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# GLOBALIZATION, DEMOCRACY AND DEVELOPMENT

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## ABSTRACT

This paper addresses the interactions between globalization, the quality of democracy, and economic convergence using simultaneous estimation techniques. To reflect process, we use multi-dimensional, de facto, and continuous measures of democracy and globalization. To reflect context, as defined by space (geography) and time (history), we control for the distance to the income frontier. Using this measure of development, we extend the test for the two-way relationship between democracy and globalization put forward by Eichengreen and Leblang (2008) for the period 1870-2000. Focusing on the more recent wave of globalization (1970-2005), we find a two-way relationship between democracy and globalization and also significant two-way relationships with development. In the restricted sample of non-OECD countries, however, democracy hurts development.



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## 1. Introduction

How do globalization, democracy and development interact with each other? In answering this question, we bear in mind that the interaction between globalization and governance is always context-specific, as defined by space (geography) and time (history). Moreover, we take into account that policy and institutional responses must necessarily change as the nature of globalization itself changes. More specifically, we believe that the complex interaction between globalization & democracy is best understood by having a closer look at all of its constituent elements, possibly on a case by case basis. In this respect, the measures of democracy commonly used in empirical research suffer from the rudimentary manner in which democracy is conceptualized and measured, *e.g.* a regime characterized exclusively by electoral competition and political participation.

To account for the democratic *process,* which is likely to depend on slow moving cultural factors, we average two measures of the *quality* of democracy: political rights and civil liberties, which are *de facto* and continuous measures of democracy as opposed to the *de jure* and dichotomous ones typically employed. Similarly, we use the KOF index (Dreher, 2006; Dreher et al., 2008) in order to account for different degrees and types of globalization, as it offers a continuous and multi-dimensional measure of the process. Finally, in order to take into account the economic context, as well as possible feedbacks from democracy and globalization to development, we include an equation determining the distance to US GDP per capita.

To the best of our knowledge, this is the first empirical analysis on the simultaneous interactions between globalization, democracy and development. Indeed, the empirical literature has typically focused on the links between pairwise combinations of these three variables. We confirm the two-way interaction between democracy and globalization found in Eichengreen and Leblang (2008) for a much longer time period (1870-2000). Besides, we show strong two-way relationships between globalization and development, as well as between democracy and development. However, over the period 1970-2005, the results seem to be more sensitive to the economic context, as some estimates vary between OECD and non-OECD countries. Overall, our results suggest a self-reinforcing process, in particular when the sample is reduced to the OECD group.

The remainder of this paper is organized as follows. Section 2 presents a framework for the links between Globalization, Governance and Economic performance. Section 3 discusses the data and the issue of identification. Section 4 presents a simultaneous system estimation of the reciprocal effects of each of our three variables on the other two while sensitivity and robustness checks are found in Section 5 and in the Appendix. Section 6 goes back to the evidence, providing examples of the effects of history and geography. Section 7 summarises the results and concludes.

## 2. Globalization, Governance & Economic Performance: An Interpretative Framework

In earlier work, Macedo (2001) found that trade openness reduced perceived corruption and claimed that this was the way in which globalization improved governance.[1] The result held

[1] Related work, subsequently published as Bonaglia *et al.* (2011), considers the hypothesis that "there is an effect of globalization *on* governance", by looking at how openness affects the quality of domestic institutions. Specifically, this study surveys available theoretical explanations of causal relationships between globalization

for OECD and non-OECD countries, even after correcting for the endogeneity of perceived corruption.[2] Similarly, Eichengreen and Leblang (2008) showed a long-term positive two-way relationship between globalization and democracy. However, the dichotomous nature of the democracy variable limits the interpretation of their results. Using the same method with a more detailed (and continuous) democracy index, we confirmed this estimation, although with a weaker link running from globalization to democracy[3].

Indeed, as Lopez-Cordova and Meissner (2005) pointed out, the existing literature on the topic has suffered from econometric problems that may explain the difficulty of reaching a consensus. Endogeneity, as well as the difficulties of finding valid instruments challenge a number of previous results. The same problem applies to the analyses of the interactions between economic growth and democracy or globalization, although the different estimations of positive relationships seem to be more consistently found. Here, we use a simultaneous equation estimation method of the relationships among democracy, globalization and income convergence, using a sample of 89 countries over the period 1970-2005. Indeed, under the assumption that these three variables interact with each other, treating them separately might induce endogeneity and/or omitted variable biases. Furthermore, our method may offer an insight into the dynamics of globalization and so provide interesting economic-policy lessons of relevance to developing countries.

The mutual relationship between globalization, governance and economic performance can be described as follows. A nation's resource endowments and its productivity determine how fast it can grow and the level of its economic well-being in terms of income per capita, both in absolute terms and relative to the income frontier. Feedbacks are possible: a richer country growing fast may invest more resources in scientific research and technology development and thus enjoy higher productivity levels than a poorer, slow-growing economy. Through trade, capital flows or migration, globalization can influence the level of endowments available in an economy, or even, through international technology transfers, its productivity. Conversely a country's endowments of natural resources, labor, and capital, as well as its geographic location and efficiency of its production structures may determine how much it trades with the rest of the world in terms of goods, services and assets.

Similarly, a country with good governance, namely a democratic state with high-quality institutions, effective corruption-free accountable bureaucracies, and a flourishing civil society may likely increase the quality, if not the quantity, of its most important endowment: its own people. Once more, cause and effect can be swapped: well-endowed countries may evolve towards democratic forms of government more easily, or, at least, they may be able to afford investment in more resources to build well-functioning institutions. These interactions

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and governance. Trade policy, competition by foreign producers and international investors, and openness-related differences in institution building costs are three major transmission mechanisms through which openness affects a country's corruption levels. Examining a large sample of countries covering a 20-year long period, robust empirical support is found for the fact that increases in import openness do indeed *cause* reductions in corruption, a crucial aspect of governance. The magnitude of the effect is also quite strong. After controlling for many cross-country differences, openness' influence on corruption is quite close to that exercised by the level of development.

[2] Using three averages corresponding to the periods 1984-89, 1990-94, and 1995-98 of the ICRG index of perceived corruption (available yearly for 119 countries), the most parsimonious specification reported in Macedo (2001, p. 243) includes only import openness, per capita GDP (both in logs) and an index of political rights and this explains almost 50 per cent of the variability in the corruption index. A 10% increase in imports openness results in 0.03-point change in the corruption score (0.34 x 0.1). This is a sizeable effect, especially when compared to the 0.09-point changes due to a 10% increase in log income per capita.

[3] The results from the 2007 draft are available from the authors upon request; see also Macedo (2013).

have been at the core of economics, and if not constantly, have always attracted economists' interest. However, how globalization and governance interact to affect economic performance have not become topical questions until recently.

## 3. Data and identification

### *3.1. Democracy*

As mentioned, the measures of democracy commonly used in empirical research of the G&D nexus suffer from one notable limitation, namely the rudimentary manner in which democracy is conceptualized and measured, *e.g.* a regime characterized exclusively by electoral competition and political participation (see Przeworski et al., 2000).

Garoupa and Tavares (2009) show that higher income increases the survivability of democracy and a history of democratic instability, as well as the international political context, helps predict how regime transitions impact on democracy. However, they do not pursue the definition of democracy *per se* while Eichengreen and Leblang (2008) use a definition that is essentially *de jure* in nature, labelling a country as democratic if its governments are designated through competitive elections - elections in which more than one party competes and the winning party is not always the same.

The extension of suffrage, for example, would not appear in this dichotomous variable. Yet a negative interaction between democracy and debt default has been found for the period of the classical gold standard. Specifically, Flandreau and Zummer (2004, p. 44) find that the extension of suffrage reduces the default probability with an elasticity of 0.5 for the whole sample and of 1.3 for capital-poor countries. They note that contemporaries saw democracy and parliaments as a source of greater stability because they put checks and controls on the sovereign and imply a greater implied ability to tax. This contradicts the widespread view that the repression of democracy facilitated the operation of the pre-1914 international monetary system by making external adjustment easier.

