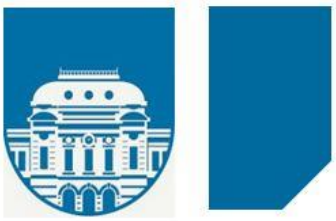

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The Effect of Executive Constraints on Reform Implementation: An Empirical Analysis

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Abstract

In the political economy literature there is a widely accepted view that checks on the executive can block policy implementation. Due to lack of sufficient data, there have not been any attempts to find empirical evidence to support this theory. This thesis studies the effect of executive constraints on reform implementation using a new dataset on economic reforms introduced by Giuliano et al. (2013) and Polity IV's measure of constraints on the executive. The database used by Giuliano et al. (2013) describes the degree of regulation in six different sectors of the economy: agriculture, product markets (electricity and telecommunication), trade, capital account, current account and the domestic financial sector in 156 countries for the period 1960-2005. I use two approaches to study the relationship between executive constraints and reform implementation. The first replicates the methodology used by Giuliano et al. (2013) using executive constraints instead of democracy as the variable of interest. The second studies the persistence of the deregulation index to see whether it is affected by executive constraints. If the theory presented before is supported by the evidence, I should observe that high executive constraints are associated with a higher persistence of the deregulation index. Both approaches result in the inability to find statistically significant evidence that constraints on the executive have any effect on reform implementation, as measured by the deregulation index from Giuliano et al. (2013).

Keywords: Political Economy, Checks and Balances, Economic Reforms

Códigos JEL: H11, P16, P48, E02

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Resumen:

En la literatura de Economía Política está generalmente aceptado que las restricciones al ejecutivo pueden bloquear la implementación de reformas. Hasta el momento no se ha encontrado evidencia empírica que apoye esta teoría, posiblemente por falta de datos adecuados. Esta tesis estudia el efecto de las restricciones al ejecutivo sobre la implementación de reformas usando una nueva base de datos de reformas introducida por Giuliano et al. (2013) y una medida de restricciones al ejecutivo tomada de la base de datos Polity IV. La base de datos de Giuliano et al. (2013) describe el grado de regulación en seis sectores de la economía: la agricultura, el mercado de productos (electricidad y telecomunicaciones), el comercio, la cuenta capital, la cuenta corriente y el mercado financiero doméstico. La base cubre 156 países para el período 1960-2005. En esta tesis uso dos enfoques para estudiar la relación entre restricciones al ejecutivo y reformas. En el primer enfoque replico la metodología utilizada por Giuliano et al. (2013) usando restricciones al ejecutivo como principal variable de interés. En el segundo enfoque estudio la persistencia del índice de desregulación para analizar si esta es afectada por la presencia de restricciones fuertes al ejecutivo. Si la teoría presentada anteriormente es apoyada por la evidencia, se debería encontrar que restricciones fuertes al ejecutivo están asociadas con una mayor persistencia en el índice de desregulación. Con ninguno de los enfoques se encuentra un efecto estadísticamente significativo de las restricciones al ejecutivo sobre la implementación de reformas, medidas a través del índice de desregulación de Giuliano et al. (2013).

Palabras clave: Economía Política, Controles y Contrapesos, Reformas Económicas.

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1 Introduction

The literature on political economy often assumes that there is a trade-off between governance and checks on the executive. The separation of powers and the existence of checks and balances are key features of most modern political systems as they protect society against the arbitrary use of power by elected governments. Checks and balances between different branches of government exist so one branch can prevent actions by the other branches (Enciclopaedia Britannica). Particularly, constraints on the executive are in place to limit the decision-making power of chief executives. By limiting the executive's freedom of action, these constraints can lead to political gridlock, where the status quo prevails. Such inaction can be welfare-enhancing if it protects society from harmful policies. Unfortunately, in some cases the political gridlock will also block beneficial policies or necessary reforms, having a detrimental effect on welfare. That is where the trade-off between governance and checks and balances arises (Forteza and Pereyra 2018).

The assumption that checks on executive power can prevent policy implementation is present in much of the recent literature on political agency (Tsebelis (1995), Aghion et al. (2004), Besley and Mueller (2017), Forteza and Pereyra (2018), Besley and Mueller (2018)). However, to the best of my knowledge, there have not been any attempts to test this relationship empirically. The purpose of this thesis is to systematically study the covariation of checks on the executive and reforms.

The lack of appropriate data may have been an impediment until a few years ago, but I now have some databases that make this analysis possible. The Polity IV database provides a good measure of executive constraints that has been used extensively in the literature (see Besley and Persson (2011), Besley and Mueller (2017) and Besley and Mueller (2018)). The variable is coded annually for most developed and developing countries, starting as early as 1800.

Finding comprehensive data on reforms is much more difficult. Giuliano et al. (2013) introduce a new dataset on reforms to study the effect of democracy on reforms. The database was compiled by the Research Department of the IMF and describes the degree of regulation in six different sectors of the economy: agriculture, product markets (electricity and telecommunication), trade, capital account, current account and the domestic financial sector. They measure reforms as changes in the index, which is on a scale from 0 to 1, with higher values associated with lower regulation. For this reason I choose to refer to the index as a "deregulation index" rather than a "regulation index" or "reform index" as it is used in Giuliano et al. (2013). The database covers 156 developed and developing countries for the period 1960-2005.

I use two approaches to study the relationship between executive constraints and reform implementation. The first is inspired in the methodology used by Giuliano et al. (2013). They regress the first difference of the deregulation index against a variable for democracy (also from the Polity IV database) and other covariates. I depart from this analysis in two directions. First, I substitute executive constraints for democracy. Second, I redefine reforms as the absolute value of the first difference in the deregulation index.

The first change is motivated in my goal of exploring the effects of executive constraints rather than democracy on reform. While the executive constraints index is an important component of democracy in the Polity IV index, democracy includes other dimensions unrelated to checks and balances.

I use the absolute value of the difference in the deregulation index to consider both pro- and anti-market reforms. Giuliano et al. (2013) study the relationship between economic and political liberalization, so they are interested

in reforms that liberalize the economy and therefore define reforms as positive changes in the deregulation index. My aim is to test the hypothesis that checks on the executive power hinder reforms, not specifically pro-market reforms, but any kind. I therefore use the absolute value of the first difference of the deregulation index to consider both pro-market and anti-market reforms.

The second approach I use to study the covariation between checks on the executive and reforms is based on the analysis of the persistence of the deregulation index. I explore whether it is affected by the presence of strong executive constraints. To do so I construct a dummy variable indicating a high level of executive constraints and interact it with the lagged level of the index, to see whether having strong constraints affects the persistence of the index. If the generally accepted view that checks on the executive hinder reforms is supported by the evidence, I should observe that high executive constraints are associated with a higher persistence of the deregulation index

Using these two methodologies and different econometric methods I find, at first, some empirical evidence of a positive correlation between executive constraints and reforms. However, I find that this result is biased by the omission of two variables: executive recruitment and political competition. The democracy measure from Polity IV is operationally defined by these two variables and executive constraints, so the three variables are highly correlated. When I add these two variables as controls in the regressions, the positive correlation found between executive constraints and reforms is no longer statistically significant. This result is robust to the inclusion of other controls and to conducting the analysis for different sub-periods (1960-1984 and 1985-2005) and by region. Both approaches lead to the same conclusion: there is no statistically significant evidence that constraints on the executive have any effect on reform implementation.

The remainder of the paper is organized as follows. The next section briefly discusses the related literature. The third section presents the deregulation indexes introduced by Giuliano et al. (2013) and the Polity IV database. In sections four and five I develop the analysis with both approaches, first I replicate the methodology from Giuliano et al. (2013) and introduce some changes, and then I analyze how strong executive constraints affect the persistence of the deregulation index. Finally, section six offers some concluding remarks.

2 Related literature

The argument for constraining the power of governments can be traced back to Locke's defense of a limited government and Montesquieu's theory of separation of powers. Establishing a system of checks and balances between the different branches of government is intended to prevent policy decisions contrary to the public's best interests. Particularly, executive constraints are a form of horizontal control on executive power, different from the vertical control exercised by citizens through elections. However, as checks and balances limit government's ability to act, they can also prevent beneficial policies if consensus can not be reached between the different branches. As executive constraints can prevent both positive and negative policies, a trade-off between governance and checks and balances arises (Forteza and Pereyra 2018).

The existence of this trade-off is central to much of the recent literature on political economy. Tsebelis (1995) compares different political arrangements in their ability to produce policy change. He studies the role of "veto players", defined as actors whose agreement is required to change the status quo, and finds that an increase in the number of veto players reduces the potential for policy change. Aghion, Alesina and Trebbi (2004), building on Tsebelis, develop a model of endogenous political institutions in which they model the constitutional choice of the size of majority needed to block legislation. They argue that, while an unrestrained leader is a risk to society, if the leader faces too many constraints, legislative action is too often blocked. Meanwhile, Besley and Mueller (2017) find a robust relationship between investment inflows and strong executive constraints, which they claim is related to strong constraints reducing growth volatility. They argue that strong constraints on executive power reduce instability by limiting policy discretion. In another paper, Besley and Mueller (2018) study the welfare implications of different political institutions, distinguishing between internal and external controls to ruling politicians. They argue that checks and balances prevent the implementation of policies by imposing the status quo. This can either be welfare enhancing, if they prevent a negative policy, or welfare decreasing, if they prevent policies that would have been beneficial to society. The trade-off between governance and checks and balances is therefore crucial to their argument.

Forteza and Pereyra (2018) develop a formal model on voter's reaction to this trade-off. They argue that voters might be willing to support the loosening of checks and balances if they are convinced that existing constraints on the executive are blocking the implementation of necessary reforms. Their model seems to effectively explain episodes of weakening of checks and balances in Latin America in recent decades[1].

On the other hand, Stephenson and Nzelibe (2010) offer an argument of why the effect of checks and balances on policies is, in principle, theoretically ambiguous. They study the interaction between separation of powers and voters' electoral strategies, and the effect of this interaction on the performance of different institutional arrangements. They argue that in a system where the executive has the power to choose policy unilaterally, he will have formal flexibility to discretionally choose his preferred policy, but the electorate will punish his policy failures more hardly to offset his possible biases. This way, adding a veto player has two opposite effects. First there is a direct effect of limiting the executive's freedom of action because the veto player (usually the legislature) will oppose some of his policy proposals. Then there is an indirect effect that derives from the voter's awareness of the first: because rational voters know that the veto player will block some of the executive's undesirable policies, they do not need to punish the executive so hardly to offset his possible biases. The latter effect makes the executive more prone

[1] They analyze the case of Presidents Fujimori in Peru, Menem in Argentina, Chavez in Venezuela, Correa in Ecuador and Morales in Bolivia.

to initiate policy change. Therefore, the net effect of separation of powers on the quantity or frequency of policy change is theoretically ambiguous.

In a related paper, Tommasi, Scartascini and Stein (2014) argue that adding a veto player not necessarily raises the probability of political inaction. They argue that adding an intertemporal dimension to the veto-player theory developed by Tsebelis might lead to potential reversion of predictions. They show that more veto players might facilitate intertemporal cooperation, which might "permit some polities to have both more stability (avoiding opportunistic adjustments) and more adaptability (permitting efficient adjustments)." (Tommasi et al. 2014: 225). In this framework, having more veto-players (which means a more constrained executive) can prevent harmful policies while permitting necessary ones, undermining the idea of a trade-off between governance and checks and balances.

