Reconsidering the modernization hypothesis: The role of diversified production and interest-group competition

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The Role of Diversified Production and Interest-group Competition

Abstract

The modernization hypothesis attributes democracy to higher incomes. The hypothesis has been controversial with claims of no relationship or opposite causality. Using data on a large sample of countries from 1995 to 2015, we show empirically that the hypothesis is valid by studying the role of diversified production and interest-group competition. Production diversification increases income and is associated with emergence of competing organized interest groups representing the different diversified sectors. The interest-group competition underlies democracy by restraining rent seeking for benefits that would otherwise be sought through single-decision-maker authoritarian government.

1. Introduction

The modernization hypothesis proposed by Lipset (1959) is that high incomes cause democracy. The hypothesis has been controversial. We present a new view on the hypothesis, based on production diversification as underlying diverse competing organized interest groups. As Olson (1965) emphasized, there are costs in organizing interest groups, in particular because of free rider problems in contributions to the common objective of the group. We view the number of organized interest groups to be determined endogenously and increase with countries' incomes. As the number increases, rents to each group fall because of a reduction in the share of public benefits (for example, financial transfers) that can be awarded to each organized group and because groups exert a countervailing influence on one in rent seeking through public finance and public policy. As in the original modernization hypothesis, our causal relation is from income levels to political institutions, and not vice versa, as in the neo-institutionalist hypothesis (see Acemoglu et al. 2008). We propose that increasing per capita income encourages democracy when associated with broad diversification in increasing production and a multiplicity of organized interest groups. Because these conditions are absent, democracy encounters difficulties in becoming established in specialized commodity-exporting countries. For example, banana republics tend not to be democracies and nor are the Arab oil-producing states. Venezuela is a case of reversal, from democracy to autocratic dictatorship, with organized diversified interest groups disappearing as dictatorship took further hold. The paper is organized as follows. Section 2 surveys the debate on the modernization hypothesis. Section 3 describes our new version of the modernization hypothesis based on economic diversification and interest groups. Section 4 sets out our empirical evidence. The conclusions offer suggestions for further research.

2. The modernization hypothesis

The modernization hypothesis is that economic development engenders social changes through above all a higher level of education and the emergence of a sizeable middle class (Lipset 1959; McCleary and Barro 2006; Paldam and Gundlach 2009, 2012, 2013ss). The middle class plays a leading role in keeping down social conflict and marginalizing extremist groups. A higher level of education underlies belief in democratic values and support for democratic institutions. Literacy promotes greater ability on the part of citizens to judge the actions of governments. As a converse proposition, Hillman (2007) observes that autocrats avoid having a middle class because of demands for accountability and transparency in government and democracy. The modernization hypothesis has

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been supported by empirical studies based mainly on cross-section analyses.[1] These studies have been the object of various criticisms.[2] In particular, Acemoglu et al. (2008, 2009) using a panel estimate and allowing for country and time fixed effects made the claim that there is no relationship between income and democracy. Their conclusions were similar regarding the relationship between education and democracy.[3] They in turn have been criticized on the grounds that the period they considered is subject to Cold War influences and is excessively short.[4] Other studies have shown evidence of a positive relationship between income and democracy when different econometric methodologies are deployed.[5]

We focus on sources of income. Boix and Stokes (2003) and Boix (2003) found that the level of economic development, together with asset mobility and income distribution, influences the emergence of democracy. Resistance by the elite to increased democracy is high if the elite has low-mobile assets such as land and houses. In the model of Boix it is assumed that natural resources are owned private individuals. In fact, especially after the second world war, resources, especially oil, were nationalized. Rentier states that derive a large part of income from external rents emerged (see Ross 2001). The rentier state is exemplified by commodity-exporter countries. There are questions. Why has democracy remained solid when the discovery of natural resources occurs after a process of industrialization, as was the case in the Netherlands, Norway, and most recently Israel and Cyprus? Why does democracy have difficulty in emerging and consolidating in low-income countries lacking in natural resources? Why is democracy in some resource-rich countries fragile and unstable?