Some of these points also apply to the related literature attempting to find the nexus between democracy and growth. For example, Tavares and Wacziarg (2001) define democracy in purely procedural terms.[4] As a result of this tendency to measure democracy in a purely political and formal manner, quantitative studies may misrepresent the effect of democracy on globalization or misinterpret the aspect of democracy responsible for that effect. The concept of democratic capital proposed by Persson and Tabellini (2006), where own history of democracy and that of democratic capital accumulation among neighbouring countries help to determine the rate of economic growth, is another way of introducing quality considerations.[5]

[4] Wanting to clearly distinguish democracy from other characteristics of political systems, they use the Freedom House indicator of political rights, based precisely on this procedural definition of democracy. They add that all previous studies focus on the *direct* effect of democracy on growth, conditional on other growth-determining factors and they question this procedure: "In theory, if a comprehensive institution such as democracy matters, it should matter *indirectly* through its effect on variables that in turn determine economic growth. Existing theoretical arguments point to links between democracy and a number of societal characteristics that influence growth. However, none of those arguments suggest that democracy has a direct impact on growth".

[5] See Persson and Tabellini (2005, 2007). Eichengreen and Leblang (2008) use the age of democracy variable with good results , while Giuliano and Nunn (2013) show the transmission of democracy from the village to the Nation-state using *Ancestral Characteristics Database* to calculate a variable local democracy, which is a significant determinant of democracy at the country level.

Along these lines, our approach is that political rights and civil liberties are essential ingredients of democracy. To enhance the quality of the democracy measure, we decompose it into those two main components[6]. First, the key elements of civil liberties (CL) include freedom of thought, religion, association, free press and respect for the rights of minorities. We derived these elements from the Freedom House Civil Liberties index, which is computed for almost all countries and "related and disputed territories" for the period 1972 onwards.

Second, political rights (PR) are associated with free and fair elections for the executive and legislative branches of power, freedom to constitute political parties, freedom of association, independence from political, religious and military authorities, real possibilities of the change of power and other related aspects of the political system. All of these and other features of political rights are taken into account by the Political Rights Index, which is published by Freedom House and covers the same period as that of the CL index.

Economic liberties are excluded from the simple average of CL and PR, which is published by Freedom House as the *Freedom index*. Indeed, the multi-dimensional nature of the globalization index features some of these economic liberties. Thus, the results would be biased, displaying an automatic correlation between the two due to their common components. This problem, however, does not seem to concern the political rights and civil liberties indices.

In sum, we posit democracy to be a multidimensional reality and stress the importance of its *de facto* nature. This entails a trade-off, as refining the measure of democracy implies a smaller sample period (1970-2005) when compared to that of Eichengreen and Leblang (2008), which covers the period 1870-2000. Although this might make the results more sensitive to sample bias (because the number of countries is much bigger than the number of years), the loss is not as large as might appear because of the missing values problem in the data[7].

### *3.2. Globalization*

To account for globalization, we use the KOF index (Dreher, 2006; Dreher et al., 2008). Its main advantage is that it presents a multi-dimensional and continuous measure of the globalization process for 123 countries over the period 1970-2005. It includes three types of globalization. *First*, economic globalization is decomposed into actual flows (trade, foreign direct investments, and portfolio investments) and restrictions on trade and capital (hidden import barriers, mean tariff rare, taxes on international trade, and capital account restrictions). *Second*, political globalization is measured by the number of embassies, membership of international organizations, and participation in UN Security Council missions. *Third*, social globalization is decomposed into personal contact (tourism, foreign population, transfers), information flows (internet users, telephone mainlines, daily newspapers), and cultural proximity.

The value ranges from zero to ten, a higher score corresponding to a more "globalized" country. The KOF index is probably closer to reality than measures focusing on only one dimension (or aspects of it), namely the economic dimension. As far as we are aware, such a

[6] The results from the 2007 and 2010 drafts are available from the authors upon request; see also Macedo (2013).
[7] The Eichengreen and Leblang sample covers 135 years for 202 countries (taking into account name and border changes) but no regression includes more than one third of the maximum number of observations (about 27K). In this regard, using our measures of democracy cuts the sample size by half rather than by two thirds.

multi-dimensional and continuous index of globalization has not been used before in other studies linking it with democracy variables. Box-plots for globalization, democracy and development show, as expected, that the level of globalization, democracy and development are much higher and have lower dispersion in OECD countries than in non-OECD countries[8].

*3.3. Stationarity*

In order to deal with the issue of a possible panel co-integration, stationarity tests have been carried out for the three endogenous variables (democracy, globalization and income gap). We implement three different types of panel unit root tests: two first generation tests, namely the Imbs *et al.* (2003) test (IPS); the Maddala and Wu (1999) test (MW) and one second generation test – the Pesaran (2007) CIPS test. The latter is associated with the fact that previous tests do not account for cross-sectional dependence of the contemporaneous error terms and failure to consider it may cause substantial size distortions in panel unit root tests (Pesaran, 2007). Tables A.1 and A.2 in the Appendix report the results of the panel stationarity tests (summary statistics for the globalization, democracy, and convergence variables for different samples are also presented). In all tests the null hypothesis is that of non-stationarity of the variable. It appears that only the KOF index suffers from non-stationarity, which implies that co-integration is not a problem here.

*3.4. Identification*

The issue of endogeneity of the regressors is usually dealt with in the literature by using instrumental variables (IV). Yu (2005), for example, uses measures of justice independence and the use of death penalty to account for democracy. Milner and Kubota (2005) use a secondary schooling measure and the political-party system's age to instrument for democracy, and economic crises, pressures by international organizations and a measure of economic ideas to instrument globalization. However, these analyses make no mention of an over-identification test, which is the main problem in our case. Lopez-Cordova and Meissner (2005) use gravity/geographic information to instrument globalization but, facing an over-identification problem, simply gather these variables into a single instrument (without being able to control for its validity).

Consequently, we try the different instruments suggested by the literature. However, taken individually, very few prove to satisfy the independence requirement. This problem becomes even clearer when using combinations of instruments, as almost none satisfies the over-identification test. Apart from the widespread difficulty in finding instruments for democracy and globalization in the literature, one could mention two reasons specific to our analysis. First of all, the multi-dimensional aspect of the KOF index of globalization makes it even harder to find a variable that is not correlated to this index. Secondly, the same goes for convergence and economic growth (many instruments can be thought to impact growth independently of their effects on globalization or democracy).

Keeping in mind these difficulties, fuel export dependence and colonial origin (in each case represented by dummy variables, which are not, when used on their own, ideal instruments) are used to instrument democracy. The investment rate is used to instrument economic convergence. Finally, inflation and the logarithm of the distance to the rest of the world are alternatively used to instrument globalization. Nonetheless, several of these specifications

[8] These are available from the authors upon request.

suffer from weak identification. Moreover, it is worth noting that for two equations, namely explaining globalization with the income gap, and explaining the income gap with democracy, no valid instrument was found.

In the Appendix, Tables A.3 and A.4 we provide a comparison of the different estimation methods in order to assess the robustness of our estimation method, using a two-step Difference GMM approach *a la* Arellano and Bond (1991) and a System GMM approach *a la* Arellano and Bover (1995). These estimators deal effectively with the endogeneity problem by using a set of instruments for the endogenous variables. The former uses lagged levels as instruments for the equation in differences; in addition to that, the latter uses lagged differences as instruments for the additional equations in levels. Democracy seems to have a positive effect on globalization; convergence displays a positive role on democracy, and globalization a positive impact on both democracy and convergence. However, the difficulties encountered when trying to find valid instruments suggests that these results should be treated with great caution. This leads us to use a simultaneous equations approach as our baseline specification.

## 4. A System Equation approach

In this section, we use a system equation approach to study the reciprocal effects of globalization, democracy and development by taking the problem of bi-directional causality into consideration. Our estimation method accounts for the problem of endogeneity as it estimates the relationships simultaneously by applying the standard Three-Stage Least Square method (3SLS).[9] The 3SLS method uses all the information provided by the exogenous right-hand-side (RHS) variables to instrument the endogenous (LHS) left-hand-side variables. As such, it avoids the potential pitfall of having to find "good" instruments within a single equation context.[10] Moreover, when different interdependence equations are specified, it seems more natural to make use of a simultaneous equation approach.