3 Data

3.1 Deregulation indexes

In this thesis I use a new dataset introduced by Giuliano et al. (2013) that describes the degree of regulation in different sectors of each country's economy. The dataset includes indexes for six sectors: agriculture, product markets (electricity and telecommunication), trade, capital account, current account and the domestic financial sector:

1. Agriculture - measures public intervention in the market for the main agricultural export commodity for each country. It captures the degree of competition in production, transportation and marketing, price administration, public ownership of producers and concession requirements to free markets.
2. Product market - captures the degree of regulation in the telecommunication and electricity markets in terms of competition in the provision of theses services, the presence of an independent regulator and the extent of privatization.
3. Trade - describes distortions in international trade and is measured by average tariff rates.
4. Capital Account - includes information on restrictions on international capital flows, such as controls on borrowing between residents and nonresidents, requirements for the approval of foreign direct investment and the use of multiple exchange rates.
5. Current Account - captures the degree of compliance with IMF's Article VII, which obliges countries to free the proceeds from international trade in goods and services from government restrictions. It measures restrictions on the proceeds of transactions.
6. Domestic financial sector - average of six sub indexes: five indexes related to banking sector regulation (interest rate controls, credit controls, competition restrictions, degree of state ownership and quality of banking supervision and regulation) and one index related to regulation in the securities market (capturing policies to develop domestic bond and equity markets).

The indexes are normalized between zero and one, with higher levels of the index indicating lower regulation. Table A2 in the Appendix provides a more complete description of the six sectoral indexes, their coverage and data sources, and more information can be found in Giuliano et al. (2013) and Ostry, Prati and Spilimbergo (2009).

The dataset is an unbalanced panel that covers 156 developed and developing countries over the period 1960-2005. However, it should be noted that some of the sectoral indexes are available for a shorter period of time: the capital account and domestic financial sector indexes are only available starting in 1973 and the agriculture index is only available until 2003. Some of the issues derived from the difference in coverage among the sectoral indexes are described in section A.1 of the Appendix.

While the database from Giuliano et al. (2013) is a major contribution to the literature, as it is more comprehensive than the information previously available in terms of sector, country and year coverage, it still only allows for a narrow view of economic reforms. Through the deregulation indexes, only a very specific set of reforms can be considered: those that increase or decrease the level of regulation in just six sectors of the economy. To the best of

my knowledge, data on other kinds of economic reforms is not available in a country-year case format. Owing to this, important economic reforms are left out of the analysis, like tax reforms, other redistributive policies, labor-market or social security reforms, changes in macroeconomic policy, among others. Additionally, the argument that constraints on the executive can impede governance is not limited to the case of economic reforms, but to all policy initiatives. Political gridlock caused by strong executive constraints could also block the implementation of other important policies like healthcare and educational reforms, security policy or the implementation of a civil-rights agenda. Comprehensive data in terms of country coverage and time period considered for these non-economic reforms is even harder to find.

Panels (a) and (b) of figure 1 plot yearly averages of the index (aggregated across all sectors in all countries) and the six sectoral indexes to describe their evolution over the time period considered. The general level of deregulation has significantly increased over the period in all sectors. The increase is especially pronounced since the mid 1980s. In some of the sectors, like agriculture, the product market and the current account, the deregulation level only started to increase in the 1990s, while for the other sectors the increase has been steady ever since the data is available.

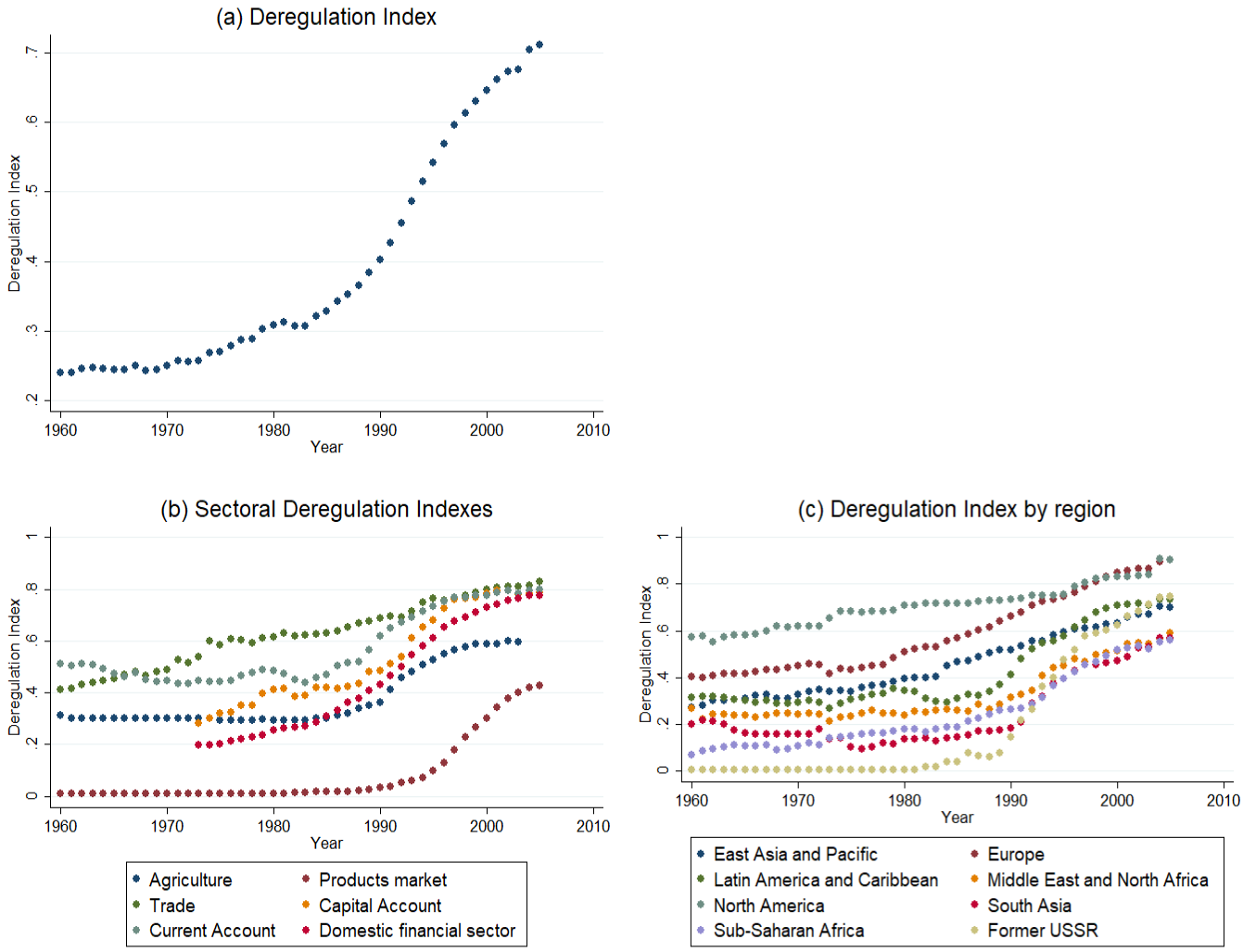
This increase in the level of deregulation in the 1980s and 1990s is associated with the vast implementation of first generation reforms in the context of the reform agenda known as the Washington Consensus. This set of policy prescriptions includes financial liberalization, trade liberalization, openness to Foreign Direct Investment (which led to capital account liberalization) and deregulation, understood as abolishing "regulations that impede the entry of new firms or restrict competition" (Williamson 1994: 27).

To a greater or lesser extent, this reform agenda was implemented by developing countries all across the world: "The regions that moved furthest in the direction of stabilization, liberalization and integrating with the world economy were Latin America and the economies in transition. East Asia moved much less, and in my view some of the movement it did was a mistake (I am thinking of the rapid capital account liberalization), but it is important to recognize that it started off with much less divergence from the OECD countries in its policy stance, especially on the stabilization front. China and South Asia both moved rather gradually, but the direction of movement was unambiguous. Sub-Saharan Africa moved spottily and grudgingly, too often under foreign pressure rather than out of conviction." (Williamson 2004: 11). Panel (c) of figure 1 illustrates this by plotting the yearly averages of the deregulation index by region. The classification used is taken from the World Bank[2] and modified to separate the countries of the soviet bloc from Europe and Central Asia[3].

[2]https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

[3]The category Soviet Bloc includes Armenia, Azerbaijan, Belarus, Albania, Georgia, Kazakhstan, Kyrgyzstan, Bulgaria, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Czech Republic, Slovak Republic, Estonia, Latvia, Hungary, Lithuania, Croatia, Slovenia, Macedonia, Poland and Romania.

Figure 1: Deregulation indexes over time



Source: Own elaboration based on the database from Giuliano et al. (2013)

3.2 Polity IV data

In order to analyze political institutions, I use the Polity IV database, which codes the authority characteristics of states for purposes of comparative, quantitative analysis. The dataset covers 167 contemporary countries, with long established countries being coded beginning in 1800. The variable democracy presented in this dataset is one of the most widely used measures of democracy in the literature. According to the Polity IV Users' Manual, "Democracy is conceived as three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. 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 to, or specific manifestations

of, these general principles." (Marshall et al. 2017: 14). Three component variables represent those elements: Executive Recruitment, Executive Constraints and Political Competition. Table 1 explains these concepts and summarizes each component variable's indicators.

The Polity IV database provides another measure of democracy, the variable polity2 (Revised Combined Polity Score), that is more frequently used in the literature to measure democracy. This variable is computed by subtracting the autocracy score from the democracy score, resulting in a unified polity score that ranges from +10 (strongly democratic) to -10 (strongly autocratic). Autocracy is defined operationally in terms of a set of particular political characteristics: "In mature form, autocracies sharply restrict or suppress competitive political participation. Their chief executives are chosen in a regularized process of selection within the political elite, and once in office they exercise power with few institutional constraints." (Marshall et al. 2017: 15). Operationally, it is coded with respect to the same component variables as the democracy score prese in table 1.

I focus on the second concept, the independence of executive authority, proxied by the variable executive constraints. "Operationally, this variable refers to the extent of institutionalized constraints on the decisionmaking powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups." In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary. The concern is therefore with the checks and balances between the various parts of the decision-making process." (Marshall et al. 2017: 24). In the Polity IV dataset this concept is represented by the variable xconst, which ranges from 1 (lowest executive constraints) to 7 (highest executive constraints).

The data suggests that the different components of democracy have similar trends in the years considered (normalized between zero and one). There is a slight decline in the 1960s and 1970s and an increase starting in the 1980s (figure 2 panel (a)). Following Besley and Persson (2011), I plot the proportion of countries with strong executive constraints (figure 2 panel (b)), defined as having the highest score for this index. Both the executive constraints index and the proportion of countries with the highest executive constraints show similar movements, with a relatively steady increase since the 1980s[4].

Besley and Persson (2011) point out that "the period from 1980 on sees a significant move toward strong executive constraint, as a number of countries in Latin America and Asia turn from military autocracy toward political democracy. This is cemented by the fall of the Berlin Wall, such that the prevalence of cohesive institutions has almost doubled by the end of the century." (Besley and Persson 2011: 261).

Besley and Persson (2011) also examine the set of 113 countries that were created between 1945 and 1995, which are mainly former Asian and African colonies and former members of the Soviet Union. They conclude that

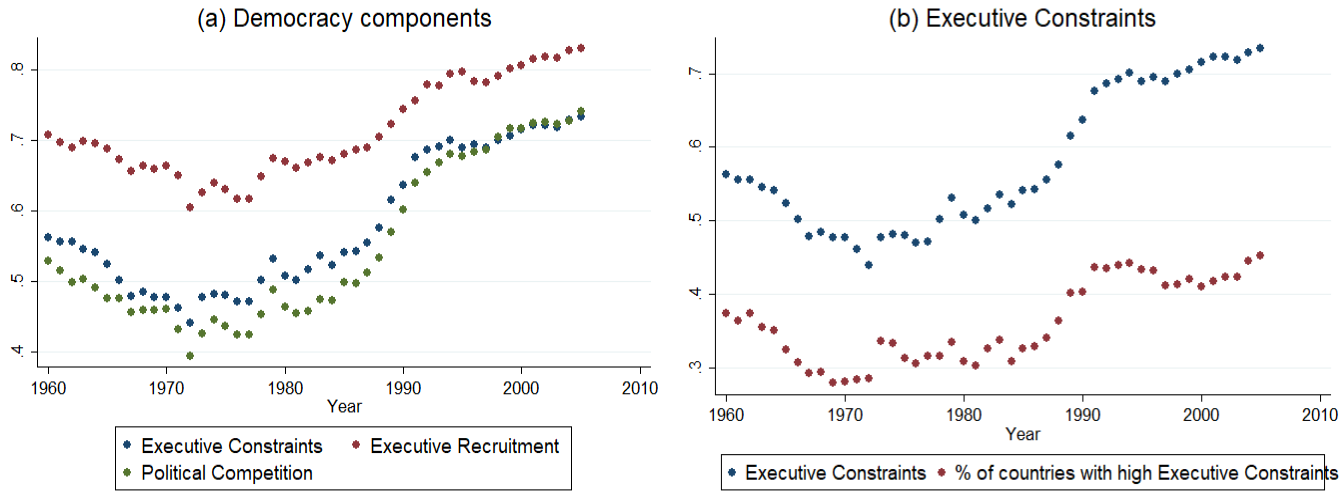
[4]I consider Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Congo, Costa Rica, Cote D'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Kyrgyz Republic, Lao, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovak Republic, Slovenia, Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, United Kingdom, Ukraine, Uruguay, United States, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia and Zimbabwe. Besley and Persson (2011) look only at the countries that appear continuously in the dataset since 1900 to purge the effect of countries appearing and disappearing from the dataset. The results are similar.