We propose that answers may be based not so much on the nature of assets and the income they yield as on the structure of income sources through the degree of production diversification and formation of interest groups.[6] As Demsetz (1982; p. 27) writes: "One of the most important consequences of the industrialization of the West has been to increase specialization of production and employment. This has created new and more numerous highly organized interest groups …". It has been shown empirically that economic development in resource-poor countries is accompanied by both a growing degree of production diversification and a significant increase in the number of organized interest groups. See, in particular, Murrell (1984) and Bischoff (2003). Taking as reference the best known survey on interest groups, the World Guide to Trade Association, in 2002 (the last

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[1] See, among others, Inglehart (1997), Barro (1999), Boix and Stokes (2003) and Glaeser et al. (2007).
[2] See among others Przeworski et al. (2000).
[3] See Acemoglu et al. (2009).
[4] See in particular Boix (2009) and Benhabib (2011).
[5] See, for example, Heid et al. (2012), Brukner and Ciccone (2011), Moral-Benito and Bartolucci (2012) and Paldam and Gundlach(2018)
[6] That is social groups wich share the same economic interests.

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year in which the survey data are available) the per country number of interest groups was on average 1,239 for OECD countries and 105 for non-OECD countries. In the same year, the (increasing) index of democracy POLITY2 from Project Polity IV was on average equal to 9.7 for OECD countries and 1.6 for non-OECD countries (see Coates and Heckelman 2003). On the basis of this evidence, we adhere to the pluralist view of Bentley (1908), Truman (1951) and Dahl (1971), according to which competition among organized interest groups promotes democracy. The broader the spectrum of competing interest groups, the higher is then the level of democracy.[7]

As noted by Olson (1965), there are costs including free-rider problems involved in group organization. The costs result in organized and non-organized interest groups. As income levels increase, the number of interest groups able to bear the costs of organization increases. As Mitra (1999) suggests, a threshold can only be reached by interest groups with a certain level of income. Hence:

Proposition 1: As per capita income rises, the number of organized groups grows, and there is an increase in the level of democracy.

The proposition is consistent with Moore's (1966) view that democracy emerges and consolidates where there is a large middle class. In fact, this class enlarges as the number of organized interest groups increases. Product diversification also allows for high social mobility that reduces distributional conflict (see Leventoglu et al. 2005). Of course, the level of democracy is conditioned also by non-economic factors. Totalitarian regimes impose supreme values (Bernholz 2017). Think, for example, of Germany under national socialist ideology or Muslim-majority societies that have been shown not to be conducive to democracy (Potrafke 2012). Proposition 1 does not imply a limit to interest groups bearing the costs of organizing themselves. When seeking their own rents, organized groups also oppose the attempt by other groups to extract rents.[8] The threat from other organized interest groups prompts an interest group to organize and countervail other interest groups. Hence:

Proposition 2: Democratic regimes consolidate and survive only when there exists a broad range of organized interest groups which, also by forming coalitions, can exert forms of countervailing political power.

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[7] For a similar view, see Gylfason (2017) and Kolstad and Wiig (2018).
[8] In usual models of political influence (Peltzman 1976; Hillman 1982; Grossman and Helpman 1994), interest groups are competing and do not form coalitions. See however Hillman and Ursprung (1992) who describe interest group coalitions forming with environmentalists.

3. Income, diversification and democracy: empirical evidence

Both the modernization hypothesis and Acemoglu et al.'s neo-institutionalist approach recognize that there is a close correlation between the level of per capita income and the level of democracy. These hypotheses differ, however, when it comes to the causal link between these two variables. The existence of a strong correlation between per capita income and level of democracy is evident when we compare democracy indices and per capita income for a sample of 116 countries, i.e., all those countries with a population of 3 million or more inhabitants. Table 1 shows the value of per capita income and the democracy index at different percentiles of the economic diversification variable for the countries considered in 2015.

In order to capture the degree of economic diversification we use the index of export concentration estimated by UNCTAD (CONC) which has been continuously available since 1995.[10] This index measures (at country level) the degree of concentration of goods exported. It indicates whether a large share of a country's exports is accounted for by a small number of commodities or, conversely, whether its exports are well distributed among many products. It is computed using the Herfindahl-Hirschman index (HHI) of the product concentration of merchandise export.[11]

Table 1 shows that higher levels of per capita income correspond to the higher levels of democracy measured by two continuous indices of democracy: one calculated by Polity IV (POLITY2), and the other one calculated by Freedom House (FREEDOM). POLITY2 captures the regime authority spectrum and ranges from -10 (hereditary monarchy) to +10 (consolidated democracy). FREEDOM

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[9] See Pittaluga and Seghezza (   ).