In order to provide consistent estimates, the 3SLS method requires a set of exogenous variables specific to each endogenous variable for each equation. Therefore, we include the number of currency crises in the year in the globalization equation, and the investment rate in the development equation. We also include dummy variables standing for legal and colonial origins, as well as for fuel export dependence, the number of democracies in the world, population density, and a measure of urban population in the democracy equation. Other control variables, common to at least two equations, are also used. These are gravity controls (distance, area, and population), inflation and regional dummies. We recognize that the 3SLS method may be more sensitive to the existence of spurious correlations or multi-collinearity among the regressors in one equation, thereby "contaminating" the remaining equations. In our sample, this does not seem to be an issue.

Accordingly, we define the following simultaneous system (1) of three equations:

[9] At the first stage, endogenous variables are instrumented by all exogenous variables in the system; at the second stage an efficient estimate for the covariance matrix of the disturbances is obtained; and at the final stage a GLS-type estimation uses this covariance matrix in a regression of the dependent variables on the instrumented values of endogenous variables and on the exogenous variables, with some identification restrictions.

[10] To deal with the potential endogeneity problem, Eichengreen and Leblang (2008) adopted a GMM-Instrumental variable approach where each relationship is estimated individually.

$$
\begin{aligned}
&\text{(i) } Globalization_{it} = \alpha_1.\, Democracy_{it} + \delta_1.\, Development_{it} + \beta_1.Z_{1it} + \varepsilon_{it} \\
&\text{(ii) } Democracy_{it} = \gamma_1.Globalization_{it} + \delta_2.\, Development_{it} + \beta_2.Z_{2it} + \varepsilon_{it} \qquad (1) \\
&\text{(iii) } Development_{it} = \alpha_2.\, Democracy_{it} + \gamma_2.Globalization_{it} + \beta_3.Z_{3it} + \varepsilon_{it} \\
&\quad \text{for } i = 1,\ldots, N \text{ and } t = 1970\text{-}2005
\end{aligned}
$$

where, for each country, *Globalization* stands for the KOF index of globalization. *Democracy* is the Freedom House index variable averaging political rights (PR) and civil liberties (CL). *Development* represents the ratio of a given country's GDP per capita over that of the United States while $\{Z_i\}$ denotes a set of appropriate control variables for each equation.[11]

Tables 1, 2 and 3 display, respectively, the estimations for all the countries pooled together, for the OECD countries, and for the non-OECD countries. For the whole sample, we observe strong positive two-way effects between democracy and globalization on the one hand, and between globalization and development on the other hand. This is a strong result for the analysis of our topic. Furthermore, democracy impacts positively on development. The feedback effect from the income gap to democracy is positive and statistically significant.

As for the remaining regressors, we observe that fuel export dependence negatively affects the level of democracy. This may be related to a Dutch Disease and Natural Resource curse story as such natural resources are predominantly located in developing countries whose quality of institutions is to some extent low and corrupt and rent seeking behaviours can easily emerge. Inflation seems to negatively impact development and this can be justified on the ground of the literature on *seignoriage* consequences and the "invisible tax" that erodes wealth. In line with the growth literature, investment and size matter for development as attested by the positive and statistically significant coefficient on investment rate and area, whereas population has the reverse effect.

[11] We followed Eichengreen and Leblang (2008) benchmark's identification strategy very closely. Similarly to their study, we used a set of control variables for globalization and democracy: the equation for globalization includes size variables, (as larger countries tend to be less open to trade), a distance variable, regional dummies for Latin America, Middle-East, Africa and Asia, a variable equal to the number of currency crisis, and the rate of inflation; the equation for democracy includes regional dummies, a dummy for fuel exporters and a number of institutional controls: the number of prior transitions to dictatorship, the constitutional age, the number of other democracies in the global system, dummies for the socialist legal system, colonial heritage (British, French and Spanish), the percentage of the population living in urban areas and the population density.

*Table 1: Baseline specification System Three Stage Least Squares, all countries*

| COEFFICIENT | (1) Globalization | (2) Democracy | (3) Development |
|---|---|---|---|
| **Globalization** | | **0.0294*** ** | **0.8888*** ** |
| | | **(0.003)** | **(0.021)** |
| **Democracy** | **2.6999*** ** | | **3.2793*** ** |
| | **(0.173)** | | **(0.221)** |
| **Development** | **0.5646*** ** | **0.0280*** ** | |
| | **(0.013)** | **(0.003)** | |
| Lagged number of prior transitions to dictatorship | | 0.0781*** | |
| | | (0.022) | |
| Lagged constitutional age | | -0.0015 | |
| | | (0.001) | |
| Lagged total number of democracies | | 0.0055*** | |
| | | (0.001) | |
| Lagged fuel export dependence | | -0.2937*** | |
| | | (0.088) | |
| Socialist legal origin | | -1.2972*** | |
| | | (0.123) | |
| English colony | | 0.4584*** | |
| | | (0.064) | |
| French colony | | 0.0152 | |
| | | (0.085) | |
| Spanish colony | | 0.2036** | |
| | | (0.080) | |
| Lagged urban population | | 0.0024 | |
| | | (0.002) | |
| Lagged population density | | -0.0004*** | |
| | | (0.000) | |
| Latin America | 6.9909*** | 0.0787 | -18.1751*** |
| | (0.936) | (0.128) | (1.109) |
| Middle East | 1.2839 | -1.4167*** | -1.7731 |
| | (1.097) | (0.135) | (1.392) |
| Africa | 5.5560*** | -0.9009*** | -12.0937*** |
| | (0.921) | (0.140) | (1.118) |
| Asia | 6.9411*** | -0.0462 | -16.6862*** |
| | (0.954) | (0.130) | (1.126) |
| Lagged total financial crises | 0.0349 | | |
| | (0.026) | | |
| Lagged inflation | 0.0007 | | -0.0012* |
| | (0.000) | | (0.001) |
| Log distance from the rest of the world | -13.4748*** | | 15.1859*** |
| | (1.353) | | (1.713) |
| Log area | -0.1746 | | 0.4773** |
| | (0.146) | | (0.186) |
| Log population | 0.1098 | | -0.8090*** |
| | (0.184) | | (0.234) |
| Investment rate | | | 0.1726*** |
| | | | (0.026) |
| Constant | 125.0519*** | 2.0633*** | -140.9057*** |
| | (11.339) | (0.154) | (14.441) |
| Observations | 2584 | 2584 | 2584 |
| R-squared | 0.6608 | 0.6316 | 0.7574 |

Note: The system is estimated by three-stage least squares. Time and countries dummies are included but not presented for reasons of parsimony. Heteroskedastic-consistent standard errors are in parentheses. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

*Table 2: Baseline specification System Three Stage Least Squares, OECD countries*

| COEFFICIENT | (1) Globalization | (2) Democracy | (3) Development |
|---|---|---|---|
| **Globalization** | | **0.0246*** ** | **0.4724*** ** |
| | | **(0.003)** | **(0.045)** |
| **Democracy** | **8.9114*** ** | | **13.2783*** ** |
| | **(0.876)** | | **(1.011)** |
| **Development** | **0.3196*** ** | **0.0238*** ** | |
| | **(0.031)** | **(0.002)** | |
| Lagged number of prior transitions to dictatorship | | 0.0458* | |
| | | (0.026) | |
| Lagged constitutional age | | -0.0006 | |
| | | (0.001) | |
| Lagged total number of democracies | | -0.0020* | |
| | | (0.001) | |
| Lagged fuel export dependence | | 0.0000 | |
| | | (0.000) | |
| Socialist legal origin | | 0.3065** | |
| | | (0.147) | |
| English colony | | 0.3087*** | |
| | | (0.066) | |
| French colony | | 0.0000 | |
| | | (0.000) | |
| Spanish colony | | -0.0041 | |
| | | (0.104) | |
| Lagged urban population | | 0.0021 | |
| | | (0.002) | |
| Lagged population density | | 0.0003 | |
| | | (0.000) | |
| Latin America | 32.6426*** | -0.6142** | -17.3094*** |
| | (4.374) | (0.261) | (5.328) |
| Middle East | 0.0000 | 0.0000 | 0.0000 |
| | (0.000) | (0.000) | (0.000) |
| Africa | 0.0000 | 0.0000 | 0.0000 |
| | (0.000) | (0.000) | (0.000) |
| Asia | 8.0643 | 0.1163 | -16.0072*** |
| | (4.928) | (0.281) | (6.030) |
| Lagged total financial crises | 0.0882 | | |
| | (0.057) | | |
| Lagged inflation | -0.0061 | | -0.0960* |
| | (0.043) | | (0.051) |
| Log distance from the rest of the world | -17.7677*** | | 10.5331*** |
| | (2.000) | | (2.545) |
| Log area | 0.2638 | | 0.5639 |
| | (0.352) | | (0.423) |
| Log population | -2.4998*** | | 2.9561*** |
| | (0.424) | | (0.511) |
| Investment rate | | | 0.3463*** |
| | | | (0.085) |
| Constant | 157.1841*** | 3.1602*** | -177.8495*** |
| | (16.791) | (0.167) | (21.530) |
| Observations | 650 | 650 | 650 |
| R-squared | 0.4391 | 0.4747 | 0.5255 |

