we estimate it over sub-periods of our sample. We divide the whole period, which goes from 1978 up to 2000, in three periods, the first with seven years and the last two with eight years. The first period presents no significance for VOTER TURNOUT. In the other hand the
remaining two sub-periods present significant estimates, additionally the coefficients closely resemble
the ones estimated over the whole period. Table 9 has the estimates for our main model.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VOTER TURNOUT</strong></td>
<td>1.18***, ii</td>
<td>0.22</td>
<td>2.50***</td>
<td>1.27***</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.80)</td>
<td>(0.64)</td>
<td>(0.54)</td>
</tr>
<tr>
<td><strong>FEDERAL</strong></td>
<td>0.23***</td>
<td>0.17</td>
<td>0.36***</td>
<td>0.23***</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.12)</td>
<td>(0.13)</td>
<td>(0.11)</td>
</tr>
<tr>
<td><strong>GDP GROWTH</strong></td>
<td>-.042***</td>
<td>-.03***</td>
<td>-.07***</td>
<td>-.05***</td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(.008)</td>
<td>(.01)</td>
<td>(.01)</td>
</tr>
<tr>
<td><strong>InGDP Per Capita</strong></td>
<td>-.012***</td>
<td>0.17</td>
<td>0.17</td>
<td>-0.28***</td>
</tr>
<tr>
<td></td>
<td>(.064)</td>
<td>(.09)</td>
<td>(.11)</td>
<td>(.074)</td>
</tr>
<tr>
<td><strong>WORLD INFLATION</strong></td>
<td>-.007***</td>
<td>0.06***</td>
<td>-0.03*</td>
<td>-0.01***</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.02)</td>
<td>(.01)</td>
<td>(.004)</td>
</tr>
<tr>
<td><strong>R2</strong></td>
<td>0.20</td>
<td>0.26</td>
<td>0.30</td>
<td>0.26</td>
</tr>
<tr>
<td><strong>Wald Chi</strong>²</td>
<td>78***</td>
<td>29***</td>
<td>88***</td>
<td>48***</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>1384</td>
<td>252</td>
<td>392</td>
<td>740</td>
</tr>
<tr>
<td><strong>Groups</strong> ii</td>
<td>111</td>
<td>47</td>
<td>71</td>
<td>111</td>
</tr>
</tbody>
</table>

1 The dependent variable is the logarithm of the inflation rate presented by IMF, LINFIMF. Analysis uses OLS with panel-correct standard errors with an AR1 correction.
2 * indicates that the coefficient is significant on 10% level, ** indicates that the coefficient is significant on 5% level, *** indicates that the coefficient is significant on 1% level.
3 Entries are unstandardized regression coefficients: panel-corrected standard errors in parenthesis.
4 Group is defined as a country in which there are available data for the referred regression.

The central bank role.

The use of central bank independence indicators as additional control did not incorporate significant results. Using the same model as the model from Table 8 with alternative indexes of independence had results with no statistical significance. As we can see from Table 10 none of the coefficients of CBI had statistical significance. The Wald statistic also had lower values when compared with the model original model.

If we use the annual real depreciation of a given amount of money $D$, a transformed inflation rate found in Cukierman et al. (1992) we obtain even less statistically significant results.
### Table 10 – Central Bank Independence and VOTER TURNOUT in Latin America

