



# **Yet Another Look at the Modernisation Hypothesis: Evidence from South America**

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# Yet Another Look at the Modernisation Hypothesis: Evidence from South America

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## Abstract

We investigate in this paper whether the exogenous version of the modernisation hypothesis holds in South America, or whether democracy needs development for its own consolidation. We use a sample of all nine countries that re-democratised in the last thirty years or so and the data sets cover two distinct periods, 1970-2007, and 1945-1969. The results, based on dynamic panel time-series data analysis (we use the Fixed Effects, Common Correlated Effects and Fixed Effects with Instrumental Variables estimators), suggest that the modernisation hypothesis holds in the region during the period 1970-2007, or that income, or development in general, plays a positive role in "sustaining" democracy. Moreover, the exogenous version of the modernisation hypothesis does survive scrutiny for the period 1945-1969 as well, a period in which the continent was relatively poorer and democracy a rather elusive concept in the region. We also test for the critical junctures hypothesis, or whether particular historical structural changes play any role in contemporaneous democratisation in the region, however we are not able to provide any concrete evidence in favour of it. Essentially, we suggest that a certain level of development is an important condition for democracy to survive and mature, which—in times of a new democratisation wave taking place in societies with different developmental paths—is a suggestive observation.

Keywords: Modernisation hypothesis, democracy, development, South America.

JEL Classification: O10, O54, P16.

## I. Introduction and Summary

South America has been known for numerous political transitions from (mostly right wing) dictatorships to more democratic regimes, macroeconomic instability (some countries experienced debt crises and high rates of inflation in the 1980s and early 1990s), delayed stabilisation processes (in the spirit of Alesina and Drazen (1991)) and, at least up to this point in time, no come back to less democratic regimes during this latest wave of democratisation which has affected the region in the last thirty years or so. Moreover, the region has been known for a certain, relatively above the average, degree of economic inequality.

Against this rather eventful background, and also with the current wave of democratisation being experienced by some Arab countries in mind (and also by other countries such as Burma and Zimbabwe), we investigate whether the exogenous version of the modernisation hypothesis holds (or whether democracy needs a precondition to survive and mature, which is basically a certain level of income and development already in place) as originally proposed by Lipset (1959) and further developed by Przeworski and Limongi (1997), in a region which has experienced its own relatively recent wave of democratisation in the late 1970s, 1980s and early 1990s. It is perhaps worth stressing that this latest wave of democratisation in South America is not its only one, nor its first one. In fact, democratic institutions were implemented in the region a number of times before, however democracy had been far from stable in the continent in its more distant past.

In addition, in the vein of Acemoglu, Johnson and Robinson (2001) and Engerman and Sokoloff (2005) who suggest that the institutional framework implemented in former colonies differed dramatically, which resulted in different contemporaneous development outcomes, we test for the critical junctures hypothesis, or whether democracy (or lack of it) in the region is being determined by a particular shock, or structural change, which affected the region in the more distant past. For that, we follow the previous literature (Acemoglu, Johnson, Robinson and Yared (2008 and 2009)) and make use of a proxy for institutional quality, in this case constraints on the executive after independence, in an attempt to understand the role of the institutional build up after independence in the 19<sup>th</sup> century on contemporaneous democracy in the region.

This particular hypothesis is of interest because there were indeed crucial differences within the American continent in terms of institutional quality after independence. For instance, the

United States shortly after independence already presented, according to the Polity IV files, fairly effective constraints on the executive (*i.e.*, 7 out of 7 for constraints on the executive), whilst most of the Latin American countries—with the exception of Peru which fared relatively above the continental average for short periods of time after independence—did not fare at all impressively on that respect. According to the critical junctures hypothesis, these institutional differences might have had an effect on how particular democratic institutions developed in the region later on in time.

To conduct the analysis we use data from all nine South American countries which re-democratised at some point in the last thirty years or so, and given data availability, we cover the periods between 1970 and 2007, and 1945-1969. Broadly speaking, for the empirical analysis we make use of dynamic panel time-series data methods. More specifically, we use the Fixed Effects, Common Correlated Effects and Fixed Effects with Instrumental Variables estimators.

In terms of results, firstly, when we cover the period between 1970 and 2007, we find evidence that the exogenous version of the modernisation hypothesis actually holds in the region, or that income, or development in general, plays an important positive role on democracy's consolidation. Moreover, when we use the data set covering the period between 1945 and 1969 we are somewhat able to find evidence in favour of the hypothesis as well, however the argument is put upside down in the sense that at the time democracy was far from stable in the region. This is suggestive of the fact that the much lower levels of development seen in the continent right after WWII played a role in the political instability experienced in South America, with different *juntas* and civilian regimes alternating in power at the time (Przeworski and Limongi (1997))<sup>1</sup>. Thirdly, we do not find any conclusive evidence for the critical junctures hypothesis, or that the institutional change happening after independence in the region has had any effect on contemporaneous democratisation in the continent.

The subject has, in one way or another, always attracted the attention of the profession (political scientists and economists alike), and, as mentioned above, Lipset (1959), with the help of Aristotle, is considered to be the first effort on the subject. Essentially, the paper sets the social requisites, or the set of conditions necessary for democracy to mature, which are wealth (income), education and urbanisation. Incidentally, the paper (written in the 1950s when Latin American democracy was a rather elusive concept) also suggests that democracy would only mature and thrive in the continent with more development in general. It is perhaps also worth saying that for Lipset, development would trigger democracy (the so-called endogenous

democratisation, Przeworski and Limongi (1997)) and also keep democracy alive (the exogenous version of it).

More recently, Barro (1999), using a sample of 100 countries between 1960 and 1995, and the SUR estimator, reports a positive effect of income per capita on democracy, or some evidence for the modernisation hypothesis. On the other hand, Acemoglu, Johnson, Robinson and Yared (2005) using data covering the period between 1965 and 2000, find no evidence supporting the role of education on democracy when allowing for fixed effects in their regressions.

On the contrary, Epstein, Bates, Goldstone, Kristensen and O'Halloran (2006), using Tobit and Markov regressions, and a cross-section of countries, are able to report some evidence in favour of the modernisation hypothesis (in terms of transition and survival of democracy), as well as Boix and Stokes (2003)<sup>2</sup>. Furthermore, Glaeser, Ponzetto and Shleifer (2007) provide some descriptive evidence of the role of education on democracy between 1960 and 2000 in a panel of countries, and then they develop a theoretical model on the importance of skills, socialisation and civic engagement (all attributes related to human capital formation) for democracy to survive and mature.