[10] In order to measure the economic diversification of a broad sample of countries it is best to use an export diversification index rather than an index of diversification of output, since for many developing countries data about output structure are limited and inexact. On this point, see World Bank (2017). In addition it must be considered that certain regimes may deliberately pursue either a policy of expanding public services (one might think, for example, of the expansion of current expenditure by certain autocratic regimes) or of creating uncompetitive state-backed industrial enterprises (for example, the policies of import substitution industrialization adopted in some Latin American countries from the 1950s until the 1980s).

[11] It should be noted that in 2002 the value of this index was 0.128 for OECD countries and 0.281 for non-OECD countries. In the same year, as already highlighted on p. 8 on the basis of the World Guide to Trade Association, the number of interest groups was significantly higher for OECD countries than for non-OECD countries.

is based on a score that represents the levels of political rights and civil liberties ranging from 1 (most free) to 7 (least free).

Table 1 – Diversification, income and democracy

CONC	POLITY2	FREEDOM	GDP per CAPITA
CONC<10th	8.6	1.7	26629
25th<CONC<50th	4.7	3.2	14316
50th<CONC<75th	2.1	4.1	11417
CONC>90th	-1.9	5.3	13571

Notes: CONC is an index of export concentration as estimated by UNCTAD. The indices of democracy, POLITY2 and FREEDOM, are in levels. GDP per capita is in thousand USD at 2011 national constant prices.

A vast literature has shown that there is a close link between level of income and production diversification.[12]

However, in a seminal paper, Imbs and Wacziarg (2003) show that there are two main reasons why countries in the early stages of development diversify as they grow. On the one hand, a higher degree of diversification enables a country to lessen the effects of any sector-specific shocks.[13] On the other, an increase in consumer income is linked to a growing preference for the diversified consumption of goods.

The evidence for a close connection between a higher level of income and diversification has been confirmed in numerous subsequent papers.[14] However, once development reaches a high level, countries tend to re-specialize, at the same time as remaining significantly diversified.

The existence of a positive relationship between per capita level of income and diversification of exports (CONC), which can be taken as a proxy for production diversification, is suggested by Table 1. This table also shows that the lowest level of per capita income does not correspond to the lowest level of diversification. On the other hand, Table 1 again shows a linear relationship between the diversification of the economy and the level of democracy.

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[12] See among others Gilles Saint Paul (1992) and Acemoglu and Zilibotti (1997).
[13] See Harrigan (2003).
[14] See, among others, Cador et al. (2011)..

As previously mentioned, the econometric analysis of the modernization hypothesis does not take into account the way income is produced. [15]

In this paper, and according to the hypothesis set out in the previous section, we wish to focus on the political effect of production diversification. A low level of diversification is a hallmark of most countries rich in raw materials, but also of countries characterized by a low level of income and scarcity of raw materials. The assumption is that the obstacles to democratization result from the pressures of only a small number of organized interest groups.

In order to verify the hypothesis according to which production diversification has a positive influence on a country's level of democracy we employ a panel dataset spanning from 1995 to 2015 and including 116 countries, i.e. all countries with more than 3 million inhabitants in 2015. This was decided because it was thought that below a certain size a country's production diversification was necessarily limited. The sample starts in 1995 because that was the year CONC, the UNCTAD measure of export concentration, was introduced.

3.1 Methodology & Data

Estimating the link between income, economic diversification and democracy poses a number of challenges due to the endogeneity of institutions, democracy and trade variables. Since our dependent variable (the index of democracy) is highly persistent over time, we apply the S-GMM estimator (Arellano and Bover, 1995 and Blundell and Bond, 1998). Our econometric equation takes the following form:

(1) $Y_{it} = \beta_0 + \beta_1 Y_{t-1} + \beta_2 X_{it-1} + \varphi_t + \mu_i + \epsilon_{it}$

where Y_{it}, our dependent variable, is the level of democracy (POLITY2), Y_{it-1} is the lagged of the dependent variable capturing persistency, and X_{it-1} indicates a vector of lagged explanatory variables such as: per capita GDP (GDP per capita), import/export diversification (CONC), population (POP) and education (EDU). We include year fixed effects (φ) to control for time-variant shocks over the sample period, while country fixed effects (μ) are differenced out by the S-GMM,[16] and ϵ_{it} is the idiosyncratic error term.