Note: The system is estimated by three-stage least squares. Time and countries dummies are included but not presented for reasons of parsimony. Heteroskedastic-consistent standard errors are in parentheses. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

*Table 3: System Three Stage Least Squares estimation for non-OECD countries*

| COEFFICIENT | (1) Globalization | (2) Democracy | (3) Development |
|---|---|---|---|
| **Globalization** | | **0.0392*** ** | **0.8196*** ** |
| | | **(0.005)** | **(0.021)** |
| **Democracy** | **3.8584*** ** | | **-1.4832*** ** |
| | **(0.190)** | | **(0.215)** |
| **Development** | **0.7667*** ** | **0.0020** | |
| | **(0.019)** | **(0.004)** | |
| Lagged number of prior transitions to dictatorship | | 0.0835*** | |
| | | (0.031) | |
| Lagged constitutional age | | -0.0015 | |
| | | (0.002) | |
| Lagged total number of democracies | | 0.0090*** | |
| | | (0.002) | |
| Lagged fuel export dependence | | -0.3605*** | |
| | | (0.110) | |
| Socialist legal origin | | -2.1144** | |
| | | (0.880) | |
| English colony | | 0.6740*** | |
| | | (0.095) | |
| French colony | | 0.0678 | |
| | | (0.114) | |
| Spanish colony | | 0.2510** | |
| | | (0.112) | |
| Lagged urban population | | 0.0061* | |
| | | (0.003) | |
| Lagged population density | | -0.0004*** | |
| | | (0.000) | |
| Latin America | -9.1930*** | -0.5371 | 4.7180*** |
| | (1.398) | (0.879) | (1.553) |
| Middle East | -7.0072*** | -1.9161** | 6.5196*** |
| | (1.263) | (0.866) | (1.353) |
| Africa | 0.8721 | -1.7849** | -5.3247*** |
| | (1.057) | (0.881) | (1.128) |
| Asia | -7.8052*** | -0.7245 | 3.6383*** |
| | (1.279) | (0.880) | (1.386) |
| Lagged total financial crises | 0.0214 | | |
| | (0.030) | | |
| Lagged inflation | 0.0007 | | -0.0010* |
| | (0.000) | | (0.001) |
| Log distance from the rest of the world | 1.6832 | | -1.3164 |
| | (2.278) | | (2.510) |
| Log area | -0.6811*** | | 1.1793*** |
| | (0.162) | | (0.175) |
| Log population | 1.2976*** | | -2.1934*** |
| | (0.205) | | (0.216) |
| Investment rate | | | 0.1624*** |
| | | | (0.024) |
| Constant | -8.3742 | 2.3778*** | 13.3539 |
| | (19.049) | (0.888) | (20.921) |
| Observations | 1934 | 1934 | 1934 |
| R-squared | 0.1782 | 0.3568 | 0.4553 |

Note: The system is estimated by three-stage least squares. Time and countries dummies are included but not presented for reasons of parsimony. Heteroskedastic-consistent standard errors are in parentheses. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

Overall, there seems to be a 'contagion effect' of the extension democracy, captured by the (lagged) number of democratic countries, as it affects positively the level of civil and political rights. This effect only derives from the non-OECD part of the sample (Table 3). Interestingly, population density affects negatively democracy, but urbanisation acts as a counteracting force for developing countries.

Other controls reflect the impact of history and geography. On historical and cultural aspects, the socialist legal origin affects negatively democracy, but within the OECD group the effect is positive, suggesting that former socialists when provided with a strong policy anchor (for example, the process of EU accession) can overcome past legacies. In contrast, the English colony dummy is uniformly positive in all samples. The Spanish colony dummy is also positive for developing countries, while the French colony dummy is never significant.

The geography dummies (Latin America, Middle East, Africa and Asia) tend to show a negative effect of on globalization and democracy for the sample of non-OECD countries. Distant countries tend to be less globalized, but this geographic factor does not seem to hinder convergence forces within the OECD group. Also, large developing countries tend to be less globalized, but they have higher convergence to the income frontier.

Tables 1a, 2a and 3a provide the calculated cross-elasticities for globalization, democracy and development - derived from the estimates for a country presenting mean values of these three variables. In the full sample (Table 1a), the largest effect is the impact of globalization on development (+1.33). As an illustration, an increase in the globalization index from the non-OECD mean (around 37, cf. Appendix) to the OECD mean (around 68, or a factor of 1.83) would narrow the distance to the frontier from the level of Colombia in 2005 (around 17) to almost that of Chile (around 43, i.e. a factor of 2.4). A similar increase in the globalization index would induce an increase of 24% in the democracy index. All these results are obtained, *ceteris paribus*, keeping the other variables constant.

*Table 1a. Estimated elasticities, baseline specification, all countries*

| *Impact of row on column* ➔ | **Globalization** | **Democracy** | **Development** |
|---|---|---|---|
| **Globalization** | -- | 0.29 | 1.33 |
| **Democracy** | 0.27 | -- | 0.49 |
| **Development** | 0.38 | 0.19 | -- |

When taking into account higher order effects reflecting the simultaneity relations could actually produce even higher values. Using an iterative method, we computed the long-run elasticity between globalization and democracy, leaving out the effects on the income gap for simplicity. When globalization increases by 1.83 as in the previous example, the long-run effect on democracy is now 60% (i.e. more than double the first round effect), roughly equivalent to going from the mean of non-OECD to the one of OECD. The mutually reinforcing effect would, in turn, make Globalization converge to a level close to that of the US (or a compound increase of 2.1 instead of 1.83).

Looking at the mean effects, for OECD countries (Table 2a), the positive two-way relationships between democracy and globalization, as well as between democracy and development, remain. In particular, the latter effect is much stronger. In contrast, globalization has a much smaller effect on the reduction of the income gap.

*Table 2a. Estimated elasticities, baseline specification, OECD countries*

| *Impact of row on column* ➔ | **Globalization** | **Democracy** | **Development** |
|---|---|---|---|
| **Globalization** | -- | 0.25 | 0.46 |
| **Democracy** | 0.87 | -- | 1.26 |
| **Development** | 0.33 | 0.25 | -- |

For non-OECD countries (Table 3a), the elasticity of globalization with respect to development is almost as large as for the full sample (1.23 vs. 1.33), while the elasticity of development with respect to globalization is larger than in the full sample (0.51 vs. 0.38). However, the interaction between democracy and development changes dramatically: the elasticity of democracy with respect to development becomes negative, and there is no effect of development on democracy.