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Indices of Independence</th>
<th>With VOTER TURNOUT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Legal Turnover Dummy</td>
<td>Legal Index Turnover Dummy</td>
</tr>
<tr>
<td>VOTER TURNOUT</td>
<td>-5.58***</td>
<td>-1.52</td>
</tr>
<tr>
<td></td>
<td>(2.93)</td>
<td>(2.27)</td>
</tr>
<tr>
<td>Square of VOTER TURNOUT</td>
<td>11.5***</td>
<td>7.24***</td>
</tr>
<tr>
<td></td>
<td>(4.43)</td>
<td>(3.28)</td>
</tr>
<tr>
<td>CUKIERMAN LEGAL</td>
<td>-0.18</td>
<td>-0.16</td>
</tr>
<tr>
<td></td>
<td>(0.57)</td>
<td>(0.57)</td>
</tr>
<tr>
<td>ANNUAL TURNOVER</td>
<td>0.08</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>CBGT DUMMY</td>
<td>-0.03</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>FEDERAL</td>
<td>0.45***</td>
<td>0.67***</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.19)</td>
</tr>
<tr>
<td>GDP GROWTH</td>
<td>-0.04**</td>
<td>-0.06***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>lnGDP Per Capita</td>
<td>-0.37</td>
<td>-0.91***</td>
</tr>
<tr>
<td></td>
<td>(0.25)</td>
<td>(0.28)</td>
</tr>
<tr>
<td>WORLD INFLATION</td>
<td>-0.01**</td>
<td>-0.01***</td>
</tr>
<tr>
<td></td>
<td>(.005)</td>
<td>(.005)</td>
</tr>
<tr>
<td>R²</td>
<td>0.19</td>
<td>0.19</td>
</tr>
<tr>
<td>Wald Chi²</td>
<td>40***</td>
<td>56***</td>
</tr>
<tr>
<td>Observations</td>
<td>366</td>
<td>258</td>
</tr>
<tr>
<td>Groups⁶⁶</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

¹ The dependent variable is the logarithm of the inflation rate presented by IMF, LINFIMF. Analysis uses OLS with panel-correct standard errors with an AR1 correction.
² * indicates that the coefficient is significant on 10% level, ** indicates that the coefficient is significant on 5% level, *** indicates that the coefficient is significant on 1% level.
³ Group is defined as a country in which there are available data for the referred regression.

The estimations address both process of error generation and possible endogeneity concerns. These concerns are easy to exaggerate, however. One might argue, for example, that causality is reversed and that inflation itself drives policy pressure by increased VOTER TURNOUT. That is, governments that choose bad policies have greater opposition. This argument alone is not enough to establish that reverse causation drives the results we observe. First, bad policy should lead citizens to prefer challengers to incumbents, but not necessarily to have strong preference for anti inflation policies. One needs, in addition, an argument that suggests why bad policy should lead increased VOTER TURNOUT. The pressure for more governmental spending is an argument that provides such mechanism; that more voters in the democratic market generate a process of higher inflation. A different model of reverse causation might assert that an omitted variable is a determinant of VOTER TURNOUT, though not of inflation, but it is policy that determines inflation. What might that omitted variable be, however? Policy
is the product of government incentives; the defined variable is one that explains the pattern of policies observed across democracies by the presented literature. Again, then, to the extent that Voter Turnout drives policy choice, it is difficult to argue that reverse causation explains the results observed. The literature suggests other possible latent influences. All of these, however, they found no explanation to the difference between democracies, as the results presented here. Finally, in any case, the statistical strategy used here also addresses potential endogeneity concerns.

We also analyze the possibility of multicollinearity over the found results. The correlation between Voter Turnout and Inflation is -0.01. With the relevant and possibly highly correlated variable, Democracy, the observed value is 0.32. The correlation of Voter Turnout with Federal is -0.04. Considering multicollinearity problems, the dependent variable that has higher correlation with Voter Turnout is lnGDP Per Capita; 0.38, with 1659 observations. We can also calculate the $R^2_{\text{VoterTurnout}}$ for the model in Table 8, which is 0.21. In Table 11 we have the correlation between the main variables for the model with most of its respective variables, with 1148 observations.

<table>
<thead>
<tr>
<th>Variable</th>
<th>VOTER TURNOUT</th>
<th>INFLATION</th>
<th>FEDERAL</th>
<th>DEMOCRACY</th>
<th>GDP GROWTH</th>
<th>lnGDP Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOTER TURNOUT</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>INFLATION</td>
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<tr>
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<td>-0.06</td>
<td>0.03</td>
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<tr>
<td>DEMOCRACY</td>
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<td>GDP GROWTH</td>
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<td>-0.002</td>
<td>-0.04</td>
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<td></td>
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<tr>
<td>lnGDP Per Capita</td>
<td>0.37</td>
<td>0.02</td>
<td>-0.19</td>
<td>0.35</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>WORLD INFLATION</td>
<td>0.08</td>
<td>-0.08</td>
<td>-0.12</td>
<td>0.06</td>
<td>0.01</td>
<td>-0.08</td>
</tr>
</tbody>
</table>

Table 11 – Correlation Between the Main Variables.