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[15] Very few scholars, such as Fayad et al. (2012), make reference to the rentier state and to Boix's hypotheses and divide national income into two component parts: one derived from natural resources and another that has other origins.
[16] See Roodman (2009).

Table 2 shows summary descriptive statistics of the variable employed in our study. Panel A shows summary descriptive statistics of the dependent variables: the democracy indices POLITY2 and FREEDOM which were described in the previous section. As dependent variables, in addition to these continuous indices of democracy, we also considered two dichotomous indices: BOIX and B&R. BOIX was calculated by Boix et al. (2014); the score is 0 for autocracy and 1 for democracy. B&R has the same score, calculated on the basis of the distinction between autocratic and democratic regimes made by Bjornskov and Rode (2019). The statistical characteristics of the variables are shown in Table A1 in the Appendix. As explanatory variables we use CONC, real GDP per capita (GDP per capita) and population size (POP). Panel B presents summary statistics of the explanatory variables. GDP per capita has been taken from the Maddison Project Database. CONC, as it has been explained in the previous section, is the index of export concentration estimated by UNCTAD.[17] POP is a measure of a country's population and is taken from the Penn World Table database. EDU is the index of human capital, again taken from the Penn World database. Our final sample covers 116 countries over the period from 1995 to 2015.

3.3 Empirical Results

The results from estimating equation (1) are presented in Table 3. The results confirm the strong persistence of the democracy index (i.e., POLITY2), which is statistically significant (at the 1% level), supporting the selection of our S-GMM methodology. While GDP per capita is positive and statistically significant at the 5% level, its impact on democracy is relatively small. Ceteris paribus, an increase in GDP per capita of 10% leads to an increase in the democracy index (POLITY2) of about 0.03. The 23% of variation of democracy between the 25th and the 75th percentile is explained by the difference of GDP per capita between the 25th and 75th percentile relative to the latter variable.

Table 3 - Baseline Results: estimates using the POLITY2 index

VARIABLES	(1) POLITY2	(2) POLITY2	(3) POLITY2
L.POLITY2	0.7498***	0.7545***	0.7516***
	(0.0487)	(0.0451)	(0.0466)
L.GDP per capita	0.3272**	0.0832	0.0630
	(0.1265)	(0.1096)	(0.1093)
L.CONC		-1.0395***	-1.0885***

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[17] There are several country-by-country surveys of interest groups. The best known is the K.G. Saur's *World Guide to Trade Associations*. However, this survey, used in other papers (see, for example Coates et al. 2011), only takes into account a relatively small number of countries and covers a time frame that ends in 1995.

		(0.2568)	(0.2725)
L.POP			-0.0772
			(0.1144)
Cumulative effect of CONC		-4.234**	-4.382**
		(2.101)	(2.143)
Observations	2,296	2,269	2,262
Number of countries	117	117	117
Estimation	System GMM	System GMM	System GMM
AR2	0.189	0.234	0.235
Hansen test	0.253	0.504	0.633
Year Fe	Yes	Yes	Yes

Notes: Dependent variables are expressed in levels. Explanatory variables are expressed in logarithms. L.POLITY2 is the lag of the polity IV democracy index. L.GDP per capita is the lag of GDP per capita in real terms. L.CONC is the lag of the index of export concentration. L.POP is the lag of population. Standard errors are computed using the Windmeijer bias-corrected estimator and clustered at country level. ***, **, and * indicate statistical significance at 1%, 5% and 10%, respectively.

It is interesting to note that when we add the variable indicating economy diversification (CONC), GDP per capita loses its significance, confirming that import and export diversification is an important determinant of democracy development (Column 2). This corroborates the hypothesis advanced in this paper that the higher the degree of diversification, the greater the competition between interest groups and the more likely the process of democratization. The magnitude of the CONC coefficient is economically more meaningful than GDP per capita. A 10% increase in economic diversification (that is, a 10% decrease in CONC) will increase the democracy index by about 0.1. As much as 41% of the variation of democracy between the 25th and the 75th percentile of democracy is explained by the difference in CONC between the 25th and the 75th percentile relating to the latter variable. Even when we add POP, the population variable, in column 3, the coefficient of CONC holds up well in terms of significance level and stable magnitude, while POP is not significant.[18]