On a different vein, Acemoglu, Johnson, Robinson and Yared (2008 and 2009) use panel estimators to suggest this time that there is no link between income and democracy when allowing for fixed effects in different sets of samples covering the last 100 years or so. They also regress the constraints on the executive right after independence alongside income against democracy in an attempt to disentangle the historical institutional differences affecting different former colonies, and they report that the historical variable is important, and that income is still not significant on democracy. All in all, they report some evidence in favour of the critical junctures hypothesis and very little evidence for the modernisation story. In contrast, Gundlach and Paldam (2009), using prehistoric biogeography measures (number of domesticable mammals and number of wild grasses in different continents) as instruments for contemporaneous income, find evidence for the modernisation hypothesis even when allowing for fixed effects.

Moreover, Benhabib, Corvalan and Spiegel (2011) using data for the 1955-2000 period and the Vanhanen's index for democracy (Vanhanen (2000)), which is unbounded and that allows for the fact that democracy is in constant change and evolution over time, are able to report that the modernisation hypothesis holds in their panel which also allows for fixed effects; and Murin and Wacziarg (2011) using a historical data set covering the period between 1870 and 2000, panel estimators and a new variable for education (Morrisson and Murin (2009)), are able

to report that primary schooling and (to a lesser extent) income are positively associated with democracy. In similar vein, Heid, Langer and Larch (2012) make use of a panel of 150 countries (with not all of them being democratic) between 1960 and 2000, and mostly the SYS-GMM estimator, to report evidence in favour of the modernisation hypothesis.

Lastly, but not least, Barro (2012) makes use of a longer and thinner panel time-series (which covers the period 1870-2009 and 28 countries), and the fixed effects estimator, to report that the modernisation hypothesis holds in his sample and, in similar vein, Che, Lu, Tao and Wang (2012) replicate Acemoglu, Johnson, Robinson and Yared (2008) using the SYS-GMM (instead of DIF-GMM) estimator to report a positive effect of income on democracy. In contrast, Fayad, Bates and Hoeffler (2012) report that in countries which rely on natural resources the modernisation theory does not hold.

Essentially, the literature presents us with interesting controversies (*e.g.*, fixed effects, no fixed effects, endogenous and exogenous democratisation, and critical junctures) which can only enrich the debate about the role of income and development on democracy. Given the above, and bearing in mind the fact that there are always new waves of democratisation affecting different parts of the world with different levels of development (some of them being rather successful in adopting and keeping democracy, whilst others not faring entirely successfully on this regard), so the need to better understand those processes, the value added of this paper to the literature is that we make use of a sample of South American countries (all former colonies sharing some developing countries characteristics, but with their own idiosyncrasies), which went through structural political and economic changes (not to mention severe shocks) in the last forty years or so. This is interesting in itself not only because (to the best of our knowledge) this is the first time that this is being done with a sample of South American young democracies, but also because with this sample we can disaggregate and comparatively further our knowledge on how democracy and development have been behaving and interacting with each other recently in the region.

Furthermore, we use different dynamic panel time-series data estimators, which tackle different empirical issues in the data (*e.g.*, heterogeneity bias, spatial dependence and reverse causality), to ensure that our results are robust and informative. Therefore, we are able to provide some interesting evidence to specifically understand the recent history of South America, instead of treating the region either as an outlier to be removed from the sample, or as a dummy variable<sup>3</sup>. Above all, we are able to avoid unwarranted generalisations about the continent's

recent history regarding democratisation and development.

The remainder of this paper is as follows: in the next sections we describe the data set, the empirical methodology used, and then we present and discuss the main results obtained. Finally, we conclude and offer some future research avenues that can be pursued from here.

## II. Empirical Analysis

### A. *A Look at the Data*

The data set for the main analysis covers the period between 1970 and 2007, and nine South American countries which transitioned from political dictatorship to full democracy at some point in the late 1970s (Ecuador), 1980s (Argentina, Bolivia, Brazil, Chile, Peru and Uruguay), and early 1990s (Guyana and Paraguay). In addition, we use a second data set, without Guyana (for lack of data), which covers the period between 1945 and 1969.

The variable used to measure democracy is the rather popular, and normalised (ranging from zero to one), Polity variable from the Polity IV data set (*POLITY*) which is basically the difference between the Democracy and Autocracy indices (Marshall and Jaggers (2010)). This particular variable is not only widely used, but also convenient in the sense that it is available from 1800 onwards which allows us to investigate the period 1945-1969. Other possible candidates in terms of proxies for democracy, for instance, the political rights variable provided by the Freedom House starts in 1972, which precludes us from carrying a more historical analysis of the continent, and the Vanhanen index stops in 2000.

Information on GDP per capita (*GDP*) comes firstly from the Penn World Table and secondly from the Historical Statistics of the World Economy: 1-2008 AD, compiled by Angus Maddison, and in this case it is expected, according to the modernisation hypothesis, that income might play a positive and significant role on democracy. In addition, and again in accordance with the main hypothesis being tested here, we use the interpolated percentage of population who are 25 years old and over with primary education (*EDUC25*) from the Barro and Lee (2010) data set (Barro (1999) indicates that what matters for democracy is "early education"), and urbanisation (*URBAN*) which comes from the World Development Indicators provided by the World Bank. In these cases we expect that more educated and urbanised societies tend to be not only more developed, but also more democratic.

Moreover, we use the Polity IV variable constraints on the executive (*XCONST*) right

after independence, which works as a proxy for institutional quality, or checks and balances, to test for the critical junctures hypothesis (Acemoglu, Johnson, Robinson and Yared (2008 and 2009)). What is expected here (apart from the fact that income does not play any significant role on democracy), is that at those particular critical historical moments at the beginning of the 19<sup>th</sup> century those countries in the sample experienced deep structural changes which would, depending on the quality of the institutions adopted, affect democratisation much later on in time, for the better or for the worse. For the sake of clarity, Argentina achieved independence in 1816 and the data cover the period between 1825 and 1863, Bolivia in 1825 and the data are for the period between 1825-1863, Brazil in 1822 and the data are for 1824-1861, Chile in 1818 and the data are for 1818-1855, Ecuador in 1830 and the data are for 1830-1867, Guyana in 1966 and the data are for 1966-2003, Paraguay in 1811 and the data are for 1811-1848, Peru in 1821 and the data are for 1821-1858, and Uruguay in 1818 and the data cover the period between 1830-1867. Furthermore, we use the same variable *XCONST*, however this time we take the five-year averages since independence (*XCONST5*) to account for institutional changes which took place not only in the 19<sup>th</sup> century, but also over the 20<sup>th</sup> century.