15 Wooldrige (2002); the R-square from regression of Voter Turnout on all other independent variables.
IV. Conclusion

The first and most important conclusion of this study is that Voter Turnout does matter for macroeconomic policy and performance. To date, the literature on the political economy of democracies has ignored the empirical role of broader selectorate in the making of macroeconomic policy in developing nations. Independent and insulated executives, international economic pressures and unified national party systems are ingredients for successful reform efforts. But so far the theorized relationship with Voter Turnout and macroeconomic outcomes overlooks the importance of the selectorate as a framework among various types of demands. In any case, a crucial ingredient is missing, namely the proper effect of Voter Turnout on national economic policies and institutions.

Works such as those by Armijo and Faucher (2006b), Armijo (2005), and Quinn and Wooley (2001) have associated some definition relating better democracies with less inflation. Desai, Olofsgård, and Yousef (2003) identify two competing theoretical hypotheses regarding the impact of democracy on inflation. In the populist approach, inflation is the result of public demands for transfers financed by the inflation tax, suggesting that electoral competition will increase inflation. In the state-capture approach, inflation is a result of pressure from elites who derive private benefits from money creation, suggesting that electoral competition may constrain inflation. Feng (2003) concludes that political factors do not explain Inflation.

On the other hand, authors such as Brittan (1975), Keefer (2005), Treisman (2000), Wibbels (2000), and Gasiorowski (2000), find a relationship between democratic values and more Inflation. Our work continues this line of attack with a new model and statistical evidence, in light of current efforts to restructure political and economic institutions in the post-authoritarian and post-communist world.

We point that the widely understood benefits of Voter Turnout may be accompanied by poorly understood but serious dangers. There is a dispute concerning macroeconomic policy. Can new political pressures due to increased Voter Turnout affect Inflation? This work indicates that in the developing world a broader share of the population participating in democratic elections on average has
lead to higher rates of inflation. A model relating political institutions and macroeconomic result associates a variable defined as Voter Turnout with more Inflation.

Our empirical analysis finds support for the hypothesis that increased Voter Turnout has statistically led to higher inflation rates. Ultimately, the association of voter turnout and a setup with veto players, modeling monetary policies, should be tested directly on a worldwide sample. This will require the construction of a dataset, including both developed and developing countries, of the number of veto players with leverage over central policy enactment and implementation in specific areas. That is an enormous task, but an important one.

Additional research is open. Findings of how the governmental ideological measurement relates to increases in Voter Turnout increases could reveal how the executive withstands the pressure for more spending. Sá (1998) theoretically showed that a successful stabilization plan depends on government preferences. This research could reveal the interaction of government preferences and the observed macroeconomic results. It is important for this further research to investigate the possible government preference about Inflation.

The argument of Armijo (2005) that an increase in the share of the population voting for president was the real reason hyperinflation was finally contained in Brazil does not hold up. The lack of a cross-sectional political study led to a conclusion that goes against the evidence found here. The main problem of that work is the very small sample studied.