Table 1: Democracy components

COMPONENT VARIABLE	DESCRIPTION	INDICATORS
EXECUTIVE RECRUITMENT (EXREC)	"Executive recruitment involves the ways in which superordinates come to occupy their positions. In current sociological jargon this is a species of "boundary interchange", a matter of crossing lines between superordinate and subordinate positions. (Eckstein and Gurr 1975,150)	**Regulation of Chief Executive Recruitment (XRREG):** Extent to which a polity has institutionalized procedures for transferring executive power.
		Competitiveness of Executive Recruitment (XRCOMP): Extent that prevailing modes of advancement give subordinates equal opportunities to become superordinates (Gurr 1974, 1483).
		Openness of Executive Recruitment (XROPEN): Recruitment of the chief executive is "open" to the extent that all the politically active population has an opportunity, in principle, to attain the position through a regularized process.
EXECUTIVE CONSTRAINTS (XCONST)	One of the key characteristics of authority patterns is the extent to which the head of the unit (in states, the chief executive ruler) must take into account the preferences of others when making decisions.	**Executive Constraints (XCONST):** Operationally, this variable refers to the extent of institutionalized constraints on the decisionmaking powers of chief executives, whether individuals or collectivities. Such limitations may be imposed by any "accountability groups." The concern is therefore with the checks and balances between the various parts of the decision-making process.
POLITICAL COMPETITION (POLCOMP)	Acts by which subordinates attempt to influence the directive activities of supers are acts of participation. The operational question is the extent to which the political system enables non-elites to influence political elites in regular ways.	**Regulation of Participation (PARREG):** Participation is regulated to the extent that there are binding rules on when, whether, and how political preferences are expressed.
		The Competitiveness of Participation (PARCOMP): The competitiveness of participation refers to the extent to which alternative preferences for policy and leadership can be pursued in the political arena.

Source: Own elaboration based on Monty G. Marshall, Ted Robert Gurr and Keith Jaggers. 2017. "'Polity IV Project: Dataset Users' Manual."

Figure 2: Polity IV variables over time



Source: Own elaboration based on the Polity IV database

the tendency towards cohesive institutions (meaning high executive constraints) is not so clear among the newly independent states. Only a small minority of them ever acquired cohesive institutions and, even among those that did, the predominant tendency is for constraints to decline.

3.3 Deregulation index and executive constraints: first look at the data

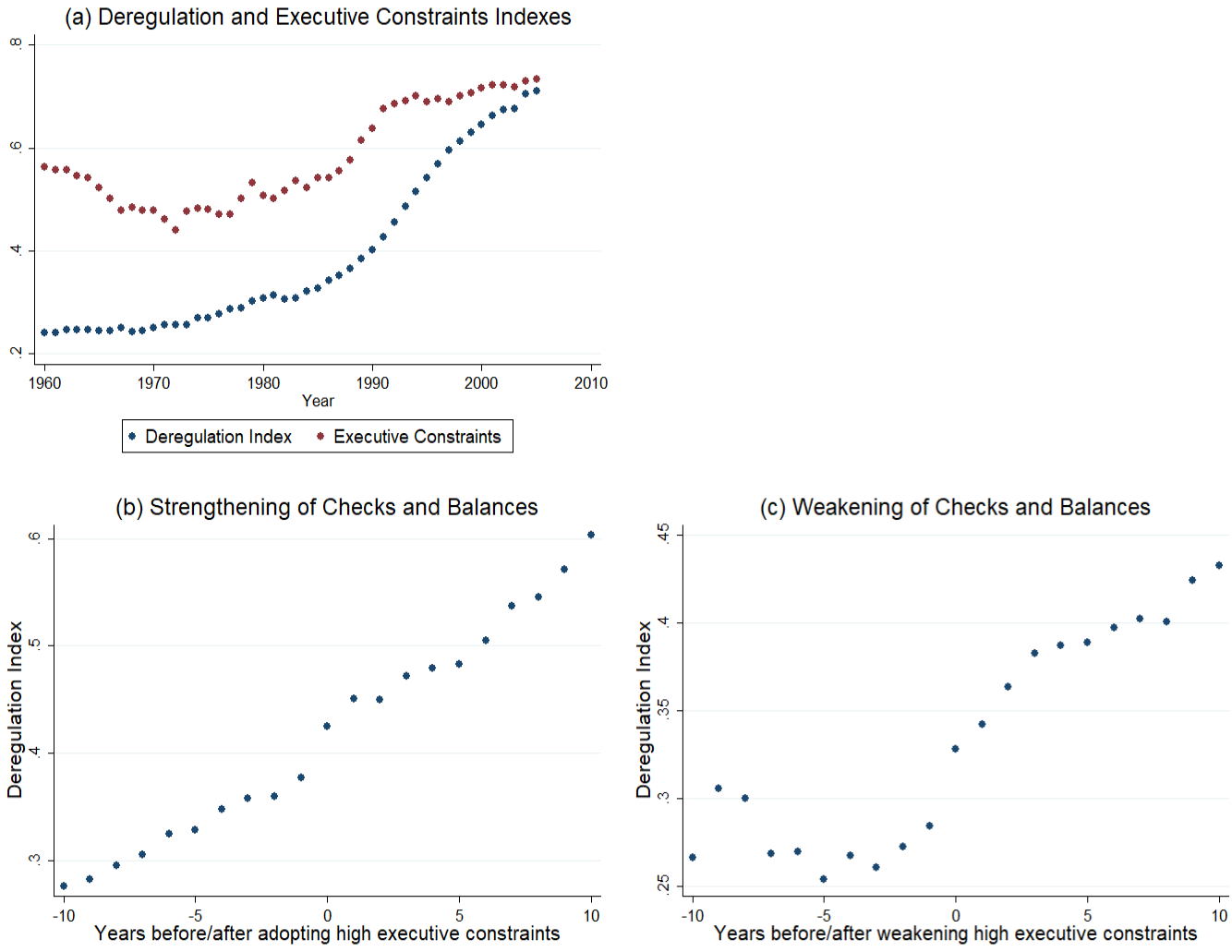
To conclude the description of the data, I look at the joint evolution of the deregulation and executive constraints indexes. Panel (a) in Figure 3 shows a parallel rise in the deregulation and executive constraints indexes taking place since the early eighties. Between 1960 and 1980, while the deregulation index was already growing, the executive constraints index fluctuated without a clear trend.

Following Besley and Mueller (2017), in panel (b) of Figure 3 I plot the mean deregulation index ten years before and ten years after the adoption of strong executive constraints[5]. If these constraints impeded reforms, I should see different behavior of the deregulation index before and after the introduction of high executive constraints. The positive trend in the index is similar before and after the event. It should be noted that only 33 countries in the sample (approximately 22%) experience at least one move from low to high executive constraints, with 3 of them experiencing two moves (Ecuador, Paraguay and Turkey).

In panel (c) I plot the average index in the opposite situation, i.e. when countries move from strong to weak executive constraints. In this case the evolution of the index is rather different before and after the weakening of controls. While the index fluctuates between 0.25 and 0.3 before, it increases steadily reaching almost 0.45 after the weakening. In this case, only 20 countries in the sample (approximately 13%) experienced an episode of weakening of checks and balances, where 4 of them suffered two episodes (Ecuador, Nigeria, Pakistan and Turkey).

[5] I thank Hannes Mueller for this suggestion.

Figure 3: Deregulation and Executive Constraints



Source: Own elaboration based on the database from Giuliano et al. (2013) and the Polity IV database

4 Giuliano et al.'s methodology

The purpose of this thesis is to analyze empirically the relationship between executive constraints and reform implementation. This is closely related to what Giuliano et al. (2013) study. They use the dataset presented above to study the relationship between political and economic liberalization, finding a positive and significant effect of democracy on the adoption of economic reforms.

Working at the sector-country year level, they define reform as the first difference of the index of deregulation for each of the six sectors, s, in country c at time t:

$$reform_{s,c,t} \equiv Index_{s,c,t} - Index_{s,c,t-1}$$

To study the effect of democracy on reforms they estimate the following equation:

$$reform_{s,c,t} = \alpha Index_{s,c,t-1} + \beta democracy_{c,t-1} + \phi X_{c,t-1} + \delta_s + \gamma_c + \chi_t + \delta_s * \gamma_c + \delta_s * \chi_t + \varepsilon_{s,c,t} \quad (1)$$

The terms δ_s, γ_c and χ_t are sector, country and year fixed effects, $\delta_s * \gamma_c$ is the interaction between country and sector fixed effects and $\delta_s * \chi_t$ is the interaction between sector and year fixed-effects. $X_{c,t-1}$ are country-specific and time-varying controls. They estimate the equation above using the fixed-effects estimator and report results for four variations, including different sets of dummies: the first only includes sector, country and year fixed effects; the second adds the interaction between country and sector fixed effects; the third adds the interaction between sector and year fixed effects; and the fourth adds both at the same time.

In this section, I use this methodology as a starting point and introduce some important modifications. First of all, in sub-section 4.1 I replace the main explanatory variable, democracy, with executive constraints and add alternative estimation methods. Giuliano et al. (2013) estimate the equation above using only the fixed-effects estimator. However, as the model is dynamic due to the use of the lagged level of the index, this estimator is inconsistent and subject to Nickell's bias. I add the Anderson-Hsiao (1981) and three different Generalized Method of Moments (GMM) estimators: first difference GMM (Arellano-Bond 1991), orthogonal deviations GMM (Arellano-Bover 1995) and system GMM (Blundell-Bond 1998). Given that I report the results for these five different estimation methods, I chose to only report one variation of the fixed-effects estimator (with sector, country and year fixed effects and the interaction between sector and country fixed effects) and report the others in the Appendix. The equation estimated is:

$$reform_{s,c,t} = \alpha Index_{s,c,t-1} + \beta xconst_{c,t-1} + \delta_s + \gamma_c + \chi_t + \delta_s * \gamma_c + \varepsilon_{s,c,t} \quad (2)$$

In sub-section 4.2, I redefine the dependent variable. Giuliano et al. (2013) define reforms as a positive change in the deregulation index because they are interested in the effect of democracy on economic liberalization. In this way, the variable reform measures only pro-market reforms, i.e. reforms that reduce the level of regulation in the different sectors of the economy[6]. However, I am interested in all kinds of reforms, whether they increase or decrease the level of regulation. In order to consider both kinds of reforms, I propose an alternative definition of reforms: the absolute value of the first difference of the index:

[6] In fact, a reform that increases regulation would be considered a "negative" reform

$$reform^{*}_{s,c,t} \equiv \mid Index_{s,c,t} - Index_{s,c,t-1} \mid$$

Finally, I incorporate in sub-section 4.3 two controls in the regressions that are likely correlated with both executive constraints and reforms. Executive recruitment and political competition are, in addition to executive constraints, the component variables that define the democracy index from Polity IV. Therefore, the three sub indexes are very correlated. I also expect them to be correlated with reforms, as Giuliano et al (2013) found a significant and positive correlation between democracy and reforms. If I do not control for these variables, the coefficient for executive constraints in equation 2 could be upward biased, capturing some of the effect that democracy as a whole has on reform implementation. In sub-section 4.3 I add these controls in the regression using both definitions of reforms.