To briefly illustrate the main hypothesis being tested, in Figure One we plot the behaviour of democracy (*POLITY*) and income (*GDP*), averaged series, against time for the period 1970-2007 in all nine young South American democracies. Essentially, the first panel illustrates the behaviour of the political regimes in the region, and we can visualise the steady democratisation wave affecting the continent in the last forty years or so. It can also be seen that in the 1970s there was a mild backdrop to even less democratic regimes, which presumably illustrates well the generalised political instability at the time with different *juntas* and civilian governments alternating in power in the region.

Moreover, the second panel illustrates how income per capita has been behaving in the region since the 1970s, and apart from the positive trend, we can also see the ‘lost decade’ in the 1980s which coincides with some of those democratic transitions, debt crises and hyperinflationary episodes<sup>4</sup>. All in all, although some important troughs occurred during the period, which provide us with important variation, in general terms both variables have been displaying positive trends in the continent in the last forty years, which is a suggestive eye-ball evidence at this stage in the sense that both variables have been, in fact, moving together over time.



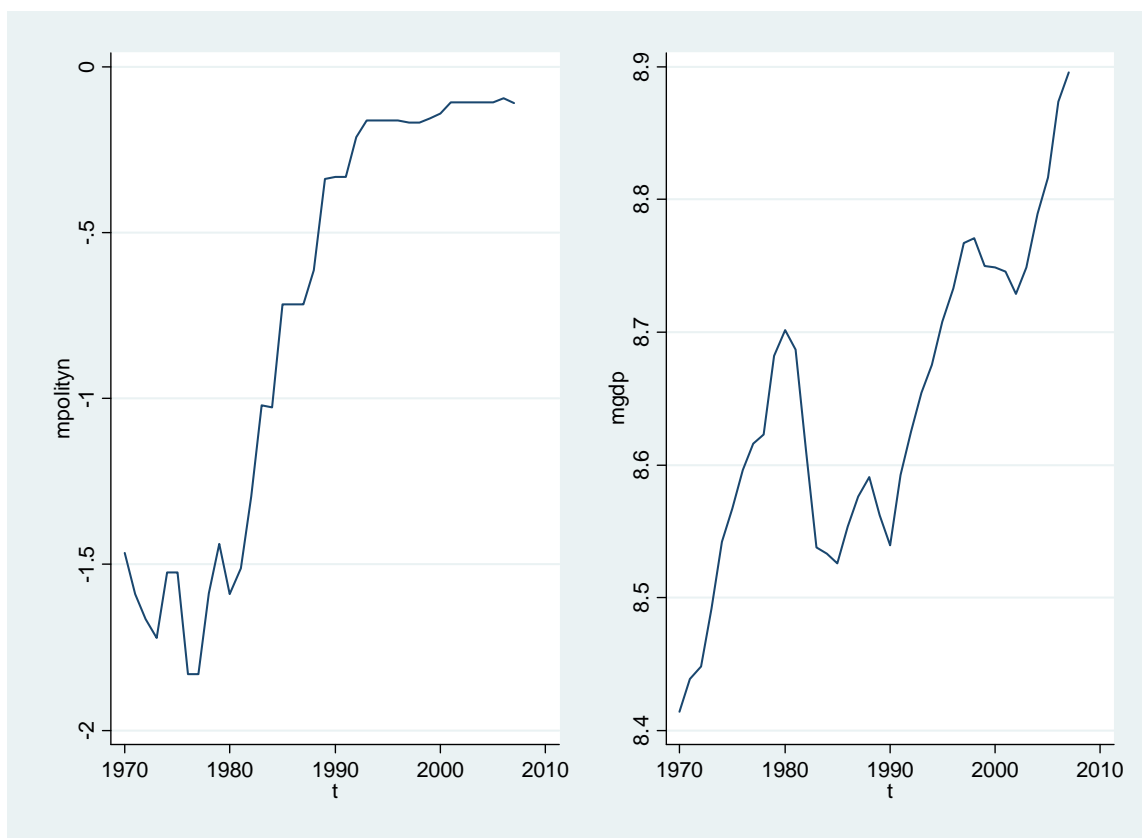


Figure 1: Democracy (*POLITY*) and income per capita (*GDP*), South America, 1970-2007. Sources: Polity IV and Penn World Table files.

In addition, we provide in Table One the correlation matrix for the period 1970-2007, and what we can see (without implying any causality at this juncture) is that there is a positive and statistically significant correlation between democracy and income (which confirms the positive comovements shown in Figure One), as well as between democracy and urbanisation. These positive correlations are in accordance with the modernisation hypothesis.

Also of interest, the correlation between constraints on the executive shortly after independence with contemporaneous democracy is negative, which descriptively suggests that the low levels of institutional quality in the distant past have had a detrimental effect on the development of contemporaneous democracy in the region. This negative correlation is in accordance with the critical junctures hypothesis.

Table 1: The Correlation Matrix: South America, 1970-2007.

	POLITY	GDP	EDUC25	URBAN	XCONST	XCONST5
POLITY	1					
GDP	0.151*	1				
EDUC25	0.355*	-0.020	1			
URBAN	0.216*	0.886*	0.086	1		
XCONST	-0.172*	-0.582*	-0.168*	-0.698*	1	
XCONST5	0.244*	-0.043	-0.201*	-0.058	0.307*	1

Sources: Polity IV, Penn World Table, Barro and Lee, and World Development Indicators files. \* represents significance at the 5% level.

Lastly, in Figure Two we provide the OLS regression line between democracy and income per capita for the period 1970-2007. The regression line is suggesting, and confirming the previous descriptive evidence, a positive relationship between our two main variables of interest, or that the modernisation hypothesis, which suggests that a particular level of income is a requisite for democracy to thrive and mature, might well be valid in the region, at least for this latest wave of democratisation affecting South America.