If our analysis is correct, important policy implications follow. Attempts to reduce inflation by introducing more voters in the electoral market in countries with soft budget constraints and a politically dependent central bank are likely to prove disastrous. Such measures will not reduce inflationary pressures, and they will tend to make stabilization harder. Lessons derived from low-inflation, democracies, such as Switzerland, Germany or the United States, may have perverse consequences if applied in many developing world structures. Furthermore, the order in which political and economic reforms are implemented appears to be extremely important. An increased franchise followed by macroeconomic stabilization is likely to fail and risks a speedier slide into hyperinflation.
Appendix

Appendix I

The 155 countries with available information included in this work and the block division used in the analysis:

**East Asia** – 23 countries – American Samoa, Cambodia, China, P.R.: Mainland, Fiji, Indonesia, Kiribati; Korea, Democratic People’s Republic (North); Korea, Republic of (South); Lao P.D.R., Malaysia, Marshall Island, Micronesia, Federated States of, Mongolia, Myanmar, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Tonga, Vanuatu, Vietnam;

**Eastern Bloc** – 28 countries – Albania, Armenia, Belarus, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Isle of Man, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russian Federation, Slovak Republic, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan, Yugoslavia.

**Latin America** – 32 countries – Antigua and Barbuda, Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

**Middle East** – 16 countries – Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Oman, Saudi Arabia, Syrian Arab Republic, Tunisia, West Bank or Gaza Strip, Yemen.

**South Asia** – 8 countries – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka.


Appendix II

Overview of the evaluated variables used to describe the process of institutional accountability and political instability.

We have the variables presented by Przeworski, Alvarez, Cheibub and Limongi (2000)\(^\text{16}\). The definitions presented by Knack & Keffer (1995)\(^\text{17}\) also were tested. The **Corruption Perception Index** from the Transparency International – ICCR (2005), or the **Civil Liberties aggregated with the Political Liberties Index** from Freedom House (2000)\(^\text{18,19}\) was also analyzed. The **Government Effectiveness Index** from Kaufmann et al. (1999)\(^\text{5}\) had not show good fit.

**Level of credit risk. ccrhar** – Erb et al. (1996) has created an index for the risk of not payment for credit contracted by that country. This index is elaborated through a compilation of data on factors about politicians and economic factors by **International Country Risk Guide - ICRG**. How political risk is defined is kept by the institute. The economic risk is a quantitative analysis. The financial risks are a combination of a subjective and quantitative analysis. The index varies of zero up to one hundred, where the countries with the biggest probability of payment have higher values. Fragile institutions are prone to have defaults.

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\(^{16}\) Including Civil Liberties, Political Liberties, number of riots and strikes.


\(^{18}\) Presented also in Persson & Tabellini, Guido (2003).

\(^{19}\) Also presented in IDEA (2006).
Level of risk politician. PRHAR - stability index politics according to Diamonte, Liew & Stevens (1996), varies of zero up to one hundred. Higher values represent a more stable politics. This index is a weighed mean of thirteen factors related to politics. This index also captures the types of instability that can appear in established democracy. It classifies political instability.

Agitations politics. RIOTS - number of violent demonstrations or confrontations with more than what one hundred people involving the use of physical force, according to Banks (1996). This index is defended by Barro (1992) as a measure of political instability, it works together with STRIKES. It characterizes the agitation exceeding politics to accept the established canals of representation in the country.

Index of national strikes. STRIKES - number of strikes of more than what a thousand industrial workers or services that they aim at to reach the politics of the national government or its authority, according to Banks (1996).

Appendix III

Overview of the evaluated variables used to describe the mechanism where the selectorate can opine about the policies deliberation, in which this study has defined as Voter Turnout.

Alternative Democratic Index. POLITY – index of democratic level institutionalization. It is an alternative to represent broader selectorate participation on policy choice result. It is conceived through three dimensions. Defined as zero for countries with little democratic internal process and ten for the countries most democratic. They consider parameters of codifications for competitiveness of the implemented policies, market oriented law passing, integration with international markets and competitiveness in the choice of the executive. It was developed by Marshall and Jaggers (2002). Currently the index considers 161 countries, including all the countries with more than half a million of inhabitants.

Level of representation politics. POLITYTB - index of representation politics presented for Marshall and Jaggers (2002). It is the combination of the indices for the level of democratic institutionalization or DEMOCRACY of autocracy level AUTOC. It is the subtraction of the democratic level of the country for the level of autocracy of the same country. It varies from ten for countries most democratic until minus ten for the countries more repressors.