*Table 3a. Estimated elasticities, baseline specification, Non-OECD countries*

| *Impact of row on column* ➔ | **Globalization** | **Democracy** | **Development** |
|---|---|---|---|
| **Globalization** | -- | 0.39 | 1.23 |
| **Democracy** | 0.39 | -- | -0.22 |
| **Development** | 0.51 | 0.01 | -- |

*Table 4: System Three Stage Least Squares SURE estimation*

| ***All countries*** | | | |
|---|---|---|---|
| *Variables* | **Globalization** | **Democracy** | **Development** |
| **Globalization** | | 0.0270*** | 0.8603*** |
| | | (0.003) | (0.020) |
| **Democracy** | 2.4305*** | | 3.1584*** |
| | (0.149) | | (0.191) |
| **Development** | 0.5336*** | 0.0261*** | |
| | (0.012) | (0.002) | |
| ***OECD*** | | | |
| *Variables* | **Globalization** | **Democracy** | **Development** |
| **Globalization** | | 0.0262*** | 0.5970*** |
| | | (0.003) | (0.041) |
| **Democracy** | 6.9967*** | | 9.7080*** |
| | (0.698) | | (0.829) |
| **Development** | 0.3838*** | 0.0218*** | |
| | (0.027) | (0.002) | |
| ***Non-OECD*** | | | |
| *Variables* | **Globalization** | **Democracy** | **Development** |
| **Globalization** | | 0.0301*** | 0.6776*** |
| | | (0.004) | (0.021) |
| **Democracy** | 2.8710*** | | -0.1689 |
| | (0.158) | | (0.178) |
| **Development** | 0.5966*** | 0.0113*** | |
| | (0.018) | (0.003) | |

Note: Each block of results correspond to the system (1) estimated by three-stage least squares seemingly unrelated regression (SURE) with iteratively convergence to ML estimates, as in Table 1-3 for the full sample, OECD and non-OECD (blocks A, B and C, respectively). Other regressors' coefficient estimates are available upon request. Time and countries dummies are included but not presented for reasons of parsimony. Heteroskedastic-consistent standard errors are in parentheses. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

## 5. Sensitivity and Robustness checks

*Seemingly Unrelated Regression Estimation*

Our first exercise consists in re-estimating our system (1) using the SURE method with an iteration procedure over the estimated disturbance covariance matrix and parameter estimates that converge to stable maximum likelihood results (Zellner, 1962, 1963; Zellner and Huang, 1962). Results are displayed in Table 4 above. Generally, speaking for all countries, OECD and Non-OECD there are not major changes compared to our baseline, which is reassuring.

We also carried out sensitivity analysis with two dynamic panel estimates, the Arellano and Blundell's first-difference GMM and the Arellano and Bover's system GMM. These results are available in Annex Tables A3 and A4. Probably due to weak instruments, the results are less significant than the 3SLS, but still do not change qualitatively the main conclusions of the baseline estimates.

*Table 5: System Three Stage Least Squares estimation for all countries*

| *Variables (memory)* | **Globalization (KOF)** | **Democracy** | **Development** | *Variables* | **Globalization Economic** | **Democracy** | **Development** |
|---|---|---|---|---|---|---|---|
| **Globalization (KOF)** | | 0.0294*** | 0.8888*** | **Globalization Economic** | | 0.0154*** | 0.5339*** |
| | | (0.003) | (0.021) | | | (0.002) | (0.020) |
| **Democracy** | 2.6999*** | | 3.2793*** | **Democracy** | 2.5194*** | | 6.0620*** |
| | (0.173) | | (0.221) | | (0.225) | | (0.225) |
| **Development** | 0.5646*** | 0.0280*** | | **Development** | 0.4917*** | 0.0396*** | |
| | (0.013) | (0.003) | | | (0.017) | (0.002) | |
| *Variables* | **Globalization Social** | **Democracy (PRCL)** | **Development** | *Variables* | **Globalization Political** | **Democracy (PRCL)** | **Development** |
| **Globalization Social** | | 0.0378*** | 0.8174*** | **Globalization Political** | | -0.0047*** | 0.7215*** |
| | | (0.003) | (0.018) | | | (0.002) | (0.018) |
| **Democracy** | 3.1881*** | | 2.7144*** | **Democracy** | 1.4895*** | | 4.7059*** |
| | (0.198) | | (0.223) | | (0.232) | | (0.218) |
| **Development** | 0.6565*** | 0.0166*** | | **Development** | 0.6658*** | 0.0434*** | |
| | (0.015) | (0.003) | | | (0.017) | (0.002) | |

Note: Each of the four blocks of results correspond to the system (1) estimated by three-stage least squares as in Table 1-3 for: the KOF composite index (repeated top left for convenience), Economic Globalization (top right), Social Globalization (bottom left) and Political Globalization (bottom right). Other regressors' coefficient estimates are available upon request. Time and countries dummies are included but not presented for reasons of parsimony. Heteroskedastic-consistent standard errors are in parentheses. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

*Decomposing the Globalization Index*

Given that our globalization index is an aggregation of several components as discussed in section 3.2, we now run our system (1) with three stage least squares for each of the three main components of the total index: i) economic globalization; ii) social globalization; and iii) political globalization. This can provide some further and useful insights driving the main results discussed in section 4. We begin with the full sample, whose results for the three main variables of concern are displayed in Table 5.[12] Most estimates are in line with previous

[12] For reasons of economy of space the coefficient estimates on other regressors have been omitted from Tables 5-7 but they are available from the authors upon request. Overall, the sign, statistical significance and economic interpretation do not qualitatively change throughout the different exercises conducted.

results, but when the dependent variable is the political globalization this has a negative and statistically significant effect on democracy. Thus, political globalization (notably captured by membership to International Organizations) by itself is not sufficient to generate an increase in political and civil rights whereas both economic and social globalization seem to be more effective in generating democracy.

*Table 6: System Three Stage Least Squares estimation for OECD countries*

| *Variables (memory)* | **Globalization (KOF)** | **Democracy (PRCL)** | **Development** | *Variables* | **Globalization Economic** | **Democracy (PRCL)** | **Development** |
|---|---|---|---|---|---|---|---|
| **Globalization (KOF)** | | 0.0246*** | 0.4724*** | **Globalization Economic** | | 0.0224*** | -0.0736 |
| | | (0.003) | (0.045) | | | (0.002) | (0.046) |
| **Democracy (PRCL)** | 8.9114*** | | 13.2783*** | **Democracy (PRCL)** | 10.2338*** | | 20.4103*** |
| | (0.876) | | (1.011) | | (1.008) | | (0.935) |
| **Development** | 0.3196*** | 0.0238*** | | **Development** | -0.0606* | 0.0323*** | |
| | (0.031) | (0.002) | | | (0.036) | (0.002) | |
| *Variables* | **Globalization Social** | **Democracy (PRCL)** | **Development** | *Variables* | **Globalization Political** | **Democracy (PRCL)** | **Development** |
| **Globalization Social** | | 0.0202*** | 0.3931*** | **Globalization Political** | | -0.0070*** | 0.8982*** |
| | | (0.002) | (0.031) | | | (0.003) | (0.045) |
| **Democracy (PRCL)** | 11.3847*** | | 12.1688*** | **Democracy (PRCL)** | 4.8321*** | | 9.7902*** |
| | (1.206) | | (1.001) | | (0.799) | | (0.955) |
| **Development** | 0.5315*** | 0.0207*** | | **Development** | 0.5002*** | 0.0372*** | |
| | (0.042) | (0.002) | | | (0.026) | (0.002) | |

Note: vide note Table 5.

For OECD countries (Table 6) economic globalization, measured by actual flows and restrictions on trade and capital, does not seem to impact the level of development. One reason may be due to the fact that these countries are at or close to the technological frontier and all marginal gains from increase economic globalization are almost exhausted. As before, all the remaining estimates are in line with previous results.

*Table 7: System Three Stage Least Squares estimation for Non-OECD countries*

| *Variables (memory)* | **Globalization (KOF)** | **Democracy (PRCL)** | **Income gap** | *Variables* | **Globalization Economic** | **Democracy (PRCL)** | **Development** |
|---|---|---|---|---|---|---|---|
| **Globalization (KOF)** | | 0.0392*** | 0.8196*** | **Globalization Economic** | | 0.0212*** | 0.5761*** |
| | | (0.005) | (0.021) | | | (0.003) | (0.019) |
| **Democracy (PRCL)** | 3.8584*** | | -1.4832*** | **Democracy (PRCL)** | 3.6492*** | | -0.3186 |
| | (0.190) | | (0.215) | | (0.241) | | (0.219) |
| **Development** | 0.7667*** | 0.0020 | | **Development** | 0.8230*** | 0.0081* | |
| | (0.019) | (0.004) | | | (0.025) | (0.005) | |
| *Variables* | **Globalization Social** | **Democracy (PRCL)** | **Development** | *Variables* | **Globalization Political** | **Democracy (PRCL)** | **Development** |
| **Globalization Social** | | 0.0669*** | 0.8165*** | **Globalization Political** | | -0.0132*** | 0.5712*** |
| | | (0.004) | (0.020) | | | (0.002) | (0.017) |
| **Democracy (PRCL)** | 4.8682*** | | -2.4573*** | **Democracy (PRCL)** | 2.7043*** | | -0.2303 |
| | (0.193) | | (0.221) | | (0.277) | | (0.216) |
| **Development** | 0.7772*** | -0.0234*** | | **Development** | 0.9094*** | 0.0132*** | |
| | (0.019) | (0.005) | | | (0.028) | (0.005) | |