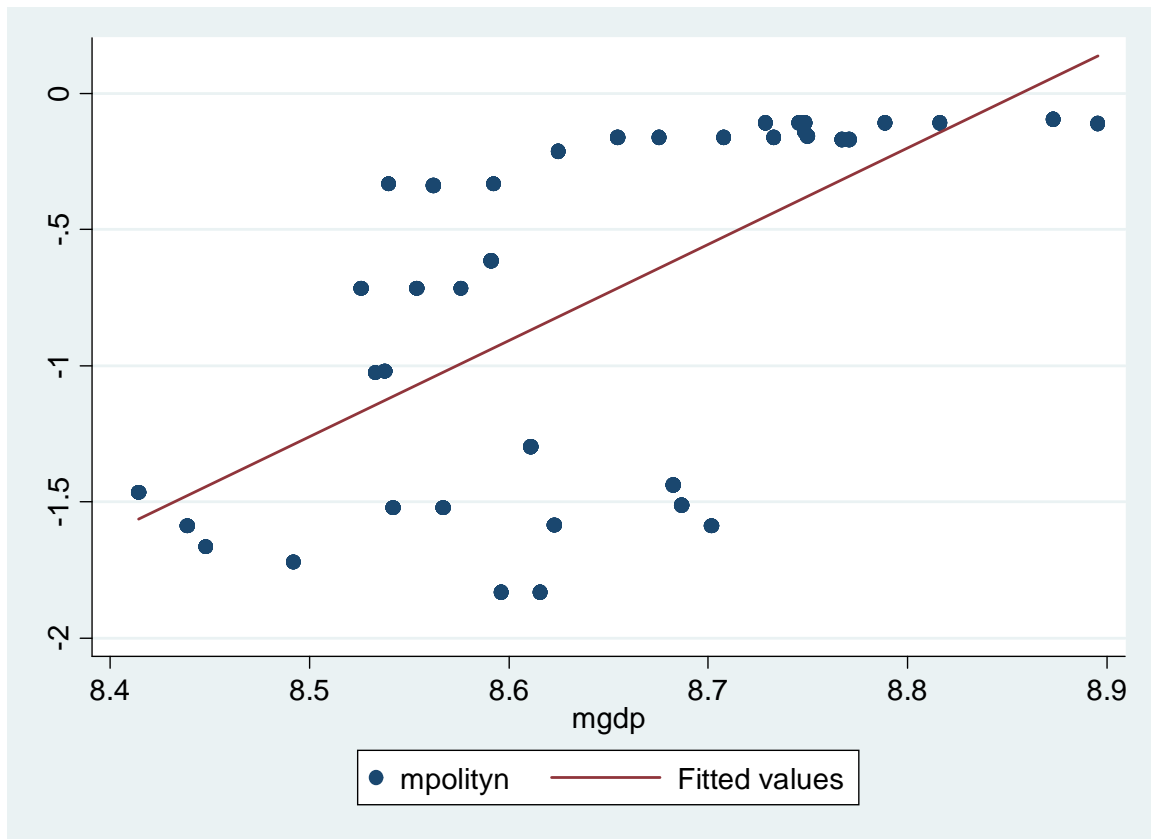


Figure 2: OLS regression line, democracy and income per capita, South America, 1970-2007. Sources: Polity IV and Penn World Table files.

In essence, the above preliminary descriptive evidence with regards to the main hypothesis being tested, with all its known caveats, suggests that in one way or another democracy and income have been positively related to each other in the region, at least in recent times which capture the latest democratisation wave being experienced by South America. To put it another way, the version of the modernisation hypothesis which suggests that democracy needs a certain level of development to consolidate itself, seems to be alive and well in the continent.

### ***B. Methodology***

In terms of empirical strategy, since we have a panel of nine South American countries ( $N = 9$ ) covering the period between 1970 and 2007 ( $T = 38$ ), and then a second sample of eight countries for the period between 1945-1969 ( $N = 8$ ,  $T = 25$ ), we make use of dynamic panel time-series data analysis. Initially, because most of the variables used for the analysis are either ratios (*e.g.*, *URBAN* and *EDUC25*) or bounded within closed intervals (*e.g.*, *POLITY* and *XCONST*), we do not pursue the issue of cointegration in panels here.

Firstly, we use the one-way Fixed Effects (FE) estimator with robust standard errors for the correlation of residuals over time, which assumes heterogeneity of intercepts (a reasonable assumption in such a diverse panel of countries), and which makes use only of the within ( $\bar{y}_i - \bar{y}$ ) variation in the data, which purges the correlation between the unobserved heterogeneity and the regressors. Essentially, the FE estimator under  $T \rightarrow \infty$ , not only minimises the Nickell bias present in short  $T$  dynamic panels, but also reduces statistical endogeneity and provides consistent estimates of the expected values (Smith and Fuertes (2010))<sup>5</sup>.

Secondly, considering that we are dealing with a particular continent in which the countries might well be connected through all sorts of political and economic channels (a plausible assumption if we consider that democracy itself hit the continent recently within a rather short period of time), we allow for spatial dependence. Basically we make use of the Common Correlated Effects (CCE) estimator (Pesaran (2006)) which introduces in the regressions individual cross-section averages of all variables as additional regressors, and these averages are proxies for unobserved common factors or spillovers.

Thirdly, although we attempt to use—given data availability—the most common variables in the literature, one would argue that omitted variables, measurement error, and even some sort of (economic) endogeneity might be present. For example, it might be that democracies have better institutions and policies in place (*e.g.*, secure property rights and higher human capital stocks) and consequently happen to be also more developed. Therefore, we make use of the Fixed Effects with Instrumental Variables (FE-IV) estimator which provides asymptotically consistent and efficient estimates as  $T \rightarrow \infty$  (Arellano (2003)), and with the assumption  $E(x_{it-1}v_{it}) = 0$  in mind (Anderson and Hsiao (1981)), we use the first lags of income per capita and education as our identifying instruments to provide external variation for  $GDP$  and  $EDUC25$  respectively (as mentioned, the growth literature suggests that democracy, income and education might be related, see Barro (1996 and 2012), Papaioannou and Siourounis (2008), Besley, Persson, and Sturm (2010) and Becker, Sascha, Erik Hornung, and Ludger Woessmann (2011) for efforts on democracy and growth, and education and growth)<sup>6</sup>.