3.4 Robustness checks

In this section, we conduct a battery of robustness tests to confirm the validity of the results of the baseline model presented in Table 3. In our first type of robustness check, we consider different sub-samples. Firstly, we removed oil-exporting countries. The rentier state hypothesis holds that democratization is particularly difficult in oil-rich countries. Compared to other commodity-exporting countries, these countries have a higher degree of export concentration and thus show a

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[18] This is in line with the empirical evidence taken from Barro (1999).

high level of CONC. In order to take this point into account we have removed oil-exporting countries from the sample.[19] The results given in column 1 of Table 4 show that the CONC coefficient maintains its significance level with magnitude in line with the baseline coefficients, while POP is not significant or very weakly significant. Secondly, we removed formerly socialist countries from the sample.[20] These countries gave up their socialist regimes or were formed at the moment when the Soviet Union was dissolved in 1991. Some of these countries moved suddenly from an autocratic system to democracy. This could have an influence on the results given in Table 3. The results obtained after these countries were excluded are presented in column 2 of Table 4. They are in line with the baseline. Finally, we excluded from the sample both oil-rich countries and formerly socialist countries. The results of this estimate, shown in column 3 of Table 4, are very similar to those to be found in column 1 and 2.

Table 4 – First type of robustness check: different types of sample

	(1) POLITY2 (Non-oil exporting countries)	(2) POLITY2 (no former socialist countries)	(3) POLITY2 (non-oil exporting and former socialist countries)
L.POLITY2	0.7682***	0.7328***	0.7509***
	(0.0453)	(0.0483)	0.0485)
L.GDP per capita	0.1937*	0.0688	0.2965**
	(0.1119)	(0.1218)	(0.1435)
L.CONC	-0.8331***	-1.1100**	-0.6305**
	(0.2644)	(0.3061)	(0.2798)
L.POP	-0.1025	-0.0773	-0.0845
	(0.1087)	(0.1294)	(0.1203)
Observations	2,042	2,042	1,802
Number of countries	105	105	93
Estimation	System GMM	System GMM	System GMM
AR(2)	0.284	0.235	0.311
Hansen test	0.789	0.633	0.856
Year-Fe	Yes	Yes	Yes

Notes: Dependent variables are expressed in levels. Explanatory variables are expressed in logarithms. L.POLITY2 is the lag of the polity IV democracy index. L.GDP per capita is the lag of GDP per capita. L.CONC is the lag of economic diversification. L.POP is the lag of population. Standard errors are computed using the Windmeijer bias-corrected estimator and clustered at country level. ***, **, and * indicate statistical significance at 1%, 5% and 10%, respectively.

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[19] Specifically, we removed the countries that are members of OPEC (Organization of the Petroleum Exporting Countries), namely, Algeria, Angola, Congo, Ecuador, Iran, Iraq, Libya, Nigeria, Saudi Arabia, Kuwait, Arab United Emirates and Venezuela.

[20] Specifically, Azerbaijan, Belarus, Bulgaria, Czech Repub., Hungary, Kazakhstan, Kyrgyzstan, Poland, Romania, Russia, Ukraine and Uzbekistan.

For the second type of robustness check we employed several alternative indices of democracy. In particular, we use both continuous (FREEDOM) and discrete (B&R and BOIX) variables. This allows us to test indices of democracy that are based on scores different from those employed in the baseline (POLITY2) as well as to check whether our results hold also when we use a dichotomous variable of democracy as a dependent variable. The results presented in column 1 of Table 5 are similar to those obtained using Polity2, as in Table 3, thus further validating our baseline findings.[21] The results of the estimate of eq. (1) using the dichotomous variables are shown in columns 2 and 3 of Table 5. The fact that the CONC variable proves significant and has the expected sign also when a dichotomous index of democracy is used as a dependent variable suggests the need to verify whether, as shown by the Second Proposition, different levels of diversification can have an influence on the transition from autocracy to democracy or vice versa, and on the stability of these regimes when they exist.