4.1 Executive constraints and reforms

Table 2 reports the results for equation (2) using different estimation methods. Fixed-effects and Anderson-Hsiao estimators result in a coefficient for the lagged level of constraints that is positive and significant at the 1 percent level. This would indicate that higher checks on the executive are associated with more reforms, opposite to what the theory suggests. On the other hand, the coefficient for the first-difference GMM estimator is also significant but negative, pointing towards a negative relationship between executive constraints and reforms. Both orthogonal-deviations and system GMM estimations result in a non-significant coefficient for the lagged level of executive constraints. The coefficient on the lagged dependent variable is significant at the 1 percent level in almost all specifications and it is always negative, as found by Giuliano et al. (2013), indicating convergence to a country-specific level of regulation. The Sargan test of overidentifying restrictions can not be rejected in any of the GMM specifications. On the other hand, the Arellano-Bond test for serial correlation rejects second order correlation in all cases[7].

[7]Rejection of the Sargan test and second order serial correlation remains a feature of the results for the remainder of this section.

Table 2: Reforms and executive constraints

	(1) Fixed-effects OLS	(2) Anderson-Hsiao	(3) First Difference GMM	(4) Orthogonal Deviations GMM	(5) System GMM
Lagged level of index	-0.126***	-0.069***	-0.127***	-0.013	-0.076***
	[0.004]	[0.004]	[0.022]	[0.010]	[0.013]
Lagged executive constraints	0.010***	0.010***	-0.030**	0.008	0.011
	[0.003]	[0.003]	[0.014]	[0.005]	[0.009]
Observations	19,642	19,413	19,413	19,642	20,248
Sargan p-value			0.000	0.000	0.000
AR(1) test p-value			0.000	0.000	0.000
AR(2) test p-value			0.569	0.594	0.581
Number of instruments			218	218	307

* p<.1; ** p<.05; *** p<.01

Notes: Fixed-effects estimators include country, sector and year fixed effects, and country x sector interactions. Following Giuliano et al. (2013), I use a two-step estimator that allows for a first-order autoregressive disturbance term. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged level of executive constraints are instrumented with their second and third lags. The instrument count is reported in the last row. Standard errors are reported in brackets.

4.2 Re-defining reforms

In Table 3 I present the results with the alternative definition of reforms ($reform^{*}_{s,c,t} \equiv \mid Index_{s,c,t} - Index_{s,c,t-1} \mid$). When I use this broader definition of reform, the coefficient for executive constraints in only significant (and positive) in one of the specifications. This would indicate that the positive correlation between reforms and executive constraints found in the sub-section above is not robust to the use of a more comprehensive definition of reforms.

Table 3: Reforms and executive constraints - Absolute value

	(1) Fixed-effects OLS	(2) Anderson-Hsiao	(3) First Difference GMM	(4) Orthogonal Deviations GMM	(5) System GMM
Lagged level of index	-0.063***	-0.038***	-0.020	0.052***	-0.008
	[0.004]	[0.004]	[0.021]	[0.009]	[0.010]
Lagged executive constraints	0.004	0.003	-0.003	0.014***	0.005
	[0.003]	[0.003]	[0.013]	[0.005]	[0.007]
Observations	19,642	19,413	19,413	19,642	20,248
Sargan p-value			0.000	0.000	0.000
AR(1) test p-value			0.000	0.000	0.000
AR(2) test p-value			0.314	0.327	0.318
Number of instruments			218	218	307

* p<.1; ** p<.05; *** p<.01

Notes: Fixed-effects estimators include country, sector and year fixed effects, and country x sector interactions. Following Giuliano et al. (2013), I use a two-step estimator that allows for a first-order autoregressive disturbance term. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged level of executive constraints are instrumented with their second and third lags. The instrument count is reported in the last row. Standard errors are reported in brackets.

4.3 Controlling for executive recruitment and political competition

In Table 4 I add the other components of democracy as controls, using both definitions of reform. When I add executive recruitment and political competition as controls, the coefficient for executive constraints is mostly not significant. When I use Giuliano et al.'s definition (the first difference of the index), the coefficient is significant and negative in the case of first-difference and system GMM, but only at the 10 percent level. This negative coefficient indicates that higher executive constraints would be associated with fewer pro-market reforms, in accordance with what the theory suggests.

On the other hand, when I use the alternative definition of reforms (the absolute value of the first difference of the index), the coefficient is only significant in the case of the orthogonal deviations GMM estimator. In this case the coefficient is positive, relating higher executive constraints with more economic reforms.

The lagged level of the index is significant and negative in all specifications that use Giuliano et al.'s definition of reforms, with point estimates not too different from those found by Giuliano et al. (2013). When I use the more general definition of reforms, the coefficient is significant in three out of the five specification, and positive in one of them.

As for the other components of democracy, their coefficients are only significant in a few cases. Using the definition of reforms in Giuliano et al. (2013), the coefficient for executive recruitment is only significant in one case (system GMM) and political competition is significant in two (fixed-effects ans system GMM). In all of these cases, the coefficients are positive, consistent with the result in Giuliano et al. (2013) of a positive correlation between political and economic liberalization.

On the other hand, when I use the alternative definition of reforms the coefficients for executive recruitment and political competition are only significant in one specification each, and only at the 10 percent level. In this case the significant coefficients are negative, indicating that political liberalization would be associated with fewer reforms (with the alternative definition). There does not seem to be a robust effect of political liberalization on reforms in general, measured as the absolute value of the first difference in the deregulation index.

In conclusion, replicating the methodology used by Giuliano et al. (2013) does not seem to give a robust relationship between executive constraints and economic reforms. While a positive correlation between the variables seems to arise at first, this result is not robust to the broadening of the definition of reforms or to controlling for the other components of democracy. The next section proposes a different approach attempting to shed light on this ambiguous relationship.

Table 4: Reforms and executive constraints - Controlling for other components of democracy

(a) Using Giuliano et al.'s definition of reform ($reform_{s,c,t} \equiv Index_{s,c,t} - Index_{s,c,t-1}$)

Dependent variable: reform	(1) Fixed-effects OLS	(2) Anderson-Hsiao	(3) First Difference GMM	(4) Orthogonal Deviations GMM	(5) System GMM
Lagged level of index	-0.131***	-0.072***	-0.122***	-0.020*	-0.077***
	[0.004]	[0.004]	[0.022]	[0.011]	[0.013]
Lagged executive constraints	-0.003	0.001	-0.049*	0.003	-0.042*
	[0.005]	[0.008]	[0.026]	[0.013]	[0.022]
Lagged executive recruitment	0.005	0.002	0.021	-0.001	0.026**
	[0.005]	[0.006]	[0.014]	[0.008]	[0.013]
Lagged political competition	0.009**	0.007	0.017	0.003	0.041***
	[0.005]	[0.005]	[0.019]	[0.007]	[0.012]
Observations	18,830	18,653	18,626	18,830	19,436
Sargan p-value			0.000	0.000	0.000
AR(1) test p-value			0.000	0.000	0.000
AR(2) test p-value			0.562	0.587	0.567
Number of instruments			220	220	309

* p<.1; ** p<.05; *** p<.01

Notes: Fixed-effects estimators include country, sector and year fixed effects, and country x sector interactions. Following Giuliano et al. (2013), I use a two-step estimator that allows for a first-order autoregressive disturbance term. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged level of executive constraints are instrumented with their second and third lags. The instrument count is reported in the last row. Standard errors are reported in brackets.

(b) Using the alternative definition of reform ($reform_{s,c,t} \equiv \mid Index_{s,c,t} - Index_{s,c,t-1} \mid$)

Dependent variable: abs_reform	(1) Fixed-effects OLS	(2) Anderson-Hsiao	(3) First Difference GMM	(4) Orthogonal Deviations GMM	(5) System GMM
Lagged level of index	-0.066***	-0.040***	-0.009	0.049***	-0.011
	[0.004]	[0.004]	[0.021]	[0.010]	[0.011]
Lagged executive constraints	-0.006	-0.006	0.032	0.031**	-0.006
	[0.005]	[0.008]	[0.026]	[0.016]	[0.023]
Lagged executive recruitment	0.004	0.004	-0.024*	-0.014	0.009
	[0.005]	[0.006]	[0.014]	[0.010]	[0.013]
Lagged political competition	0.006	0.006	-0.018	-0.014*	0.001
	[0.005]	[0.005]	[0.018]	[0.008]	[0.012]
Observations	18,830	18,653	18,626	18,830	19,436
Sargan p-value			0.000	0.000	0.000
AR(1) test p-value			0.000	0.000	0.000
AR(2) test p-value			0.314	0.323	0.320
Number of instruments			220	220	309

* p<.1; ** p<.05; *** p<.01

Notes: Fixed-effects estimators include country, sector and year fixed effects, and country x sector interactions. Following Giuliano et al. (2013), I use a two-step estimator that allows for a first-order autoregressive disturbance term. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged level of executive constraints are instrumented with their second and third lags. The instrument count is reported in the last row. Standard errors are reported in brackets.

5 Studying the persistence of the deregulation index

In this section I propose a different approach to study the effect of constrains on the executive on reform implementation. The idea is to analyze the persistence of the deregulation index to see if having high executive constraints has any effect on said persistence. To do so I regress the level of the deregulation index against its first lag and an interaction term between the first lag and a dummy variable indicating strong executive constraints. I estimate the following equation to study the coefficient for the interaction term:

$$Index_{s,c,t} = \alpha Index_{s,c,t-1} + \beta(Index_{s,c,t-1} * xconst^{H}_{c,t-1}) + \phi X_{c,t.1} + \delta_s + \gamma_c + \chi_t + \delta_s * \gamma_c + \varepsilon_{s,c,t}$$

where $Index_{s,c,t-1} * xconst^{H}_{c,t-1}$ is the interaction term and $X_{c,t.1}$ is a set of controls that includes the variable for high executive constraints ($xconst^{H}_{c,t-1}$) in all specifications.

Strong executive constraints are defined as having the highest value on the categorical variable xconst (a value of 7 on a scale from 1 to 7)[8]. According to Besley and Muller (2017) "While it is ultimately an empirical question what cutoff matters, there are good reasons to suppose that it is only when the highest score is attained that constraints on the executive are fully binding. The coders designate this a case where "(a)ccountability groups have effective authority equal to or greater than the executive in most areas of activity." (Polity IV, Coding Manual)" (Besley and Muller (2017): 5). Besley and Persson (2011) also define cohesive political institutions as having the highest score for executive constraints.

The coefficient associated to the interaction measures the effect that having strong constraints on the executive has on the persistence of the deregulation index. If the theory of a trade-off is supported by the evidence, the coefficient should be positive. This would mean that countries with strong executive constraints have more persistent deregulation indexes, meaning that they implement less reforms that change the level of regulation in the sectors considered. On the other hand, if the coefficient is negative, strong executive constraints would be associated with a less persistent index, which is to say that they implement more reforms.

This approach has the advantage of dealing with positive/negative changes in the index in a more "refined" way than in the previous section. Redefining reforms as the absolute value of the index was an effective way of dealing with the issue of positive/negative reforms in the context of the methodology used above but it is not without issues. Taking the absolute value of the first difference of the index inevitably reduces information. It fails to distinguish between cumulative changes in the index (changes in the same direction) and positive and negative changes that alternate around a relatively stable value.

As in the previous section, and following Giuliano et al. (2013), I run the regressions at the country-sector year level. This approach allows me to obtain an average coefficient for all sectors and avoids composition issues that arise if I aggregate the sectoral indexes to work at the country level. A detailed explanation of this issue can be found in section A.1 of the Appendix.

5.1 Executive constraints and the persistence of the deregulation index

In the following I estimate the equation presented above using different estimation methods. Similarly to what happened in the first approach, since I regress the deregulation index against its first lag, the model is dynamic and

[8] Results are robust to using a lower cutoff for strong executive constraints (a value of 5 or 6).