All in all, the above-mentioned dynamic panel time-series estimators take into account not only the fact that those countries in the sample share particular characteristics in a rather interconnected continent, but also the fact that such a panel is, no doubt, heterogenous (some of the countries in the sample are more developed than others, or more or less urbanised than others). Moreover, some of these estimators take into consideration the possibility of omitted

variables and measurement error biases, and (statistical and economic) endogeneity issues, which are, for the sake of robustness, advantageous for our purposes here. The estimated second-stage FE-IV dynamic equations used to test for the modernisation hypothesis and for the critical junctures hypothesis are respectively as follow,

$$(1) \quad POLITY_{it} = \alpha_i GDP_{it} + \beta EDUC25_{it} + \gamma URBAN_{it} + \delta POLITY_{it-1} + v_{it},$$

$$(2) \quad POLITY_{it} = \alpha_i GDP_{it} + \beta EDUC25_{it} + \gamma URBAN_{it} + \delta XCONST_{it-n} + \epsilon POLITY_{it-1} + v_{it}$$

where *POLITY* is the Polity IV proxy for democracy, *GDP* is income per capita in logs, *EDUC25* is the percentage of the population who are 25 years old and over with primary education, *URBAN* is the share of urban population, *XCONST* are the constraints on the executive after independence and *POLITY*<sub>*it*-1</sub> is the lagged dependent variable.

### *C. Results and Discussion*

In this section we initially test for the modernisation hypothesis on its own, and then secondly we also test for the critical junctures hypothesis, using data for the period between 1970 and 2007. Then we run another exercise using only data for the period between 1945-1969 to test for both hypotheses again.

In Table Two we firstly report the estimates of *GDP*, *EDUC25* and *URBAN* on *POLITY*. More specifically, in columns one and four we report the role of contemporaneous and lagged income on democracy using the FE estimator and the estimates are all positive and statistically significant. In columns two and five we make use of the CCE estimator, which allows for spatial dependence, and the *GDP* estimates are again positive and significant. In columns three and six the FE-IV delivers similar estimates, positive and significant.

Moreover, *EDUC25* presents mostly positive and significant estimates as well as *URBAN* on democracy. In addition, in all cases the lagged dependent variable, *POLITY*<sub>1</sub>, is positive and significant, confirming the fact that democracy (or any political regime in general) tends to become rather persistent over time.

Also worth mentioning, the cross-section averages of the dependent variable (*POLITY AVE*) introduced as an additional regressor in the CCE regressions are significant, which indicate that common factors are important in the region. A plausible interpretation of these positive and

significant estimates for the averages is that democracy in the neighborhood can spillover to other less democratic countries. Furthermore, when using the FE-IV estimator, the identifying instruments are statistically significant and the  $F$  test indicates that the regressors are jointly different from zero in the first-stage regressions (available on request), which minimise the issue of weak instruments.

Table Two: FE, CCE and FE-IV Estimates, South America, 1970-2007.

POLITY	Dynamic Models					
	FE (1)	CCE (2)	FE-IV (3)	FE (4)	CCE (5)	FE-IV (6)
GDP	.518 (4.50)	1.34 (2.50)	.505 (3.60)			
GDP <sub>1</sub>				.460 (4.43)	.934 (1.76)	.442 (2.96)
EDUC25	3.65 (3.20)	.819 (1.06)	3.99 (4.08)	3.46 (3.11)	-.223 (-.22)	3.97 (4.01)
URBAN	.666 (2.44)	-.609 (-0.10)	.657 (2.50)	.652 (2.32)	.759 (0.11)	.666 (2.40)
POLITY <sub>1</sub>	.753 (21.38)	.500 (9.17)	.752 (23.09)	.759 (20.76)	.546 (11.11)	.748 (21.75)
POLITYAVE		.901 (3.30)			1.01 (4.26)	
F test	572.40		375.80	576.11		340.17
R <sup>2</sup>	.62		.62	.64		.63
Wald test		298.36			369.56	

T-ratios in parentheses. Number of observations:  $NT = 342$ . *POLITY* is the proxy for democracy, *GDP* is income per capita, *EDUC25* is the share of those who are 25 or over with primary education and *URBAN* is the share of urban population. FE is the Fixed Effects, CCE is the Common Correlated Effects and FE-IV is the Fixed Effects with Instrumental Variables estimators.

In Table Three we follow the same procedure as above, however we now include constraints on the executive after independence (*XCONST*) on the right hand side of those equations in order to test for the critical junctures hypothesis as well. The contemporaneous and lagged estimates of income per capita on democracy are all positive and mostly statistically significant. The *EDUC25* and *URBAN* estimates are less clear-cut this time though. The lagged dependent variable keeps its positive and mostly significant role, or its persistence over time.

In addition, the *XCONST* estimates are mostly positive (the critical junctures hypothesis would predict that higher constraints on the executive right after independence in former colonies would have a positive effect on contemporaneous democracy), however they are far from being statistically significant. These estimates, and bearing in mind that income is positive and significant against democracy, puts the critical junctures hypothesis in difficult terrain.

It is worth mentioning that the cross-section averages of the dependent variable introduced in the CCE regressions are significant (columns two and five), which suggest that common factors are important in the region, or that the presence of democracy in the neighborhood might spill over to other countries. In addition, for the FE-IV estimates, the identifying instruments are statistically significant in the first-stage regressions as well as the  $F$ -test for joint significance, which minimise the issue of weak instruments (available on request).

Table Three: FE, CCE and FE-IV Estimates, South America, 1970-2007.