Table 5 – Second type of robustness check: different indices of democracy

VARIABLES	(1) FREEDOM	(2) B&R	(3) BOIX
L.FREEDOM	0.7295*** (0.0514)		
L.B&R		0.7446*** (0.0428)	
L.BOIX			0.8933*** (0.0262)
L.GDP per capita	-0.1044** (0.0437)	0.0144 (0.0105)	0.0041 (0.0047)
L.CONC	0.3614*** (0.0888)	-0.0651*** (0.0191)	-0.0235*** (0.0087)
L.POP	0.0517 (0.0414)	-0.0020 (0.0096)	0.0059 (0.0053)
Observations	2,315	2,315	2,315
Number of countries	118	118	118
Estimation	System GMM	System GMM	System GMM
AR2	0.274	0.232	0.340
Hansen test	0.488	0.981	0.824
Year Fe	Yes	Yes	Yes

Notes: Dependent variables are expressed in levels. Explanatory variables are expressed in logarithms. L.FREEDOM is the lag of the Freedom House democratic index. L.B&R is the lag of B&R index. L.BOIX is the lag of BOIX index. L. GDP per capita is the lag of GDP per capita. L.POP is the lag of population. Standard errors are computed using the

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[21] The reader should be aware that since FREEDOM ranges from 1 (most free) to 7 (least free), the interpretation of the coefficients mirrors that of Polity II.

To test this implication of the Second Proposition we used the model proposed by Przeworski et al. (2000) and based on a simple first-order Markov assumption according to which the different processes of transition from autocracy (A) to democracy (D) and vice versa are based on the lagged type of political regime (A or D). On the basis of this model, taking the dichotomous indices BOIX and B&R as a reference, we split the data into two sub-samples: the first relative to the process of transition from autocracy to democracy and containing the data according to which the democracy index has a value of 0 in the previous period, and the second relative to the process of transition from democracy to autocracy and containing the data according to which the democracy index has a value of 1 in the previous period. After building these two sub-samples, we estimated the following two binary Probit models:

(3) $Pr\left(BOIX_{i,t-1} = 0\right) = \Lambda\left(\beta^{AD} x_{i,t-1}\right)$

(4) $Pr\left(BOIX_{i,t-1} = 1\right) = \Lambda\left(\beta^{DA} x_{i,t-1}\right)$

where Λ is the cumulative distribution of the probabilistic function, $x_{i,t-1}$ are the explanatory variables and β^{AD} and β^{DA} are the coefficients of explanatory variables on the transition from autocracy to democracy and from democracy to autocracy, respectively.

Using the same explanatory variables and in reference to the same period and the same countries as in Table 3 we obtained the results to be found in Table 6. From columns (1) and (2) of this table, which refer to the transition from autocracy to democracy, it emerges that CONC is significant and has the expected negative sign both in the case of BOIX and B&R: the transition from autocracy to democracy is more likely when the level of export diversification is high, that is to say, when CONC is low.[22] The results of the estimates in columns (3) and (4), which refers to the transition from democracy to autocracy, are mixed[23]: CONC is significant and has the expected sign only when we use the variable BOIX, on converse CONC is not significant when we use the variable B&R.

Table 6 – Transition from autocracy to democracy and vice versa

Dependent Variable	B&R	BOIX	B&R	BOIX
Explanatory variables		B^{AD}		B^{DA}
Constant	0.5475	3.8084	-2.5310	5.8404
	(1.7566)	(2.0398)	(3.2821)	(2.2228)
L.CONC	-0.4111**	-0.6692***	0.0712	-0.3945**

[22] See among others the case of Paraguay.
[23] See the example of Venezuela as evidenced by Pittaluga and Seghezza (   ).

	(0.1868)	(0.2063)	(0.2652)	(0.1691)
L.GDP per capita	-0.1540	-0.2067**	0.5659	0.4318
	(0.0947)	(0.1025)	(0.1631)	(0.1119)
L.POP	0.0998	-0.0425	-0.0254	-0.4907
	(0.0927)	(0.0766)	(0.1181)	(0.1805)
Obs.				
-with Dep=0	960	991	1239	1222
-with Dep=1	16	16	8	9
Restr. Deviance	163.28	164.29	96.73	106.46
Log likelihood	-77.60	-75.38	-38.73	-41.58
Restr. Log likelihood	-81.64	-82.15	-48.37	-53.23
Iterations	31	35	24	35

Notes: Dependent variable is expressed in levels. Explanatory variables are expressed in logarithm. L.CONC is the lag of CONC.L. GDP per capita is the lag of GDP per capita. L.EDU is the lag of EDU. L.POP is the lag of POP.

These results confirm the hypothesis of the Second Proposition, namely that a high degree of production diversification facilitates the transition from autocracy to democracy.