Table 5: Executive constraints and the persistence of the regulation index

	(1) Pooled OLS	(2) Fixed-effects OLS	(3) Anderson-Hsiao	(4) First Difference GMM	(5) Orthogonal Deviations GMM	(6) System GMM
Lagged level of index	0.950***	0.890***	0.933***	0.881***	0.994***	0.950***
	[0.005]	[0.007]	[0.004]	[0.025]	[0.011]	[0.015]
Lagged $Index * xconst^H$	-0.003	-0.014	-0.005	-0.020	-0.084***	-0.065**
	[0.005]	[0.009]	[0.004]	[0.042]	[0.020]	[0.030]
Lagged high constraints	0.013***	0.014**	0.009**	-0.049**	0.003	0.029*
	[0.004]	[0.006]	[0.004]	[0.020]	[0.008]	[0.015]
Observations	20,248	20,248	19,413	19,413	19,642	20,248
Sargan p-value				0.000	0.000	0.000
AR(1) test p-value				0.000	0.000	0.000
AR(2) test p-value				0.569	0.548	0.551
Number of instruments				218	218	307

* p<.1; ** p<.05; *** p<.01

Notes: Pooled OLS estimations include year and sector fixed effects with errors clustered at the country level. Fixed-effects estimators include year fixed effects, with errors clustered at the country level. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

the fixed-effects estimator is inconsistent and subject to Nickell's bias. I therefore use the Anderson-Hsiao, first difference GMM, orthogonal deviations GMM and system GMM estimators to check the robustness to different estimation methods. Estimating Pooled OLS and Fixed Effects OLS is a useful check because the former is upward biased and the latter is downward biased, so the true parameter should lie somewhere in between.

Table 5 shows the estimates for the equation above, using the different estimation methods. The coefficient for the first lag of the index shows very high persistence, with point estimates between 0.881 and 0.994. The estimates for pooled OLS and fixed-effects are 0.950 and 0.890 respectively, and only the Anderson-Hsiao and system GMM estimations fall in this range[9]. The coefficient for the interaction between the lagged index and high constraints on the executive is always negative, indicating that strong executive constraints are associated with a less persistent deregulation index, contrary to what the theory suggests. However, the coefficient is only statistically significant at the usual probability levels in two of the six specifications (orthogonal deviations and system GMM). Again, the Sargan test is not rejected in any of the specifications and the Arellano-Bond test for serial correlation yields the expected result[10].

[9]To be more precise, it should be noted that the coefficient for the first lag is only the persistence of the index for sectors in countries with weak executive constraints. The persistence coefficient for sectors in countries with strong executive constraints is the sum of the coefficient for the first lag and the interaction term. The comparison above should be made for both coefficients, but the results are similar.

[10]This result remains mostly unchanged in all of this Section

Table 6: Executive constraints and the persistence of the deregulation index - Controlling for other components of polity2

	(1) Pooled OLS	(2) Fixed-effects OLS	(3) Anderson-Hsiao	(4) First Difference GMM	(5) Orthogonal Deviations GMM	(6) System GMM
Lagged level of index	0.945***	0.882***	0.929***	0.885***	0.992***	0.928***
	[0.005]	[0.008]	[0.005]	[0.023]	[0.011]	[0.015]
Lagged $Index * xconst^H$	-0.000	-0.008	-0.001	-0.002	-0.047***	-0.017
	[0.005]	[0.010]	[0.005]	[0.034]	[0.012]	[0.025]
Lagged high constraints	0.005	0.006	0.002	-0.051*	-0.001	0.005
	[0.004]	[0.007]	[0.004]	[0.028]	[0.014]	[0.020]
Lagged executive recruitment	0.000	0.001	0.000	0.001	0.000	0.000
	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]
Lagged political competition	0.001***	0.001	0.001*	0.001	0.001	0.003**
	[0.000]	[0.001]	[0.000]	[0.002]	[0.001]	[0.001]
Observations	19,436	19,436	18,653	18,626	18,830	19,436
Sargan p-value				0.000	0.000	0.000
AR(1) test p-value				0.000	0.000	0.000
AR(2) test p-value				0.575	0.562	0.568
Number of instruments				220	220	309

* p<.1; ** p<.05; *** p<.01

Notes: Pooled OLS estimations include year and sector fixed effects with errors clustered at the country level. Fixed-effects estimators include year fixed effects, with errors clustered at the country level. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

5.2 Controlling for executive recruitment and political competition

In line with the last set of regressions from Section 4, I introduce the other components of democracy, executive recruitment and political competition, as controls in the above regressions. Table 6 shows that, when I add these controls, the coefficient for the interaction between the first lag of the index and the categorical variable for high executive constraints is only significant in one of the specifications. The coefficient for the interaction is always negative, as in the previous case, but is only significant when I estimate with orthogonal deviations GMM. Only in this case I get empirical evidence that high executive constraints could be related to a higher persistence in the deregulation index. The persistence coefficient is always significant at the 1 percent level and is bounded between 0.882 and 0.992. On the other hand, the coefficient for the dummy variable for high executive constraints is only significant in one specification, and only at the 10 percent level. The coefficient for executive recruitment is not significant in any of the specifications. On the other hand, the coefficient for political competition is positive and significant in three of the specifications, providing some evidence that it is associated with a higher level of deregulation, similar to what was found in the previous section.

5.3 Other robustness checks

5.3.1 Other controls

I present in this section a set of regressions including other covariates that might explain the implementation of economic reforms. Following Giuliano et al. (2013) I control for economic crises, public expenditure in terms of GDP, real devaluation, tertiary enrollment, bureaucratic quality, reforms in neighbors, dummy variables for leftist governments and presidential system, real GDP growth and the existence of an IMF (International Monetary Fund) program. Table 7 presents the results.

One of the biggest challenges to the implementation of reforms is the opposition of potential losers. Such opposition is higher when it is harder for potential losers to find other opportunities or when there is not much state capacity to compensate them for their losses. I control for public expenditure over GDP as a measure of state capacity to compensate losers from reforms. The corresponding coefficient is only significant in some of the specifications, in which it has a negative sign, contrary to what was expected. Real devaluations could be an alternative way to compensate losers through increased exports and in fact, as Giuliano et al. (2013) argue, many important reforms coincided with large real devaluations. Economic crisis could affect reform implementation in opposite directions: complicating reforms by making it harder for losers to find new opportunities or encouraging them by bringing out economic issues that need to be resolved. To account for economic crisis I add two variables: inflationary crises (a dummy variable equal to 1 if the country has an inflation rate larger that 40 percent) and real GDP growth. Neither the coefficient for real devaluations, inflationary crises or real GDP growth are significant in any of the specifications.

Human capital, proxied here with tertiary enrollment, and bureaucratic quality can also affect the government's capacity to implement reforms (Besley and Persson 2009). The corresponding coefficients are only significant in one or two specifications, where they show the expected sign.

The prevalence of reforms in neighboring countries is the only control variable that is significant in most specifications. The coefficient is always positive, indicating that there could be a spillover effect, which is in line with Giuliano et al. (2013) and the work by Buera, Monge-Naranjo and Primiceri (2011) cited by them.

Again following Giuliano et al. (2013), I include two political variables: the ideology of the incumbent (measured by a dummy variable for leftist governments) and the form of government (a categorical variable that indicates whether the system is presidential). Left-wing governments are expected to be less favorable to pro-market reforms so I would expect the associated coefficient to be negative, but it is not significant in any of the specifications. On the other hand, Persson and Tabellini (2002) argue that presidential systems are more able to resist the opposition of pressure groups against reforms. The coefficient is positive in all cases, as was expected, but never significant at the usual levels.

Finally, I control for the existence of an IMF program. In the 1980s and 1990s, the IMF and World Bank often made their loans conditional on the adoption of the policy agenda known as the Washington Consensus. Many highly indebted countries had little choice but to implement pro-market reforms in order to gain some relief from the burden of their large foreign financial obligations (Naim 2000). In my sample, IMF Programs are present almost half of the time in countries from Latin America and the Caribbean, South Asia and Sub-Saharan Africa. However, the coefficient for the corresponding variable is never statistically significant.

When I add all of these controls and estimate with the different methods, the coefficient for the interaction term is positive but only statistically significant in one specification. When I use the system GMM estimator, the coefficient is negative and significant at the 1 percent level, providing evidence contrary to the theory.

Table 7: Executive constraints and the persistence of the deregulation index - Robustness to controls

	(1) Pooled OLS	(2) Fixed-effects OLS	(3) Anderson-Hsiao	(4) First Difference GMM	(5) Orthogonal Deviations GMM	(6) System GMM
Lagged index	0.913***	0.755***	0.885***	0.905***	0.985***	0.993***
	[0.010]	[0.022]	[0.014]	[0.061]	[0.032]	[0.024]
Lagged $Index * xconst^H$	0.005	0.007	0.013	0.168	0.026	-0.126***
	[0.012]	[0.032]	[0.012]	[0.114]	[0.059]	[0.038]
Lagged high constraints	0.003	0.007	0.006	0.186	0.056*	0.094***
	[0.010]	[0.025]	[0.015]	[0.120]	[0.029]	[0.029]
Lagged executive recruitment	0.001	0.000	-0.000	-0.004	-0.001	-0.002
	[0.001]	[0.002]	[0.003]	[0.005]	[0.003]	[0.002]
Lagged political competition	0.001	0.002	0.002	0.001	0.000	-0.000
	[0.001]	[0.002]	[0.001]	[0.004]	[0.001]	[0.001]
Lagged inflationary crisis	0.001	-0.003	0.003	0.008	0.008	0.006
	[0.008]	[0.011]	[0.008]	[0.011]	[0.008]	[0.007]
Lagged real devaluation	-0.000	0.002	0.006	0.005	0.010	0.004
	[0.007]	[0.007]	[0.008]	[0.007]	[0.007]	[0.005]
Lagged public expenditure over GDP	-0.000	-0.002*	-0.002**	-0.002	-0.002**	-0.000
	[0.000]	[0.001]	[0.001]	[0.002]	[0.001]	[0.000]
Lagged bureaucratic quality	-0.000	0.003	0.001	0.012*	0.001	-0.002
	[0.002]	[0.004]	[0.003]	[0.007]	[0.003]	[0.002]
Lagged tertiary enrollment	0.020*	-0.017	0.003	-0.024	-0.030	0.039**
	[0.012]	[0.024]	[0.019]	[0.051]	[0.031]	[0.018]
Lagged reform in geographical neighbor	0.234***	0.283***	0.236***	0.054	0.156***	0.097*
	[0.049]	[0.052]	[0.061]	[0.068]	[0.050]	[0.054]
Lagged dummy for left	-0.001	-0.003	-0.002	0.002	0.000	0.001
	[0.003]	[0.004]	[0.003]	[0.006]	[0.003]	[0.003]
Lagged dummy for presidential	0.003	0.003	-0.006	0.038	0.016	0.003
	[0.003]	[0.014]	[0.015]	[0.030]	[0.021]	[0.006]
Lagged real GDP growth	0.026	0.033	0.019	-0.040	-0.023	0.009
	[0.034]	[0.039]	[0.035]	[0.042]	[0.035]	[0.032]
Lagged IMF Program	0.003	-0.000	-0.000	-0.001	0.008	-0.000
	[0.004]	[0.004]	[0.005]	[0.006]	[0.006]	[0.004]
Observations	5,208	5,208	5,172	4,270	4,740	5,208
Sargan p-value				0.005	0.00	0.005
AR(1) test p-value				0.000	0.000	0.000
AR(2) test p-value				0.420	0.598	0.708
Number of instruments				72	77	102

* p<.1; ** p<.05; *** p<.01

Notes: Pooled OLS estimations include year and sector fixed effects with errors clustered at the country level. Fixed-effects estimators include year fixed effects, with errors clustered at the country level. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

Table 8: Executive constraints and the persistence of the deregulation index - Sub-period analysis (system GMM)

	(1) 1960-2005	(2) 1960-1984	(3) 1985-2005	(4) 1960-2005	(5) 1960-1984	(6) 1985-2005
Lagged index	0.950***	0.984***	0.943***	0.928***	0.967***	0.930***
	[0.015]	[0.024]	[0.019]	[0.015]	[0.025]	[0.021]
Lagged $Index * xconst^H$	-0.065**	-0.038	-0.069**	-0.017	0.013	-0.045
	[0.030]	[0.047]	[0.032]	[0.025]	[0.044]	[0.033]
Lagged high constraints	0.029*	0.002	0.072***	0.005	-0.026	0.058**
	[0.015]	[0.017]	[0.024]	[0.020]	[0.023]	[0.027]
Lagged executive recruitment				0.000	0.002	-0.001
				[0.001]	[0.001]	[0.002]
Lagged political competition				0.003**	0.002	0.001
				[0.001]	[0.001]	[0.001]
Observations	20,248	8,890	11,358	19,436	8,242	11,194
Sargan p-value	0.000	0.000	0.000	0.000	0.000	0.000
AR(1) test p-value	0.000	0.000	0.000	0.000	0.000	0.000
AR(2) test p-value	0.551	0.811	0.335	0.568	0.789	0.330
Number of instruments	307	160	147	309	162	149

* p<.1; ** p<.05; *** p<.01

Notes: System GMM two-step estimators with robust standard errors and year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

5.3.2 Sub-period analysis

In section 3, the first look at the data showed that my two main variables of interest, the deregulation index and the executive constraints index, show rather different paths in the first and second halves of the sample. The deregulation index increases throughout the period, but the increase is much more pronounced since the mid-1980s. The measure of executive constraints shows a decrease until about 1980 and increases at different paces until the end of the sample. The increase is particularly steep around 1990, which is also the case of the deregulation index.