POLITY	Dynamic Models					
	FE (1)	CCE (2)	FE-IV (3)	FE (4)	CCE (5)	FE-IV (6)
GDP	.387 (2.17)	.595 (2.16)	.428 (1.74)			
GDP <sub>1</sub>				.332 (1.69)	.569 (2.89)	.572 (2.22)
EDUC25	1.50 (2.21)	-1.16 (-1.07)	1.84 (1.44)	1.13 (1.57)	-1.00 (-1.09)	1.96 (1.63)
URBAN	.231 (.84)	4.19 (.35)	.219 (.90)	.224 (.76)	5.09 (.44)	.120 (.47)
XCONST	.879 (1.12)	-.027 (-.12)	.165 (1.27)	.158 (1.19)	.139 (.80)	.132 (.99)
POLITY <sub>1</sub>	.879 (15.22)	.041 (.14)	.874 (17.75)	.886 (13.22)	-.073 (-.29)	.874 (17.65)
POLITYAVE		.763 (3.20)			.870 (3.51)	
F test	162.15		161.93	160.95		156.76
R <sup>2</sup>	.80		.79	.82		.76
Wald test		19.49			177.35	

T-ratios in parentheses. Number of observations:  $NT = 342$ . *POLITY* is the proxy for democracy, *GDP* is income per capita, *EDUC25* is the share of those who are 25 or over with primary education, *URBAN* is the share of urban population and *XCONST* are the constraints on the executive after independence. FE is the Fixed Effects, CCE is the Common Correlated Effects and FE-IV is the Fixed Effects with Instrumental Variables estimators.

In Table Four we include in the regressions, alongside income, education and urbanisation, the variable *XCONST5* which is the five-year averages of constraints on the executive since independence in each country as an extra test for the critical junctures hypothesis. *XCONST5* presents mostly positive estimates, however, similarly to the *XCONST* estimates reported above, those estimates are not statistically significant either. These not so clear estimates, once again, leave the critical junctures hypothesis in a difficult terrain in comparison to the modernisation hypothesis.

In addition, income keeps its positive and mostly significant effect on democracy (which is

extra evidence for the modernisation hypothesis), and education and urbanisation present some positive and significant estimates as well. The lagged dependent variable confirms the fact that political regimes become persistent over time.

Moreover, the cross-section averages of the dependent variable introduced as an additional regressor in the CCE regressions are significant, indicating that common factors and spillovers are important in the continent. In the FE-IV first-stage regressions the identifying instruments are statistically significant, and the  $F$ -test for joint significance rejects the null (available on request)<sup>7 8</sup>.

Table Four: FE, CCE and FE-IV Estimates, South America, 1970-2007.

POLITY	Dynamic Models					
	FE (1)	CCE (2)	FE-IV (3)	FE (4)	CCE (5)	FE-IV (6)
GDP	.334 (3.43)	1.66 (2.08)	.333 (1.79)			
GDP <sub>1</sub>				.294 (2.31)	1.58 (1.38)	.348 (1.84)
EDUC25	4.22 (2.16)	3.91 (1.55)	4.46 (3.16)	4.06 (2.05)	3.99 (1.38)	4.57 (3.24)
URBAN	.566 (1.69)	-3.33 (-1.07)	.551 (1.56)	.542 (1.57)	-1.41 (-.44)	.464 (1.24)
XCONST5	.047 (1.41)	-.107 (-1.07)	.051 (.87)	.049 (1.50)	-.098 (-1.36)	.059 (1.00)
POLITY <sub>1</sub>	.762 (15.13)	.430 (4.28)	.760 (18.40)	.768 (13.88)	.439 (4.23)	.760 (18.20)
POLITYAVE		.691 (2.28)			.741 (2.80)	
F test	289.92		163.47	288.15		157.32
R <sup>2</sup>	.66		.66	.68		.67
Wald test		52.31			60.87	

T-ratios in parentheses. Number of observations:  $NT = 342$ . *POLITY* is the proxy for democracy, *GDP* is income per capita, *EDUC25* is the share of those who are 25 or over with primary education, *URBAN* is the share of urban population and *XCONST5* are the five year averages of the constraints on the executive since independence. FE is the Fixed Effects, CCE is the Common Correlated Effects and FE-IV is the Fixed Effects with Instrumental Variables estimators.

Lastly, given data availability, we conduct a simple exercise in which we make use of historical data covering the period between 1945 and 1969. For this exercise we acknowledge the fact that we have less data, for instance, Guyana is not in the sample for lack of data, and data on human capital and urbanisation are scarce for the period, and therefore not used. Nevertheless, we run simple dynamic regressions with GDP per capita against democracy in a period which the continent was not only poorer than in the 1980s and 2000s, but also, coincidentally enough,



much more unstable politically. In addition to the modernisation hypothesis, we test for the critical junctures hypothesis by introducing the variables  $XCONST$  and  $XCONST5$  on the right hand side of those equations as well.

Firstly though, for the sake of clarity, we provide in Figure Three the OLS regression line between democracy and income, and this initial visual inspection of the data suggests that during the 1945-1969 period there was no positive relationship between income and democracy in the continent, or to put it another way, this initial inspection suggests that in a period in which the continent was poorer, the lack of development played a role on the political regime instability seen in the region (or on the lack of survival and consolidation of democracy).