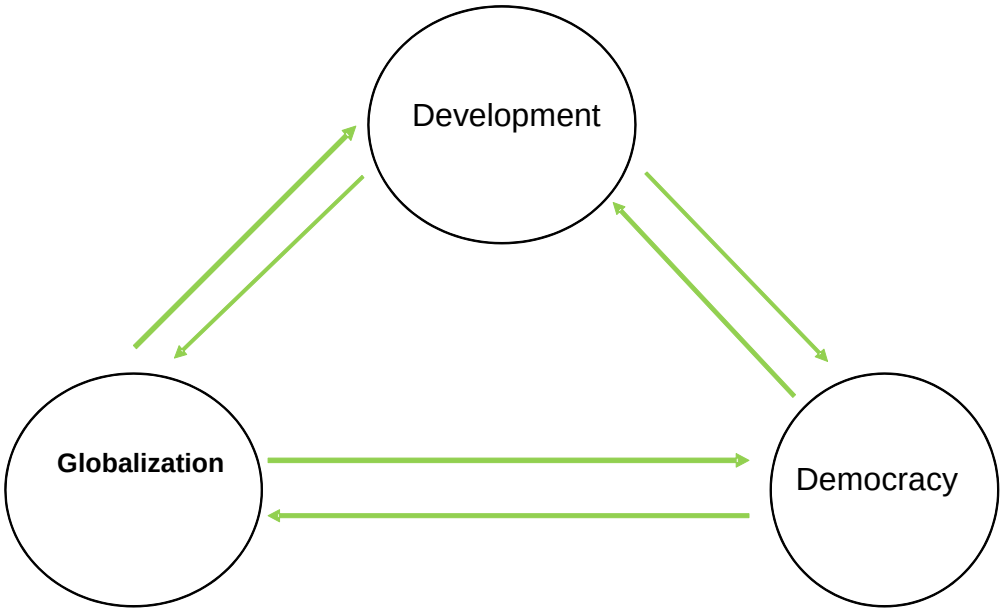
Note: vide note Table 5.

For non-OECD countries (Table 7), the component driving the negative impact of democracy on development in Non-OECD countries is social globalization (bottom left panel). The change in the sign is probably due to the fact that social globalization is driven by elites and consumer behaviour that may not affect the supply-side of the economy.

## 6. Back to the Evidence: From General to Context-Specific Interactions

To sum-up our results, Figures 1 and 2 reflect the empirical findings of this paper with respect to the relative strengths of the links between Globalization, our benchmark measure of Democracy, and Development. Considering the full sample, a clear positive two-way relationship appears between Globalization and Development (measured by the income gap), between Globalization and Democracy, as well as Democracy and Development.

**Figure 1: Summary of interactions (KOF Index): all countries and OECD**




These results support Eichengreen and Leblang (2008)'s findings and the hypothesis of a positive two-way relationship between democracy and globalization. However, they are not likely to be uniform across time and space; in particular, the impact of democracy on globalization varies with resource endowments and global economic conditions.[13] Indeed, they noted that "general conclusions, not surprisingly, remain elusive. But the evidence here is a start." (p.5).

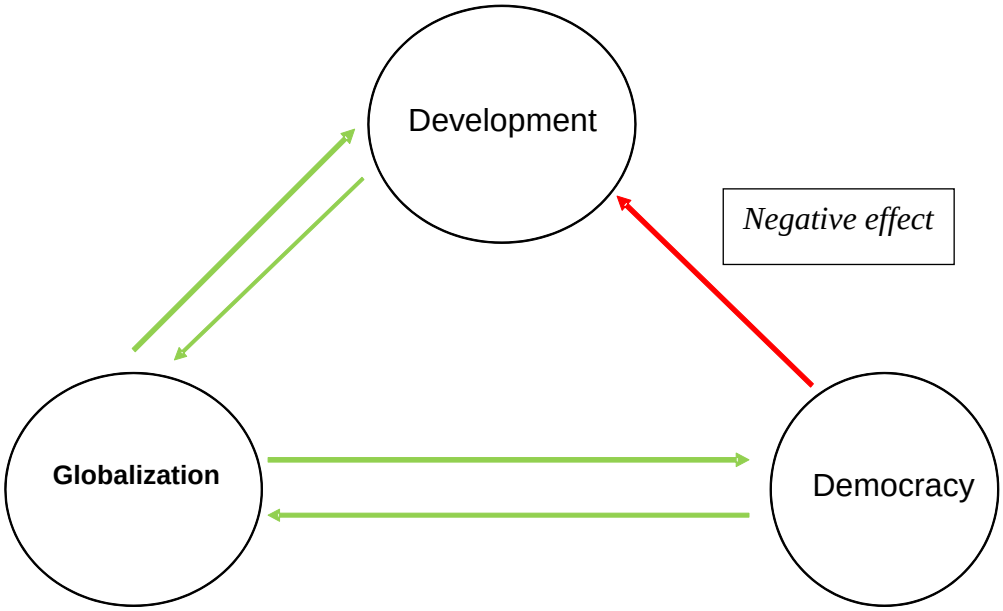
In our estimates, OECD countries are also characterized with positive two-way relationships between economic convergence and freedoms on the one hand, and between freedoms and globalization on the other hand.

Concerning non-OECD countries, two features are particularly interesting. First, Globalization appears to interact positively with both Democracy and Development, both ways. Second, a negative relationship links Democracy and Development, with a strong negative impact of Democracy on the Income gap. Further work is therefore needed to understand the long-run dynamics and sustainability of this global system, in particular the mechanisms that could enforce or reinforce the expected positive effect of Globalization on both Development and Democracy.

[13] See Huang (2006) for a model suggesting a long-run relationship between economic development and political development based on the inherent technical features of different production factors.

Finally, we reflect the importance of history and geography discussed in section 4, by summarizing the impact of these controls on Globalization, Democracy and Development for the full sample. Unlike the English and Spanish colony dummies, the socialist legal origin negatively affects democracy (Figure 3)[14]. Figure 4 shows the effects of geography: countries from Latin America, Africa and Asia show a lower convergence to the income frontier but a higher KOF index of globalization, while countries from Middle East and Africa have a negative impact on democracy.

**Figure 2: Summary of interactions (KOF index): Non-OECD countries**




## 7. Conclusions

In this paper, we analyse for the first time simultaneously the interactions between globalization, democracy and development for 89 countries over the period 1970-2005. Our starting point is the two-way robust relation between democracy and globalization found in Eichengreen and Leblang (2008). We extended their analysis by using multi-dimensional and continuous measures of democracy and globalization, as well as integrating the relationships between these two variables and the income gap relative to the US.

Two main results of our work should be highlighted. When separated into two groups, clearly distinct patterns emerge for developed and developing countries. Introducing the income gap as a third endogenous variable confirms the two-way interaction between democracy and globalization found in Eichengreen and Leblang (2008) both for developed and developing countries. Globalization displays significant positive effects on both democracy and development in non-OECD countries. Our analysis, however, indicates a strong negative impact of democracy on development in non-OECD countries. This may reflect the hypothesis that globalization's effects on democracy are mediated by slow-moving cultural values, probably leading to a dynamic asymmetry between globalization and democracy, moderated by the stage of economic and institutional development.

[14] A complementary explanation of the democracy-globalisation interaction can be based on the manner in which diversity, be it socio-cultural or economic, is addressed by a given society. This is detailed in Macedo (2013).