Level of representation politics. GASTIL - index of representation politics presented by Persson & Tabellini (2003), it is the average of other indices of civil freedom and political rights, where each index is measured in a scale from one up to seven, with one being the country with the biggest degree of freedom and the seven country with less. Countries with values between 1 and 2.5 are assigned as free, between 3 and 3.5 partially free ones and between 5.5 and 7 are the countries without freedom. The index is elaborated by the Freedom House (2000).

Level of representation politics. POLITYGTB - index compared to GASTIL, it is change in the scale of the representation index politics POLITYTB, for comparison, presented for Marshall and Jaggers (2002).

Pointer of civil freedoms. CIVLIG - index of civil freedoms according to Freedom House (2000), where the values go of one for the countries with the lesser level of civil freedom and seven for that they guarantee the biggest level of civil freedom to its citizens.

Index of freedom politics. POLLIB - freedom index politics according to Freedom House (2000), where the values go of one for the countries with the lesser level of freedom politics and seven for that they guarantee the biggest level of freedom politics for the individuals that are in that country, this index presents high correlation of 0.95 with the index of civil freedom.

Appendix IV

Procedure to calculate democracy definition.

The DEMOCRACY index gives operational values for concepts associated with democratic nations. This code is defended by extensive literature. It aggregates from coding of the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. It is a weighted scale and can be disaggregated following a structured procedure.
The *competitiveness of political participation* refers to the extent to which alternative preferences for policy and leadership can be pursued in the political arena. Competitiveness is coded on a five-category scale:

- **Competitive** (+3): There are relatively stable and enduring, secular political groups which regularly compete for political influence at the national level. The ruling groups and coalitions regularly and voluntarily transfer central power to competing groups. Competition among groups seldom involves coercion or disruption. Small parties or political groups may be restricted in the competitive pattern.

- **Transitional** (+2): Any transitional arrangement from Restricted or Factional patterns to fully Competitive patterns, or vice versa. Transitional arrangements are accommodative of competing, parochial interests but have not fully linked parochial with broader, general interests. Sectarian and secular interest groups coexist.

- **Factional** (+1): Polities with parochial or ethnic-based political factions that regularly compete for political influence in order to promote particularistic agendas and favor group members to the detriment of common, secular, or cross-cutting agendas.

- **Repressed** (0): No significant oppositional activity is permitted outside the ranks of the regime and ruling party. Totalitarian party systems, authoritarian military dictatorships, and despotic monarchies are typically coded here. However, the mere existence of these structures is not sufficient for a Repressed coding. The regime's institutional structure must also be matched by its demonstrated ability to repress oppositional competition.

- **Suppressed** (0): Some organized, political competition occurs outside government, without serious factionalism; but the regime systematically and sharply limits its form, extent, or both in ways that exclude substantial groups, 20% or more of the adult population. Suppressed competition is distinguished from Factional competition by the systematic, persisting nature of the restrictions. As an operational rule, the banning of a political party which received more than 10% of the vote in a recent national election is sufficient evidence that competition is suppressed. However, other information is required to determine whether the appropriate coding is Suppressed or Factional competition. This category is also used to characterize transitions between Factional and Repressed competition.

The *openness of executive recruitment*. Recruitment of the chief executive is defined as open to the extent that all the politically active population can dispute an opportunity to receive the position through a regularized process.

- **Open** (+1): Chief executives are chosen by elite designation, competitive election, or transitional arrangements between designation and election.


- **Dual executive – designation** (0): Hereditary succession plus executive or court selection of an effective chief minister.

- **Closed** (0): Chief executives are determined by hereditary succession, e.g. kings, emperors, emirs, whom assume executive powers by right of descent. An executive selected by other means may proclaim he a monarch but the process is not coded as such unless a relative succeeds him as ruler.