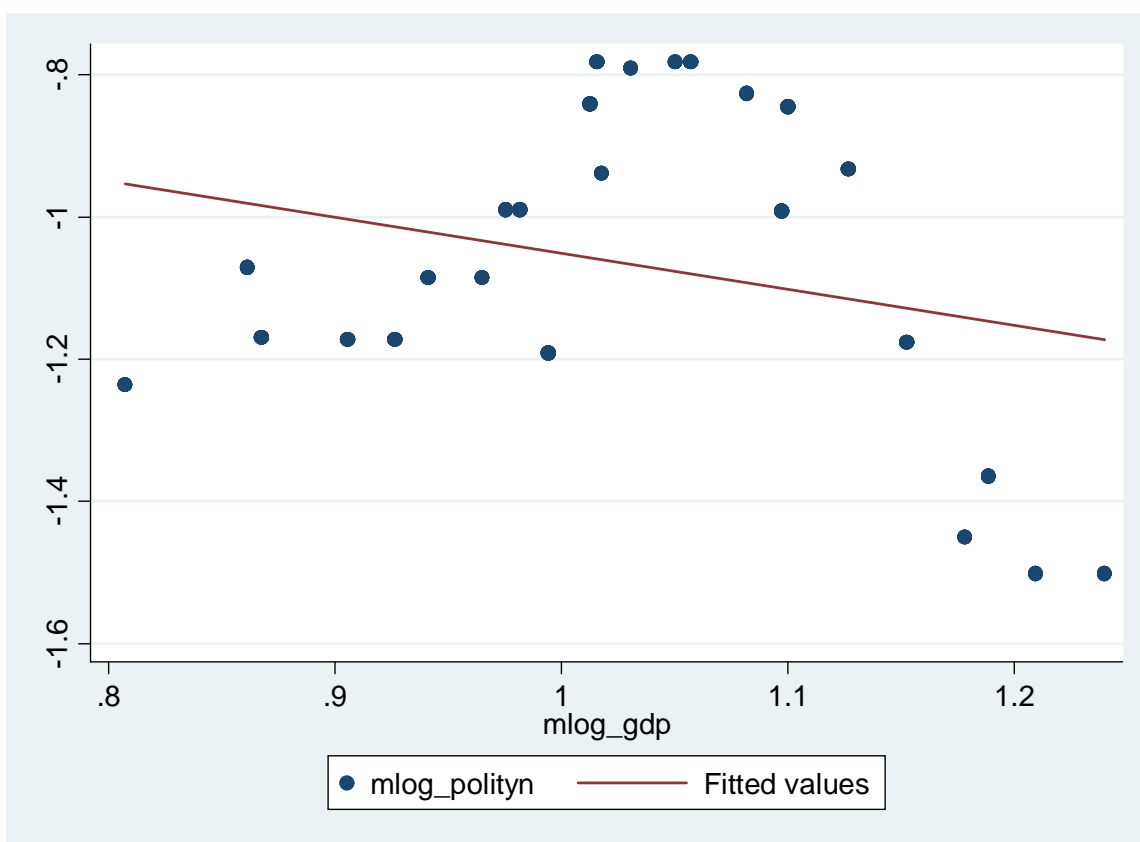


Figure 3: OLS regression line, democracy and income per capita, South America, 1945-1969. Sources: Polity IV and Historical Statistics of the World Economy files.

Secondly, in the first panel of Table Five we report the results regarding the modernisation hypothesis on its own, and most  $GDP$  estimates are, in fact, negative, however not statistically significant. The lagged dependent variable is positive and significant, which indicates regime persistence over time. Basically, these  $GDP$  estimates suggest that during a period in which the continent was poorer than, for instance, in the 1990s, the democratic (and not so democratic)

institutions were not related to income or development.

Thirdly, in the second and third panels of Table Five we include  $XCONST$  and  $XCONST5$  on the right hand side of those equations in order to test for the critical junctures hypothesis. To put it simply,  $XCONST$  and  $XCONST5$  are never significant against democracy. Essentially, during the 1945-1969 period, one would suggest that because the continent was by far poorer than in the 1990s the link between income and democracy is not as clear cut as in the latest democratisation wave affecting the continent. That is exactly the case. To illustrate, Brazil implemented democratic institutions in 1946 and a *coup* took place in 1964, Argentina had a fairly democratic regime between 1957 and 1965, and Peru between 1956 and 1967, to mention a few. Needless to say that all those democratic experiences of the 1950s came to an abrupt end in the 1960s and beginning of the 1970s.

Moreover, the averages of the dependent variable in our CCE regressions are less clear-cut this time (perhaps illustrating the political instability at the time with different regimes alternating in power), and the instruments in the first-stage regressions are different from zero as well as the  $F$  tests for joint significance, which minimise concerns on weak instrumentation (available on request)<sup>9</sup>.

Table Five: FE, CCE and FE-IV Estimates, South America, 1945-1969.

POLITY	Dynamic Models					
	FE (1)	CCE (2)	FE-IV (3)	FE (4)	CCE (5)	FE-IV (6)
GDP	-.353 (-1.47)	.348 (0.42)	-.370 (-1.73)	.286 (.93)	-.237 (-.63)	.214 (.79)
XCONST				.276 (1.39)	.788 (.83)	.266 (1.38)
POLITY <sub>1</sub>	.845 (15.28)	.301 (2.96)	.845 (18.95)	.463 (3.85)	.253 (1.59)	.469 (3.81)
POLITYAVE		.628 (1.18)			1.09 (.81)	
F test	265.00		185.93	6.55		6.36
R <sup>2</sup>	.81		.81	.44		.45
Wald test		8.79			2.33	
POLITY	FE (7)	CCE (8)	FE-IV (9)			
GDP	-.089 (-.92)	1.69 (1.23)	-.240 (-.89)			
XCONST5	.077 (1.20)	.167 (1.19)	.078 (.88)			
POLITY <sub>1</sub>	.838 (9.39)	.603 (3.73)	.840 (14.91)			
POLITYAVE		.852 (2.13)				
F test	40.85		78.40			
R <sup>2</sup>	.86		.84			
Wald test		22.66				

T-ratios in parentheses. Number of observations:  $NT = 200$ . *POLITY* is the proxy for democracy, *GDP* is income per capita, *XCONST* are the constraints on the executive after independence and *XCONST5* are the five year averages of the constraints on the executive since independence. FE is the Fixed Effects, CCE is the Common Correlated Effects and FE-IV is the Fixed Effects with Instrumental Variables estimators.

In a nutshell, these dynamic panel time-series estimates suggest that the exogenous version of the modernisation hypothesis holds in South America, or to put it differently, as predicted by Lipset (1959) and further elaborated by Przeworski and Limongi (1997), a certain minimum level of income and development has been of paramount importance in keeping democracy alive and well in the region for the last thirty years or so. Moreover, Gassebner, Lamla and Vreeland (2012) use extreme bounds analysis to report that income is a robust determinant of democracy survival. Coincidentally enough, contemporaneous income in the region is higher than in the first half of the 20<sup>th</sup> century, or even right after WWII, periods in which democratic institutions were implemented a number of times in the region, however to no avail. For instance, the GDP per capita for the whole region in 1930 was G-K\$ 1,913, G-K\$ 2,304 in 1945, G-K\$ 5,891 in 1980

and G-K\$ 6,418 in 2000, which illustrates, the slowly but surely, long-run development that the region has seen during the 20<sup>th</sup> century. Essentially, and keeping in mind that we make use of different data sets, specifications and estimation procedures, before this latest wave of political liberalisation, democracy had never set foot in the region for such a long time as currently.