**Figure 3: Effect of History: all countries**

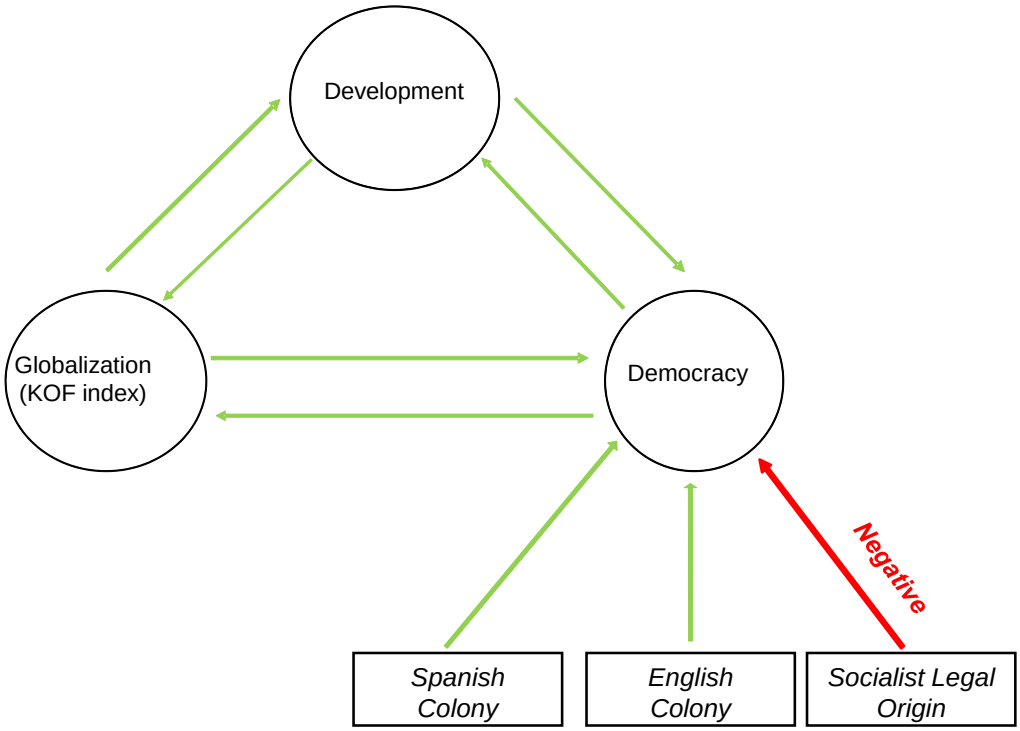
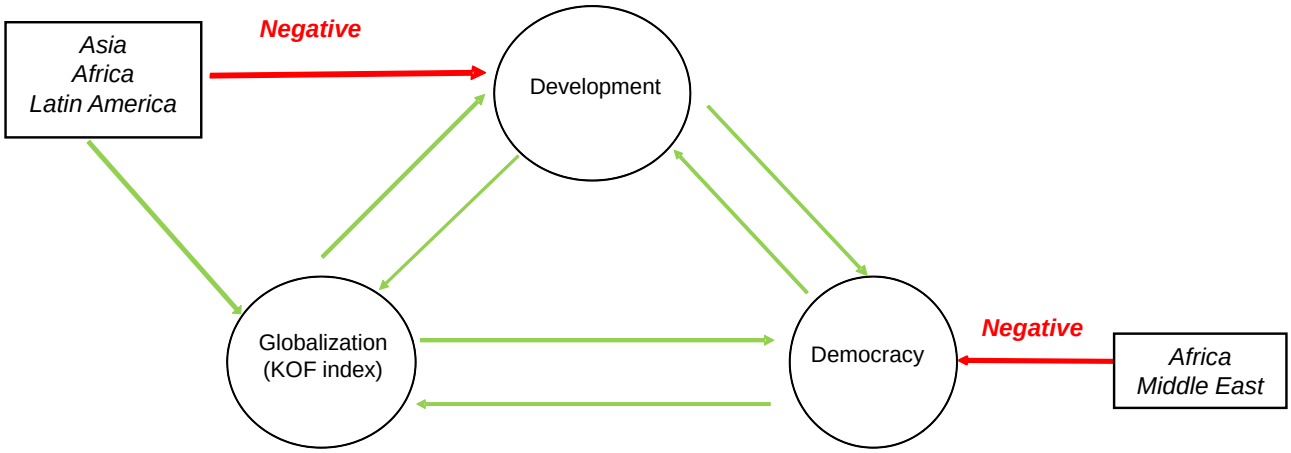



**Figure 4: Effect of geography: all countries**



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## Appendix: Summary data and additional robustness tests

*Summary statistics, all countries*

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| | | | | | |
| Globalization (KOF) | 3312 | 45.40 | 19.36 | 7.14 | 93.64 |
| Freedoms (PRCL) | 3312 | 4.51 | 1.96 | 1 | 7 |
| Development | 3312 | 0.30 | 0.29 | 0.02 | 2.03 |

*Summary statistics, OECD countries*

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| | | | | | |
| Globalization (KOF) | 866 | 68.39 | 14.67 | 27.90 | 93.64 |
| Freedoms (PRCL) | 866 | 6.65 | 0.76 | 2 | 7 |
| Development | 866 | 0.70 | 0.21 | 0.21 | 1.62 |

*Summary statistics, non-OECD countries*

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| | | | | | |
| Globalization (KOF) | 2446 | 37.26 | 13.35 | 7.14 | 84.45 |
| Freedoms (PRCL) | 2446 | 3.75 | 1.67 | 1 | 7 |
| Development | 2446 | 0.16 | 0.16 | 0.02 | 2.03 |

## Table A.1 First Generation Panel Unit Root Tests

Im, Pesaran and Shin (2003) Panel Unit Root Test (IPS) (a)

| **Globalization (KOF index)** | | | **Democracy** | | | **Convergence (Development)** | | |
|---|---|---|---|---|---|---|---|---|
| *[t-bar]* | *(p)* | *lag* | *[t-bar]* | *(p)* | *lag* | *[t-bar]* | *(p)* | *lag* |
| *2.76* | *0.99* | *0.75* | *-4.62* | *0.00* | *0.75* | *-2.04* | *0.02* | *1.14* |

Maddala and Wu (1999) Panel Unit Root Test (MW) (b)

| *Full* | **Globalization (KOF index)** | | **Democracy** | | **Convergence (Development)** | |
|---|---|---|---|---|---|---|
| *lags* | $p_\lambda$ | *(p)* | $p_\lambda$ | *(p)* | $p_\lambda$ | *(p)* |
| *in levels* | | | | | | |
| 0 | 66.680 | 1.00 | 287.961 | 0.000 | 226.209 | 0.019 |
| 1 | 55.619 | 1.00 | 294.308 | 0.000 | 242.153 | 0.003 |
| 2 | 63.368 | 1.00 | 237.645 | 0.005 | 214.000 | 0.064 |
| 3 | 49.808 | 1.00 | 336.250 | 0.000 | 195.850 | 0.261 |

Notes: (a) We report the average of the country-specific "ideal" lag-augmentation (via AIC). We report the t-bar statistic, constructed as $t-bar=(1/N)\sum_i t_i$ ($t_i$ are country ADF t-statistics). Under the null of all country series containing a nonstationary process this statistic has a non-standard distribution: the critical values are -1.73 for 5%, -1.69 for 10% significance level – distribution is approximately *t*. We indicate the cases where the null is rejected with **. (b) We report the MW statistic constructed as $p_\lambda=-2\sum_i \log(p_i)$ ($p_i$ are country ADF statistic p-values) for different lag-augmentations. Under the null of all country series containing a nonstationary process this statistic is distributed $\chi^2(2N)$. We further report the p-values for each of the MW tests.

## Table A.2: Second Generation Panel Unit Root Tests

Pesaran (2007) Panel Unit Root Test (CIPS)

| **Variable** | **Globalization (KOF index)** | | **Democracy** | | **Convergence (Development)** | |
|---|---|---|---|---|---|---|
| *lags* | $p_\lambda$ | *(p)* | $p_\lambda$ | *(p)* | $p_\lambda$ | *(p)* |
| *in levels* | | | | | | |
| 0 | -3.088 | 0.001 | -1.623 | 0.052 | 2.764 | 0.997 |
| 1 | -1.909 | 0.025 | -1.103 | 0.135 | 0.099 | 0.539 |
| 2 | -1.622 | 0.052 | 0.137 | 0.555 | 1.307 | 0.904 |
| 3 | -0.024 | 0.49 | -0.057 | 0.477 | 2.469 | 0.993 |

Notes: Null hypothesis of non-stationarity. We further report the p-values for each of the CIPS tests.