These differences could indicate a structural change in the mid 1980s. To check for this I repeat the regressions above using system GMM for two different periods: 1960-1984 and 1985-2005. I first run the regressions without controlling for executive recruitment and political competition and then I add them, using the system GMM estimator in all cases. The system GMM estimator is my preferred method because the persistence coefficient is very high (between 0.9 and 1), which could result in a weak instrument problem in the other GMM estimators. Nevertheless, I report the other estimators in the Appendix to check the robustness to other methods. Table 8 presents the results. As expected, the persistence coefficient is higher in the first period than in the second. Before I include the controls (executive recruitment and political competition), the coefficient associated to the interaction term is significant for the entire sample and for the second period, and it is always negative. However, when I control for these variables the coefficient is no longer significant for any of the periods.

5.3.3 Analysis by region

In section 3.1 I discussed the evolution of the deregulation index by region. Countries in Latin America and the Caribbean, South Asia, Sub-Saharan Africa and countries that belonged to the Soviet Bloc were the ones that suffered a greater increase in their deregulation index in the 1980s and 1990s. Countries in Europe and North America did not show such a steep increase since their levels of deregulation were already high. Executive constraints have also followed different trajectories across regions. The increase in the executive constraints index, and in the overall democracy index, is more pronounced for Latin American countries that were restoring their democracies in the 1980s after years of military dictatorships and for the countries of the Soviet Bloc after the fall of the Berlin Wall in 1989.

In this subsection I develop the analysis of the effect of executive constraints on the persistence of the deregulation index by region, using the classification described in subsection 3.1. system GMM is my preferred estimator for the arguments laid above, and the regressions using the other methods are also presented in the Appendix. By running the regressions for each region, the number of observations in each regression obviously drops and some issues arise. North America only has two countries (United States and Canada) and both have the highest value for executive constraints for all years in the sample, so the interaction term drops due to collinearity and the regression is not useful. In the case of Middle East and North Africa, the only country that has at least one value of 7 for executive constraints is Israel, so the interaction term equals a categorical variable that indicates that the country is Israel. On the other hand, in South Asia there is only four countries that register strong constraints for some years (Pakistan, India, Sri Lanka and Bangladesh), so the coefficient for the interaction term should also be looked at cautiously.

Another issue is that the inclusion of time dummies leads to point estimates of the persistence coefficients of approximately 0 for some of the regions (Middle East and North Africa, North America and South Asia). For this reason I present the results for the regressions without time dummies, where the persistence coefficients are between 0.928 and 1.105, more reasonable values[11].

That said, only two regions show a significant coefficient for the interaction term: Sub-Saharan Africa and the countries of the former Soviet Bloc. Both coefficients are negative and significant at the 5 and 1 percent levels respectively. For these regions, there seems to be evidence that high executive constraints reduce the persistence of the deregulation index, contrary to the theory. In both cases, the coefficient for high executive constraints is also significant but positive, meaning that high executive constraints would be associated with a higher level of deregulation.

[11] Nonetheless, the inclusion of time dummies leads to similar results in terms of significance and sign of our variable of interest, the interaction between the deregulation index and strong constraints.

Table 9: Executive constraints and the persistence of the deregulation index - Analysis by region

	(1) All regions	(2) Asia & Pacific	(3) Europe	(4) Latin America and the Caribbean	(5) Middle East & North Africa	(6) North America	(7) South Asia	(8) Sub-Saharan Africa	(9) Ex-Soviet Bloc
Lagged index	0.975***	0.980***	0.966***	0.990***	0.928***	1.105	0.968***	0.980***	1.006***
	[0.016]	[0.028]	[0.031]	[0.018]	[0.048]	[1.186]	[0.044]	[0.019]	[0.023]
Lagged $Index * xconst^H$	-0.024	-0.017	0.010	-0.058	0.087		0.006	-0.291**	-0.262***
	[0.028]	[0.043]	[0.029]	[0.050]	[0.102]		[0.098]	[0.118]	[0.069]
Lagged high constraints	-0.005	0.014	0.010	0.058	-0.094**		-0.020	0.094*	0.170**
	[0.020]	[0.034]	[0.013]	[0.039]	[0.040]		[0.024]	[0.050]	[0.066]
Lagged executive recruitment	0.002*	0.004	0.001	0.002*	0.006*	-0.010	0.003	-0.001	0.002
	[0.001]	[0.002]	[0.001]	[0.001]	[0.003]	[0.118]	[0.002]	[0.002]	[0.002]
Lagged political competition	0.003**	-0.001	0.001	-0.001	0.005*	0.001	0.002	0.004**	0.002
	[0.001]	[0.002]	[0.001]	[0.002]	[0.003]	[0.008]	[0.002]	[0.002]	[0.003]
Observations	19,436	2,725	3,843	3,948	1,540	484	1,107	4,070	1,719
Sargan p-value	0.000	0.000	0.000	0.000	0.000	0.437	0.000	0.000	0.489
AR(1) test p-value	0.000	0.000	0.000	0.000	0.000	0.375	0.005	0.000	0.000
AR(2) test p-value	0.596	0.209	0.763	0.946	0.263	0.488	0.603	0.277	0.613
Number of instruments	264	226	209	243	218	176	208	251	171

* p<.1; ** p<.05; *** p<.01

Notes: System GMM two-step estimator with robust standard errors. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

6 Concluding remarks

The purpose of this paper is to provide empirical evidence on the generally accepted view that executive constraints may prevent the implementation of reforms. While this hypothesis is central to much of the recent literature on political agency, there is no empirical evidence that supports it. Such lack of empirical evidence is likely due to the difficulty of measuring reforms. In this thesis I use a new database introduced by Giuliano et al. (2013) on the level of regulation in six sectors of the economy: agriculture, product markets (electricity and telecommunications), trade, current account, capital account and the domestic financial sector. To measure constraints on the executive I use the variable executive constraints from the Polity IV database.

I use two approaches to study the question of whether executive constraints hinder reform, arriving to inconclusive results. The first approach is to use the methodology found in Giuliano et al. (2013) to regress the first difference of the deregulation index on executive constraints. I use fixed effects, Anderson-Hsiao (1981) and Arellano-Bover (1995)/Blundell-Bond(1998) estimators and find a positive and significant relationship between reforms and executive constraints, contradicting the hypothesis. However, when I redefine the dependent variable as the absolute value of the first difference of the index to consider reforms that both increase and decrease the level of regulation, the relationship loses significance. Finally, when I control for executive recruitment and political competition (variables that are related to both executive constraints and reforms), the coefficient for executive constraints is mostly non significant.

The second approach is to study the persistence of the deregulation index. I analyze whether it is affected by the presence of strong executive constraints. In this case, there is some evidence that strong executive constraints could be associated with lower persistence in the deregulation index, but this result is not robust to all estimation methods. Most importantly, and in line with the first approach, this result is not robust to controlling for executive recruitment and political competition. In this second approach I also control for other variables that could affect reform implementation, and conduct an analysis for different sub-periods (1960-1984 and 1985-2005) and by region. Throughout these robustness checks the result is the same: there does not seem to be a statistically significant relationship between constraints on the executive and the implementation of reforms.

This thesis was motivated by Giuliano et al's result that democracy -as measured by the polity IV index- is positively associated to reforms and Forteza and Pereyra (2018) observation that xconst is a component of the Polity IV democracy index. Hence, Giuliano et al's finding suggests that, contrary to theory, more checks on the executive could be positively associated to more reforms. Using different methodologies and econometric methods I find that, while there is some evidence consistent with this puzzling positive correlation, this result is not robust to the inclusion of several controls, alternative measures of reforms and alternative estimation strategies. While this solves the issue of the contradicting evidence, I still do not find evidence in favor of the hypothesis that more constraints reduces reforms.

I think of two possible explanations for this. The first is that my measure of reforms is not comprehensive enough. Using the database from Giuliano et al. (2013) I can only consider reforms that increase or decrease the degree of deregulation in six specific sectors of the economy. Other important economic reforms are left out of the analysis, such as meaningful changes in macroeconomic policy or tax, social security and labor market reforms, just to name a few. Even more so, the argument that checks and balances hinder reforms is not limited to the case of economic reforms. Reforms in healthcare, education or even the implementation of a civil rights agenda can be blocked by strong executive constraints.

Another explanation can be found in some of the literature reviewed in Section 2. Stephenson and Nzelibe (2010) claim that the effect of checks and balances on policies is theoretically ambiguous. They argue that voters could adjust their voting strategies to the varying degrees of executive constraints. When the executive has unconstrained power to choose policy, the electorate punishes his failures more harshly to offset his possible biases. Contrarily, when the executive's power is checked by another actor (usually the legislature), the electorate knows that some of the executive's undesirable policies will be blocked, so they do not need to rely so much on hard punishment to compensate for the executive's possible biases. If the executive knows that his failures will not be punished so harshly, he will be more prone to initiate policy change. While this could increase the implementation of reforms when executive constraints are strong, the direct effect is that some policies will get blocked by the controlling agent. The net effect is indeterminate.

On the other hand, Tommasi, Scartascini and Stein (2014) add an intertemporal dimension to the veto-player theory and argue that adding a veto player not necessarily raises the probability of political inaction. The addition of veto-players might facilitate intertemporal cooperation, which could in turn allow for efficient adjustments in policies. In this framework, a more constrained executive does not necessarily implement less reforms.

Further research should go in three directions. First, to construct more comprehensive data on reforms in order to have a more complete view of the issue. Second, to model the mechanisms through which executive constraints might affect policy implementation. In that sense, the insight provided by Stephenson and Nzelibe (2010) and Tommasi, Scartascini and Stein (2014) are interesting starting points. Finally, it could be interesting to study possible asymmetric effects of weakening and strengthening of checks and balances on reform implementation. Panels (b) and (c) of figure 3 seem to suggest that this could be the case.