The *competitiveness of executive recruitment* it refers to the extent that prevailing procedures of advancement give subordinates equal opportunities to become superordinates. If the selection of chief executives through popular elections happen to match two or more actual parties or candidates is regarded as competitive. Three categories are used to operationalize the concept:

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20 Examples of suppression are: first, prohibiting some kinds of political organizations, either by type or group of people involved; second, prohibiting some kinds of political action; third, by systematic harassment of political opposition. This is evidence for Factional, Suppressed, or Repressed.
- **Election** (+2): Chief executives are typically chosen in or through competitive elections matching two or more major parties or candidates. Elections may be popular or by an elected assembly.
- **Dual/Transitional** (+1): Dual executives in which one is chosen by hereditary succession, the other by competitive election. Also used for transitional arrangements between selection, ascription or designation, and competitive election.
- **Selection** (0): Chief executives are determined by hereditary succession, designation, or by a combination of both, as in monarchies whose chief minister is chosen by king or court. Examples of pure designative selection are rigged, unopposed elections; repeated replacement of presidents before their terms end; recurrent military selection of civilian executives; selection within an institutionalized single party; recurrent incumbent selection of successors; repeated election boycotts by the major opposition parties, etc.

The *constraints on the chief executive* or executive constraints on decision, also called decision rules are defined in the following manner: superordinate structures in action make decisions concerning the direction of public goods. Making such decisions requires that all the structure in the process being able to recognize when decision-processes have been concluded, especially when properly concluded. An indispensable ingredient of the processes, therefore, is the existence of decision rules that provide basic criteria under which decisions are considered to have been taken. Operationally, this variable refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles; powerful advisors in monarchies; the military in coup-prone polities; and in many state a strong, independent judiciary. The concern is therefore with the checks and balances between the various parts of the decision-making process. A seven-category scale is used.

- **Executive Parity or Subordination** (+4): Accountability groups have effective authority equal to or greater than the executive in most areas of activity. Examples of evidence:
  i. A legislature, ruling party, or council of nobles initiates much or most important legislation.
  ii. The executive (president, premier, king, cabinet, council) is chosen by the accountability group and is dependent on its continued support to remain in office (as in most parliamentary systems).
  iii. In multi-party democracies, there is chronic "cabinet instability."

- **Intermediate Category** (+3):
- **Substantial Limitations** (+2) on executive authority: The executive has more effective authority than any accountability group but is subject to substantial constraints by them. Examples:
  i. A legislature or party council often modifies or defeats executive proposals for action.
  ii. A council or legislature sometimes refuses funds to the executive.
  iii. The accountability group makes important appointments to administrative posts.
  iv. The legislature refuses the executive permission to leave the country.

- **Intermediate Category** (+1)
- **Slight to Moderate Limitation** (0) on executive authority: There are some real but limited restraints on the executive. Evidence:
  i. The legislature initiates some categories of legislation.
  ii. The legislature blocks implementation of executive acts and decrees.
  iii. Attempts by the executive to change some constitutional restrictions, such as prohibitions on succeeding himself, or extending his term, fail and are not adopted.
  iv. The ruling party initiates some legislation or takes some administrative action independently of the executive.
  v. The legislature or party approves some categories of appointments nominated by the executive.
  vi. There is an independent judiciary.
  vii. Situations in which there exists a civilian executive, but in which policy decisions, for all practical purposes, reflect the demands of the military.

- **Intermediate Category** (0):
• Unlimited Authority\textsuperscript{21} (0): There are no regular limitations on the executive's actions (as distinct from irregular limitations such as the threat or actuality of coups and assassinations). Examples of evidence:
  i. Constitutional restrictions on executive action are ignored.
  ii. Constitution is frequently revised or suspended at the executive's initiative.
  iii. There is no legislative assembly, or there is one but it is called and dismissed at the executive's pleasure.
  iv. The executive appoints a majority of members of any accountability group and can remove them at will.
  v. The legislature cannot initiate legislation or veto or suspend acts of the executive.
  vi. Rule by decree is repeatedly used.

References


\textsuperscript{21} If the executive is given limited or unlimited power by a legislature to cope with an emergency and gives back the gained power after the emergency has passed, this is not a change to unlimited authority.