Also of importance, when we test for the critical junctures hypothesis, put forward by Acemoglu, Johnson, Robinson and Yared (2008 and 2009), we are not able to provide any hard evidence for the prediction that a particular structural and institutional change, or shock, happening in the more distant past would affect the development of democracy later on in time. Along those lines, one would argue that those countries after independence simply maintained the same institutional framework implemented by the Portuguese and Spanish, and therefore the critical juncture would not be that critical after all (*e.g.*, Brazil achieved independence in 1822, but kept the Portuguese royal family in power until 1889, when it became a republic). Moreover, some would argue that transitions to democracy do not depend on the distant past, but on actions by particular groups in society (Przeworski and Limongi (1997)).

Consequently, we manage to provide even more evidence for the modernisation hypothesis, which is of considerable importance for a region that has been clearly maturing economically and politically in recent times. Along those lines, the very fact that the likes of Lula, Morales, Correa and the Kirchners have been able to be elected, sometimes reelected, and most important of all, survive their terms in office is perhaps further (anecdotal) evidence of the process of political and economic maturing affecting the continent.

All in all, these results suggest that income and development matter for the consolidation of the current wave of democratisation, but they did not for the wave of democratisation experienced right after WWII. This is an important point in the sense that the levels of development in the continent now are higher than in the 1950s, which is an indication that not only the Lipset's hypothesis holds in South America for this latest episode of democratisation, but also that the claim by Przeworski and Limongi (1997) on the importance of development for the very consolidation of democracy is alive and well in the continent.

### **III. Final Observations**

In this paper we have investigated the modernisation hypothesis, yet again we admit, however this time specifically the latest South American wave of democratisation affecting the region in the last thirty years or so. The results, based on dynamic panel time-series data

analysis, indicate that the modernisation hypothesis, which highlights the importance of income and development for democracy to consolidate itself, is alive and well in the region. Moreover, putting the argument upside down, we find evidence (by not having solid statistical evidence) for the hypothesis for the period between 1945 and 1969, a period in which the continent was by far poorer than in the 1990s and democracy an elusive concept in the continent. In addition, we test for the critical junctures hypothesis, or the role of the institutions implemented after independence in those countries and whether they would play any role in later democratisation processes, however, as interesting as it is, we are unable to find any concrete evidence for it.

The importance of this study is that with panel time-series analysis we have been able to specifically study the South American case, with all its developmental idiosyncrasies, without having to incur in generalisations which are not always warranted (in particular about the role of constraints on the executive after independence), nor to treat the region either as a dummy or as an outlier to be removed from the sample. With that we have been able to further our comparative understanding of the recent history of the region in terms of development and democracy during an eventful period of its history, which might also be of use to understand the importance of income on the current wave of democratisation affecting particular Arab countries. All in all, the modernisation hypothesis holds in South America, at least for the period 1970-2007, and there is no reason to believe that it will not hold in other regions as well, as long as a particular level of development is in place.

Future research can be extended to further disaggregations and comparisons. For instance, the wave of democratisation which affected sub-Saharan Africa shortly after independence in the 1960s can be studied as well as the transition economies from eastern Europe which have been through important political and economic structural changes in the last twenty years or so. Moreover, when we look at the statistical correlations and also to some of the regressions results, we can perhaps speculate that (the low) constraints on the executive after independence might be affecting contemporaneous urbanisation and education instead of democracy. This issue deserves more attention. Furthermore, assuming that democratisation in Argentina was triggered by the *fiasco* in the Falklands (Malvinas) war, announced well in advance by former president Figueiredo in Brazil, and decided in a plebiscite rather accidentally in Chile, understanding the determinants of those democratic transitions would be an interesting path to follow. Along those lines, how the cold war influenced the democratisation after WWII and how it affected the collapse of democracy in the 1960s is also an interesting research avenue.

Essentially, perhaps the main lesson from the above analysis is the need for a return to the basics in terms of understanding successes and failures of democratisation processes, and the role and relevance of economic development in keeping democracy alive. This is interesting in itself, since the lesson, or the main implication, coming from the results is the fact that democracy seems to be a political arrangement which thrives only when there is a particular level of development already in place, and as a counterfactual the traumatic experiences of South America in the 1950s and 1960s, sub-Saharan African in the 1960s and Iraq now unfortunately come to mind. Hence, it seems that there is very little added-value in implementing particular democratic institutions in places which are simply not ready for the complexities of a new and demanding political regime, which highlights the need for development so that democracy can be enjoyed to its full.

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## Notes

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<sup>1</sup>It can also be argued that, because of the lower levels of income right after WWII, development itself was not the main determinant of the democratic transitions taking place in the more distant past in the continent. In fact, some would suggest that external factors (*e.g.*, the cold war) might have played a role on political regime characteristics in the continent.

<sup>2</sup>It is important to mention that in the political science literature the debate between what causes the transition to and the survival of democracy is fierce. This is perhaps because in Lipset's own words, "democracy has *emerged* out of these conditions, and has become *stabilized* because of certain supporting institutions and values, as well as because of its own internal self-maintaining processes."

<sup>3</sup>For instance, Barro (1999) includes dummies for former Portuguese and Spanish colonies in his regressions.

<sup>4</sup>For instance, Gasiorowski (1995) argues that high inflation played a role in the democratic transition of the 1980s in his sample of 97 developing countries. However, Bittencourt (2012) uses a sample of hyperinflationary South American countries to suggest that the macroeconomic crises of the 1980s did not cause the democratic transition in the region.

<sup>5</sup>An alternative would be the POLS estimator, however it suffers from a heterogeneity bias in such a dynamic panel time-series framework (Smith and Fuertes (2010)).

<sup>6</sup>In addition, Bond (2002) argues that GMM-type estimators are not an alternative under  $T > N$  for the overfitting problem.

<sup>7</sup>It is worth mentioning that within the FE-IV framework, we experiment with different lag structures of the instruments (*e.g.*, two, three and four lags) and the results are similar in nature to the ones reported. Available on request.

<sup>8</sup>We also populate, for robustness sake, these regressions with additional control variables, such as inflation and inequality, variables which one would deem important for the South American context. However, the results are quantitatively and qualitatively equivalent to those re-

ported above. Available on request.

<sup>9</sup>For the sake of space we do not report the lagged income estimates against democracy, however they follow the same pattern as those reported in Table Five. Available on request.