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A Appendix

A.1 Discussion of the data

A.1.1 Descriptive statistics of the main variables

Table A1: Summary Statistics of the main variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Deregulation index	22.565	0,41	0,37	0	1
Polity2	21.297	2,03	7,38	-10	10
Executive Constraints	20.856	4,57	2,28	1	7
Executive Recruitment	20.044	6,07	2,31	1	8
Political Competition	20.044	6,14	3,65	1	10
Inflationary crisis	19.101	0,09	0,28	0	1
Real devaluation	17.726	0,02	0,42	-1,00	24
Public expenditure over GDP	11.830	15,29	5,50	1,38	54,52
Bureaucratic quality	9.621	2,37	1,21	0	4
Tertiary enrollment	8.312	0,23	0,20	0,00	0,97
Reform in geographical neighbor	20.614	0,45	0,27	0	0,97
Dummy for left	22.565	0,23	0,42	0	1
Dummy for presidential	15.906	0,62	0,49	0	1
Real GDP growth	20.020	0,02	0,06	-0,76	0,73
IMF Program	22.565	0,33	0,47	0	1

A.1.2 Discussion of the deregulation indexes

In the analysis of the persistence of the deregulation index I maintain the strategy of Giuliano et al. (2013) of running the regressions at the country-sector year level. This approach allows me to obtain an average coefficient for all sectors while avoiding some composition issues that arise when trying to work at the country level. In order to work at the country level I would have to aggregate the six sectoral indexes into one single index. One possible way to aggregate the indexes is to simply average all available indexes. However, the different indexes are not all available from the start of the sample: the capital account and domestic financial sector indexes are only available starting in 1973 and the agriculture index is only available until 2003. Averaging all available indexes produces "jumps" in the average whenever a new index enters or leaves the sample. Such "jumps" in the average would be interpreted as important reforms in my analysis, but are actually just a matter of data availability. An alternative would be to only take the average when all six indexes are available, but it would result in the loss of too many observations. Even more so, it would reduce the sample to very few countries in a biased way, since developed countries have more available data. In fact, 58 (mostly) developing countries have no available data for one or more sectoral indexes, so they would disappear from the dataset entirely.

Table A2: Deregulation indexes

	Coverage	Data Sources	Description
Agriculture market	1960-2003	Based on IMF commodities data, various existing studies and datasets, and national legislation and other official documents.	The index captures intervention in the market for the main agricultural export commodity in each country.
Product market	1960-2005	Electricity: Based on various existing studies and datasets as well as national legislation and other official documents. Telecommunication: Based on IMF commodities data, various existing studies and datasets, and national legislation and other official documents.	The electricity indicators capture (i) the degree of unbundling of generation, transmission, and distribution; (ii) whether a regulator other than government has been established; (iii) whether the wholesale market has been liberalized; and (iv) privatization. The telecommunication indicator captures (i) the degree of competition in local services; (ii) whether a regulator other than government has been established; (iii) the degree of liberalization of interconnection changes; and (iv) privatization.
Trade	1960-2005	Various sources, including IMF, World Bank, WTO, UN, Clemens and Willamson (2004).	"Trade liberalization is defined by looking at average tariff rates, with missing values extrapolated using implicit weighted tariff rates. Index normalized to be between zero and unity: zero means the tariff rates are 60 percent or higher, while unity means the tariff rates are zero."
Capital Account	1973-2005	Abiad, Detragiache, and Tressel (2008), following the methodology in (Abiad and Mody 2005), based on various IMF reports and working papers, central bank websites, and others.	"Qualitative indicators of restrictions on financial credits and personal capital transactions of residents and financial credits to nonresidents, as well as the use of multiple exchange rates."
Current Account	1960-2005	Based on the methodology in Quinn (1997) and Quinn and Toyoda (2007), drawing on information contained in the Fund's AREAER database (Annual Reports on Exchange Arrangements and Exchange Restrictions).	"Current account liberalization is defined with an indicator describing how compliant a government is with its obligations under the IMF's Article VIII to free from government restriction the proceeds from international trade in goods and services."
Domestic Financial Sector	1973-2005	Abiad, Detragiache, and Tressel (2008), following the methodology in (Abiad and Mody 2005), based on various IMF reports and working papers, central bank websites, and others.	"The banking subindex is an average of five indicators: (i) interest rate controls; (ii) credit controls; (iii) competition restrictions; (iv) the degree of state ownership; and (v) the quality of banking supervision and regulation. The sixth subindex relates to securities markets and covers policies to develop domestic bond and equity markets."

Source: Own elaboration based on Giuliano et al. (2013) and Spilimbergo, Prati and Ostry (2009).

A.1.3 Correlation between executive recruitment, executive constraints and political competition

Table A3: Correlation between executive recruitment, executive constraints and political competition

	Executive recruitment	Executive constraints	Political competition
Executive recruitment	1.0000		
Executive constraints	0.8564***	1.0000	
Political competition	0.8658***	0.8274***	1.0000

* p<.1; ** p<.05; *** p<.01

A.2 Robustness to estimation methods

A.2.1 Robustness to the inclusion of different sets of dummies in the fixed-effects estimator using the methodology in Giuliano et al. (2013)

Table A4: Robustness to inclusion of different sets of dummies: Reforms and executive constraints - Giuliano et al.'s definition of reform

	Dep var: reform			
	(1)	(2)	(3)	(4)
Lagged level of index	-0.072***	-0.126***	-0.064***	-0.132***
	[0.003]	[0.004]	[0.003]	[0.004]
Lagged level of executive constraints	0.009***	0.011***	0.018***	0.011***
	[0.003]	[0.003]	[0.004]	[0.003]
Observations	20,248	19,642	20,410	19,642
Country FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country x sector FE	No	Yes	No	Yes
Sector x year FE	No	No	Yes	Yes

* p<.1; ** p<.05; *** p<.01

Notes: Two-step fixed-effects estimator that allows for a first-order autoregressive disturbance term (Following Giuliano et al. (2013). Standard errors are reported in brackets.

Table A5: Robustness to inclusion of different sets of dummies: Reforms and executive constraints - Alternative definition of reform

	Dep var: abs_reform		
	(1)	(2)	(3)
Lagged level of index	-0.040***	-0.064***	-0.005**
	[0.003]	[0.004]	[0.002]
Lagged level of executive constraints	0.004	0.004	0.014***
	[0.003]	[0.003]	[0.003]
Observations	20,248	19,642	20,103
Country FE	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Country x sector FE	No	Yes	No
Sector x year FE	No	No	Yes

* p<.1; ** p<.05; *** p<.01

Notes: Two-step fixed-effects estimator that allows for a first-order autoregressive disturbance term (Following Giuliano et al. (2013). Standard errors are reported in brackets.

Table A6: Robustness to inclusion of different sets of dummies: Reforms and executive constraints - controlling for other components of democracy

(a) Giuliano et al.'s definition of reform

	Dep var: reform		
	(1)	(2)	(3)
Lagged level of index	-0.075***	-0.134***	-0.071***
	[0.003]	[0.004]	[0.003]
Lagged level of executive constraints	-0.003	-0.003	-0.000
	[0.005]	[0.005]	[0.007]
Lagged level of executive recruitment	0.005	0.005	0.005
	[0.005]	[0.005]	[0.007]
Lagged level of political competition	0.008*	0.008*	0.012**
	[0.004]	[0.005]	[0.006]
Observations	19,436	18,830	19,598
Country FE	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Country x sector FE	No	Yes	No
Sector x year FE	No	No	Yes

* p<.1; ** p<.05; *** p<.01

Notes: Two-step fixed-effects estimator that allows for a first-order autoregressive disturbance term (Following Giuliano et al. (2013). Standard errors are reported in brackets.

(b) Alternative definition of reform

	Dep var: abs_reform			
	(1)	(2)	(3)	(4)
Lagged level of index	-0.042***	-0.066***	-0.008***	-0.077***
	[0.003]	[0.004]	[0.002]	[0.004]
Lagged level of executive constraints	-0.006	-0.006	-0.003	-0.004
	[0.005]	[0.005]	[0.005]	[0.005]
Lagged level of executive recruitment	0.003	0.004	0.005	0.004
	[0.005]	[0.005]	[0.006]	[0.005]
Lagged level of political competition	0.008*	0.006	0.013***	0.002
	[0.004]	[0.005]	[0.005]	[0.005]
Observations	19,436	18,830	19,291	18,830
Country FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country x sector FE	No	Yes	No	Yes
Sector x year FE	No	No	Yes	Yes

* p<.1; ** p<.05; *** p<.01

Notes: Two-step fixed-effects estimator that allows for a first-order autoregressive disturbance term (Following Giuliano et al. (2013). Standard errors are reported in brackets.

A.2.2 Robustness to different estimation methods in the sub-period analysis

Table A7: Sub-period analysis: robustness to estimation methods

	(1) 1960-2005 Pooled OLS	(2) 1960-1984 Pooled OLS	(3) 1985-2005 Pooled OLS	(4) 1960-2005 Fixed-effects OLS	(5) 1960-1984 Fixed-effects OLS	(6) 1985-2005 Fixed-effects OLS	(7) 1960-2005 Anderson-Hsiao	(8) 1960-1984 Anderson-Hsiao	(9) 1985-2005 Anderson-Hsiao
Lagged level of index	0.950***	0.964***	0.935***	0.941***	0.778***	0.888***	0.933***	0.943***	0.910***
	[0.005]	[0.006]	[0.005]	[0.006]	[0.025]	[0.008]	[0.004]	[0.006]	[0.007]
Lagged $Index * xconst^H$	-0.003	0.009	-0.012	-0.010	0.033	-0.027	-0.005	0.011	-0.008
	[0.005]	[0.007]	[0.008]	[0.010]	[0.030]	[0.016]	[0.004]	[0.008]	[0.007]
Lagged high constraints	0.013***	0.006**	0.021***	0.024***	-0.015**	0.038***	0.009**	-0.010*	0.014**
	[0.004]	[0.003]	[0.007]	[0.008]	[0.006]	[0.013]	[0.004]	[0.005]	[0.007]
Observations	20,248	8,890	11,358	20,248	8,890	11,358	19,413	8,289	11,124

	(10) 1960-2005 First Difference GMM	(11) 1960-1984 First Difference GMM	(12) 1985-2005 First Difference GMM	(13) 1960-2005 Orthogonal Deviations GMM	(14) 1960-1984 Orthogonal Deviations GMM	(15) 1985-2005 Orthogonal Deviations GMM
Lagged level of index	0.881***	0.722***	0.898***	0.994***	1.022***	0.984***
	[0.025]	[0.092]	[0.025]	[0.011]	[0.016]	[0.013]
Lagged $Index * xconst^H$	-0.020	-0.010	-0.006	-0.084***	-0.095***	-0.081**
	[0.042]	[0.136]	[0.045]	[0.020]	[0.022]	[0.032]
Lagged high constraints	-0.049**	-0.097**	0.041	0.003	0.006	0.033
	[0.020]	[0.039]	[0.044]	[0.008]	[0.008]	[0.021]
Observations	19,413	8,289	11,124	19,642	8,887	10,755
Sargan p-value	0.000	0.000	0.000	0.000	0.000	0.000
AR(1) test p-value	0.000	0.000	0.000	0.000	0.485	0.000
AR(2) test p-value	0.569	0.648	0.324	0.548	0.514	0.573
Number of instruments	218	113	105	218	138	100

* p<.1; ** p<.05; *** p<.01

Notes: Pooled OLS estimations include year and sector fixed effects with errors clustered at the country level. Fixed-effects estimators include year fixed effects, with errors clustered at the country level. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

Table A8: Sub-period analysis controlling for executive recruitment and political competition: robustness to estimation method

	(1) 1960-2005 Pooled OLS	(2) 1960-1984 Pooled OLS	(3) 1985-2005 Pooled OLS	(4) 1960-2005 Fixed-effects OLS	(5) 1960-1984 Fixed-effects OLS	(6) 1985-2005 Fixed-effects OLS	(7) 1960-2005 Anderson-Hsiao	(8) 1960-1984 Anderson-Hsiao	(9) 1985-2005 Anderson-Hsiao
Lagged level of index	0.945***	0.961***	0.929***	0.919***	0.778***	0.866***	0.929***	0.941***	0.906***
	[0.005]	[0.007]	[0.005]	[0.008]	[0.025]	[0.010]	[0.005]	[0.007]	[0.007]
Lagged $Index * xconst^H$	-0.000	0.009	-0.007	0.005	0.032	-0.008	-0.001	0.011	-0.005
	[0.005]	[0.007]	[0.008]	[0.011]	[0.030]	[0.018]	[0.005]	[0.008]	[0.007]
Lagged high constraints	0.005	0.002	0.011	0.000	-0.016**	0.015	0.002	-0.009	0.007
	[0.004]	[0.004]	[0.007]	[0.008]	[0.006]	[0.015]	[0.004]	[0.005]	[0.007]
Lagged executive recruitment	0.000	-0.000	0.001	0.001	-0.001	0.001	0.000	-0.001	0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Lagged political competition	0.001***	0.001*	0.002**	0.003***	0.001	0.004***	0.001*	0.000	0.001
	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]
Observations	19,436	8,242	11,194	19,436	8,242	11,194	18,653	7,668	10,985