## Table A.3 – Difference GMM estimation – all countries

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Globalization | | Democracy | | Development |
| COEFFICIENT | (KOF) | | (PRCL) | | |
| **Development** | 0.0855 | 0.5218* | 0.0024 | 0.0355** | |
| | (0.124) | (0.315) | (0.011) | (0.018) | |
| **Democracy** | 1.3368 | 0.8511 | | | -0.4179 |
| | (1.073) | (0.752) | | | (0.521) |
| Lagged total financial crises | -0.1286*** | -0.0911*** | | | |
| | (0.019) | (0.022) | | | |
| Lagged inflation | -0.0042 | -0.0039 | | | -0.0004* |
| | (0.003) | (0.005) | | | (0.000) |
| Log distance from the rest of the world | -100.4159*** | -56.5735* | | | -21.7439 |
| | (23.016) | (29.141) | | | (19.619) |
| Log area | 146.2584 | 87.7472 | | | 31.1900 |
| | (226.923) | (170.837) | | | (99.796) |
| Log population | 38.1425*** | 41.7753*** | | | -9.5856 |
| | (4.262) | (6.966) | | | (7.370) |
| **KOF index** | | | 0.0080 | -0.0148 | 0.2160 |
| | | | (0.018) | (0.015) | (0.149) |
| Lagged number of prior transitions to dictatorship | | | 0.5028 | 1.1316*** | |
| | | | (0.396) | (0.281) | |
| Lagged constitutional age | | | -0.0334** | -0.0189* | |
| | | | (0.015) | (0.010) | |
| Lagged total number of democracies | | | 0.0033 | 0.0067 | |
| | | | (0.004) | (0.005) | |
| Lagged urban population | | | 0.0441* | 0.0296* | |
| | | | (0.025) | (0.017) | |
| Lagged population density | | | -0.0003 | -0.0005 | |
| | | | (0.002) | (0.001) | |
| Investment rate | | | | | 0.1944* |
| | | | | | (0.111) |
| Instruments | English colony | Lagged fuel export dependence | log distance from the rest of the world | Investment rate | Inflation |
| Observations | 2,649 | 2,649 | 2,832 | 2,832 | 2,852 |
| *Hansen (p-value)* | 0.0071 | 0.1385 | 1.0000 | 1.0000 | 1.0000 |
| *AR(1)* | 0.2295 | 0.5963 | 0.0140 | 0.0068 | 0.0474 |
| *AR(2)* | 0.1988 | 0.0969 | 0.0936 | 0.0474 | 0.2287 |

Note: The models are estimated by difference Generalized Method of Moments (DIFF-GMM). Heteroskedastic-consistent standard errors are in parentheses. The Hansen test evaluates the validity of the instrument set, i.e., tests for over-identifying restrictions. AR(1) and AR(2) are the Arellano-Bond autocorrelation tests of first and second order (the null is no autocorrelation), respectively. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

## Table A.4 – System GMM estimation – all countries

| COEFFICIENT | (1) Globalization (KOF) | (2) Globalization (KOF) | (3) Democracy (PRCL) | (4) Democracy (PRCL) | (5) Development |
|---|---|---|---|---|---|
| **Globalization (KOF index)** | | | 0.0242* | 0.0122 | 0.3262*** |
| | | | (0.014) | (0.012) | (0.108) |
| **Development** | 0.3657*** | 0.3544*** | 0.0108 | 0.0124 | |
| | (0.088) | (0.075) | (0.015) | (0.010) | |
| Lagged number of prior transitions to dictatorship | | | 0.0056 | 0.0121 | |
| | | | (0.133) | (0.170) | |
| Lagged constitutional age | | | 0.0009 | -0.0005 | |
| | | | (0.007) | (0.007) | |
| Lagged total number of democracies | | | 0.0042 | 0.0068* | |
| | | | (0.005) | (0.004) | |
| Lagged fuel export dependence | | | -0.0177 | -0.8747 | |
| | | | (0.937) | (0.858) | |
| Socialist legal origin | | | -2.2113*** | -2.3898*** | |
| | | | (0.756) | (0.702) | |
| English colony | | | 0.4127 | 0.1442 | |
| | | | (0.390) | (0.601) | |
| French colony | | | -0.1929 | -0.6649 | |
| | | | (0.494) | (0.813) | |
| Spanish colony | | | 0.2322 | 0.3244 | |
| | | | (0.305) | (1.200) | |
| Lagged urban population | | | 0.0059 | 0.0095 | |
| | | | (0.010) | (0.014) | |
| Lagged population density | | | -0.0006*** | -0.0009 | |
| | | | (0.000) | (0.001) | |
| Latin America | -0.8579 | -1.3295 | -0.7251 | -1.1900 | -62.7800*** |
| | (3.708) | (3.640) | (0.886) | (1.410) | (15.960) |
| Middle East | 1.7468 | 0.2582 | -2.4263*** | -2.1848** | -13.3237 |
| | (5.663) | (5.418) | (0.867) | (1.083) | (15.826) |
| Africa | -1.2316 | -1.8968 | -1.8627* | -2.0856** | -27.8221*** |
| | (3.730) | (3.241) | (0.953) | (1.026) | (7.964) |
| Asia | -2.2665 | -2.8901 | -0.7318 | -0.8774 | -38.8319** |
| | (5.880) | (4.516) | (0.933) | (0.910) | (15.145) |
| **Democracy** | 3.3806*** | 3.4480*** | | | 0.9832 |
| | (0.897) | (0.854) | | | (1.363) |
| Lagged total financial crises | 0.0352 | 0.0345 | | | |
| | (0.032) | (0.030) | | | |
| Lagged inflation | 0.0019 | 0.0035 | | | -0.0002 |
| | (0.003) | (0.004) | | | (0.001) |
| Log distance from the rest of the world | -6.9637 | -7.2708 | | | 84.5342*** |
| | (4.663) | (4.422) | | | (27.274) |
| Log area | -0.2478 | -0.2679 | | | 5.1698* |
| | (0.778) | (0.689) | | | (2.748) |
| Log population | 1.1397 | 1.1031 | | | -8.2661*** |
| | (1.174) | (1.023) | | | (2.895) |
| Investment rate | | | | | 0.7059* |
| | | | | | (0.392) |
| Constant | 67.9182* | 71.3385* | 3.4062*** | 3.9720*** | -642.2196*** |
| | (40.229) | (36.572) | (1.020) | (0.968) | (225.839) |
| Instruments | English colony | Lagged fuel export dependence | log distance from the rest of the world | Investment rate | Inflation |
| Observations | 2,741 | 2,741 | 2,921 | 2,921 | 2,946 |
| *Hansen (p-value)* | 0.9995 | 0.9996 | 1.0000 | 1.0000 | 1.0000 |
| *AR(1)* | 0.3686 | 0.8817 | 0.4096 | 0.3730 | 0.1095 |
| *AR(2)* | 0.0142 | 0.1318 | 0.1636 | 0.1478 | 0.7676 |

Note: The models are estimated by system Generalized Method of Moments (SYS-GMM). Heteroskedastic-consistent standard errors are in parentheses. The Hansen test evaluates the validity of the instrument set, i.e., tests for over-identifying restrictions. AR(1) and AR(2) are the Arellano-Bond autocorrelation tests of first and second order (the null is no autocorrelation), respectively. ***, ** and * denote significant coefficients, respectively at the 1, 5 and 10 % confidence levels.

## Data and Variable Definitions

The sources for the variables of Freedoms and Globalization used in this paper are as follows:

PR: Freedom House Political Rights PR. We ranked this variable from:

7 = maximum political rights

1 = minimum political rights

CL: Freedom House Civil Liberties CL. We ranked this variable from:

7 = maximum civil liberties

1 = minimum civil liberties

These variables can be downloaded The Freedom House:
http://www.freedomhouse.org/printer_friendly.cfm?page=35&year=2006

KOF: Swiss Federal Institute of Technology Zurich KOF. The variable is ranked from:

100 = maximum globalization

1 = minimum globalization

This variable can be downloaded from the Swiss Federal Institute of Technology, Zurich:
http://globalization.kof.ethz.ch/