	(10) 1960-2005 First Difference GMM	(11) 1960-1984 First Difference GMM	(12) 1985-2005 First Difference GMM	(13) 1960-2005 Orthogonal Deviations GMM	(14) 1960-1984 Orthogonal Deviations GMM	(15) 1985-2005 Orthogonal Deviations GMM
Lagged level of index	0.899***	0.684***	0.924***	0.983***	1.001***	0.986***
	[0.022]	[0.066]	[0.027]	[0.012]	[0.014]	[0.014]
Lagged $Index * xconst^H$	-0.042	0.047	-0.074	-0.070***	-0.053**	-0.087**
	[0.039]	[0.089]	[0.050]	[0.024]	[0.024]	[0.038]
Lagged high constraints	-0.021	-0.039*	-0.000	0.007	0.000	0.023
	[0.016]	[0.023]	[0.028]	[0.010]	[0.007]	[0.018]
Lagged executive recruitment	-0.003*	-0.001	-0.004	-0.000	-0.000	0.001
	[0.002]	[0.002]	[0.004]	[0.001]	[0.001]	[0.002]
Lagged political competition	0.000	-0.004	0.001	-0.000	0.000	0.000
	[0.002]	[0.003]	[0.003]	[0.001]	[0.001]	[0.001]
Observations	18,626	7,668	10,958	18,830	8,239	10,591
Sargan p-value	0.000	0.000	0.000	0.000	0.000	0.000
AR(1) test p-value	0.000	0.000	0.000	0.000	0.568	0.000
AR(2) test p-value	0.547	0.633	0.294	0.545	0.862	0.566
Number of instruments	392	203	189	392	232	180

* p<.1; ** p<.05; *** p<.01

Notes: Pooled OLS estimations include year and sector fixed effects with errors clustered at the country level. Fixed-effects estimators include year fixed effects, with errors clustered at the country level. The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. All GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

A.2.3 Robustness to different estimation methods in the analysis by region

Table A9: Analysis by region: robustness to estimation method - Pooled OLS

	(1) All regions	(2) Asia & Pacific	(3) Europe	(4) Latin America and the Caribbean	(5) Middle East & North Africa	(6) North America	(7) South Asia	(8) Sub-Saharan Africa	(9) Ex-Soviet Bloc
Lagged index	0.945***	0.945***	0.959***	0.967***	0.922***	0.938***	0.993***	0.937***	0.922***
	[0.005]	[0.005]	[0.009]	[0.008]	[0.012]	[0.024]	[0.003]	[0.015]	[0.006]
Lagged $Index * xconst^H$	-0.000	-0.000	-0.008	-0.013	-0.016	-0.032**		0.004	0.006
	[0.005]	[0.005]	[0.009]	[0.008]	[0.012]	[0.013]		[0.019]	[0.007]
Lagged high constraints	0.005	0.005	0.002	0.010*	0.013	0.044***		-0.008**	0.001
	[0.004]	[0.004]	[0.006]	[0.005]	[0.009]	[0.014]		[0.003]	[0.004]
Lagged executive recruitment	0.000	0.000	0.002	-0.005***	-0.000	-0.002		0.003**	-0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]		[0.001]	[0.001]
Lagged political competition	0.001***	0.001***	0.000	0.003***	-0.002	0.001	0.003**	-0.002	-0.000
	[0.000]	[0.000]	[0.001]	[0.000]	[0.001]	[0.001]	[0.000]	[0.001]	[0.001]
Observations	19,436	19,436	2,725	3,843	3,948	1,540	484	1,107	4,070

* p<.1; ** p<.05; *** p<.01

Notes: Pooled OLS estimations include year and sector fixed effects with errors clustered at the country level. Standard errors are reported in brackets.

Table A10: Analysis by region: robustness to estimation method - Fixed effects OLS

	(1) All regions	(2) Asia & Pacific	(3) Europe	(4) Latin America and the Caribbean	(5) Middle East & North Africa	(6) North America	(7) South Asia	(8) Sub-Saharan Africa	(9) Ex-Soviet Bloc
Lagged index	0.919***	0.885***	0.942***	0.876***	0.836***	0.916***	0.865***	0.880***	0.781***
	[0.008]	[0.014]	[0.016]	[0.012]	[0.055]	[0.006]	[0.019]	[0.010]	[0.034]
Lagged $Index * xconst^H$	0.005	0.017	-0.012	-0.060***	0.011		0.047*	0.011	-0.102**
	[0.011]	[0.017]	[0.017]	[0.018]	[0.021]		[0.023]	[0.018]	[0.046]
Lagged high constraints	0.000	-0.012	0.006	0.031			-0.014*	-0.010	0.098***
	[0.008]	[0.007]	[0.010]	[0.018]			[0.006]	[0.008]	[0.030]
Lagged executive recruitment	0.001	0.004*	-0.002	-0.001	-0.009		0.005**	0.001	-0.003
	[0.001]	[0.002]	[0.002]	[0.002]	[0.005]		[0.002]	[0.001]	[0.006]
Lagged political competition	0.003***	-0.000	0.002**	-0.001	-0.001	0.004***	-0.001	-0.000	0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.000]	[0.002]	[0.001]	[0.003]
Observations	19,436	2,725	3,843	3,948	1,540	484	1,107	4,070	1,719

* p<.1; ** p<.05; *** p<.01

Notes: Fixed-effects estimators include year fixed effects, with errors clustered at the country level. Standard errors are reported in brackets.

Table A11: Analysis by region: robustness to estimation method - Anderson-Hsiao estimator

	(1) All regions	(2) Asia & Pacific	(3) Europe	(4) Latin America and the Caribbean	(5) Middle East & North Africa	(6) North America	(7) South Asia	(8) Sub-Saharan Africa	(9) Ex-Soviet Bloc
Lagged index	0.929***	0.952***	0.960***	0.901***	0.932***	0.998***	0.941***	0.920***	0.859***
	[0.005]	[0.008]	[0.011]	[0.008]	[0.013]	[0.008]	[0.014]	[0.008]	[0.016]
Lagged $Index * xconst^H$	-0.001	-0.003	-0.017*	-0.008	-0.043*	0.000	-0.011	-0.006	-0.065***
	[0.005]	[0.009]	[0.010]	[0.013]	[0.025]	[0.000]	[0.020]	[0.015]	[0.021]
Lagged high constraints	0.002	0.000	0.013**	0.003	0.000	0.000	0.002	-0.001	0.065***
	[0.004]	[0.009]	[0.006]	[0.010]	[0.000]	[0.000]	[0.010]	[0.011]	[0.017]
Lagged executive recruitment	0.000	0.003	-0.003	-0.001	-0.005	0.000	0.005*	0.000	-0.005
	[0.001]	[0.002]	[0.003]	[0.002]	[0.004]	[0.000]	[0.003]	[0.001]	[0.005]
Lagged political competition	0.001*	-0.001	0.002	-0.001	-0.001	-0.000	-0.002	-0.000	0.002
	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.001]	[0.003]
Observations	18,653	2,617	3,723	3,803	1,494	472	1,077	3,839	1,628

* p<.1; ** p<.05; *** p<.01

Notes: The Anderson-Hsiao estimator includes country, sector and year fixed effects and has robust standard errors. Standard errors are reported in brackets.

Table A12: Analysis by region: robustness to estimation method - First Difference GMM

	(1) All regions	(2) Asia & Pacific	(3) Europe	(4) Latin America and the Caribbean	(5) Middle East & North Africa	(6) North America	(7) South Asia	(8) Sub-Saharan Africa	(9) Ex-Soviet Bloc
Lagged index	0.899***	0.272	0.835***	0.827***	-0.200	0.033	-0.706	0.581***	0.837***
	[0.022]	[0.338]	[0.197]	[0.065]	[0.299]	[0.732]	[1.901]	[0.080]	[0.071]
Lagged $Index * xconst^H$	-0.042	0.493	0.272	-0.077	-0.070		1.433	0.379	-0.144
	[0.039]	[0.400]	[0.203]	[0.166]	[0.964]		[1.593]	[0.276]	[0.102]
Lagged high constraints	-0.021	-0.275	-0.069	0.063			0.000	-0.046	0.160
	[0.016]	[0.252]	[0.056]	[0.101]			[0.000]	[0.119]	[0.184]
Lagged executive recruitment	-0.003*	0.009	0.021	-0.002	0.304		0.010	-0.001	-0.007
	[0.002]	[0.010]	[0.019]	[0.003]	[0.288]		[0.023]	[0.003]	[0.005]
Lagged political competition	0.000	-0.004	0.003	-0.004	-0.038	-0.002	-0.016	0.001	0.002
	[0.002]	[0.008]	[0.002]	[0.003]	[0.160]	[0.008]	[0.015]	[0.002]	[0.008]
Observations	18,626	2,617	3,723	3,803	1,494	472	1,077	3,839	1,601
Sargan p-value	0.000	0.000	0.000	0.000	0.000	0.113	0.000	0.000	0.104
AR(1) test p-value	0.000	0.054	0.000	0.000	0.015	0.937	0.973	0.000	0.004
AR(2) test p-value	0.547	0.369	0.966	0.892	0.750	0.350	0.501	0.797	0.628
Number of instruments	392	206	198	213	201	132	195	218	162

* p<.1; ** p<.05; *** p<.01

Notes: GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.

Table A13: Analysis by region: robustness to estimation method - Orthogonal Deviations GMM

	(1) All regions	(2) Asia & Pacific	(3) Europe	(4) Latin America and the Caribbean	(5) Middle East & North Africa	(6) North America	(7) South Asia	(8) Sub-Saharan Africa	(9) Ex-Soviet Bloc
Lagged index	0.983***	1.056***	0.934***	0.926***	0.890***	0.532	0.000	0.869***	0.902***
	[0.012]	[0.060]	[0.075]	[0.027]	[0.147]	[0.436]	[0.000]	[0.033]	[0.056]
Lagged $Index * xconst^H$	-0.070***	-0.036	0.070	-0.109	0.442		-0.189	0.048	-0.163**
	[0.024]	[0.074]	[0.078]	[0.076]	[0.304]		[0.489]	[0.057]	[0.080]
Lagged high constraints	0.007	0.020	-0.021	0.040			0.029	-0.027	0.130
	[0.010]	[0.029]	[0.023]	[0.028]			[0.296]	[0.028]	[0.084]
Lagged executive recruitment	-0.000	0.003	-0.000	-0.002	-0.039		0.007	0.001	-0.019
	[0.001]	[0.002]	[0.004]	[0.002]	[0.035]		[0.007]	[0.001]	[0.013]
Lagged political competition	-0.000	-0.002	0.001	0.000	0.005	0.008	-0.005	-0.001	0.004
	[0.001]	[0.002]	[0.001]	[0.002]	[0.009]	[0.008]	[0.017]	[0.001]	[0.010]
Observations	18,830	2,649	3,739	3,843	1,498	472	1,077	3,943	1,609
Sargan p-value	0.000	0.000	0.000	0.000	0.000	0.062	0.002	0.000	0.143
AR(1) test p-value	0.000	0.000	0.000	0.000	0.125	0.065	0.673	0.000	0.330
AR(2) test p-value	0.545	0.199	0.837	0.894	0.127	0.812	0.798	0.414	0.271
Number of instruments	392	206	198	213	201	174	195	218	178

* p<.1; ** p<.05; *** p<.01

Notes: GMM estimators are two-step estimators with robust standard errors and include year fixed-effects. The lagged level of the index and the lagged interaction term are instrumented with the second and third lags of the index and executive constraints. The instrument count is reported in the last row. Standard errors are reported in brackets.