In the third type of robustness check, we considered the other fundamental idea of the modernization hypothesis, that is to say, the idea that education promotes the emergence and consolidation of democracy. As shown by some scholars,[24] there is a close connection between production diversification and levels of skills and education. Indeed, the low level of production diversification in many resource-rich countries means that the development of human capital is not required.

Conversely, resource-deficient countries must export manufactured goods in order to grow. They require high levels of skill and therefore there is a high demand for education.[25] This, in turn, can stimulate a process of democratization through competition of ideas.

Given that higher levels of diversification imply higher levels of human capital, we decided to test the validity of our estimates by substituting our measure of economic diversification with a measure of human capital (EDU) that is widely used in the literature (Acemoglu et al., 2009). We expect a positive sign of this variable.

Table 8 – Third type of robustness check: education and democracy

VARIABLES	(1) POLITY2	(2) FREEDOM	(3) B&R	(4) BOIX
L.POLITY2	0.6345***			
	(0.0608)			
L.FREEDOM		0.7548***		
		(0.0576)		

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[24] See among others Gylfason (2001) and Birdsall et al. (1997).
[25] See, among others, Matsuyama (1992).

	(1)	(2)	(3)	(4)
L.B&R			0.7229***	
			(0.0440)	
L.BOIX				0.8917
				(0.0231)
L.GDP per capita	-0.5246	0.0611	-0.0171	-0.0066
	(0.3283)	(0.1035)	(0.0148)	(0.0069)
L.EDU	5.0724***	-1.1420*	0.2479***	0.0723**
	(1.3446)	(0.6353)	(0.0654)	(0.0320)
L.POP	0.0195	0.0255	0.0005	0.0046
	(0.1700)	(0.0639)	(0.0090)	(0.0048)
Observations	1,937	1,948	2,159	2,159
Number of countries	98	98	108	108
Estimation	System GMM	System GMM	System GMM	System GMM
AR2	0.182	0.625	0.236	0.308
Hansen test	0.896	0.861	0.019	0.001
Year Fe	Yes	Yes	Yes	Yes

Notes: Dependent variables are expressed in levels. Explanatory variables are expressed in logarithms. L.POLITY2 is the lag of POLITY2. L.FREEDOM is the lag of FREEDOM. L.B&R is the lag of B&R. L.BOIX is the lag of BOIX. L. GDP per capita is the lag of GDP per capita. L.EDU is the lag of EDU. L.POP is the lag of POP. Standard errors are computed using the Windmeijer bias-corrected estimator and clustered at country level. ***, **, and * indicate statistical significance at 1%, 5% and 10%, respectively.

As is clear from the results shown in Table 8, sign, magnitude and significance levels of the explanatory variables are in line with the baseline results in Table 3. In particular, the level of democracy is higher the higher the level of human capital (EDU).

As a final robustness check, we employ an alternative methodology to the S-GMM. Specifically, Table 9 displays ordinary least square (OLS) estimates where we include country and time fixed effects.

Table 9 – Fourth type of robustness check: the OLS estimates

	(1)	(2)	(3)	(4)
VARIABLES	POLITY2	POLITY2	POLITY2	POLITY2 (Non-oil exporting countries)
L.POLITY2	0.7692***	0.9675***	0.9666***	0.9645***
	(0.0283)	(0.0079)	(0.0079)	(0.0088)
L.GDP per capita	-0.1304	-0.0190	-0.0231	0.0079
	(0.2136)	(0.0213)	(0.0216)	(0.0256)
L.CONC		-0.1397**	-0.1592**	-0.1396**
		(0.0583)	(0.0623)	(0.0578)
L.POP			-0.0231	-0.0385*
			(0.0240)	(0.0219)
Cumulative effect of		-4.2984**	-4.7666*	

CONC				
		(2.0991)	(2.188)	
Observations	2,296	2,269	2,262	2,042
Number of countries	117	117	117	107
Estimation	OLS	OLS	OLS	OLS
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Notes: Dependent variables are expressed in levels. Explanatory variables are expressed in logarithms. L.POLITY2 is the lag of the polity IV democracy index. L.GDP per capita is the lag of GDP per capita in real terms. L.CONC is the lag of the index of export concentration. L.POP is the lag of population. Robust standard errors clustered at country level are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5% and 10%, respectively.

The results of Table 9 show that the coefficient of CONC is still statistically significant (although at the 5% level) with sign in line to the baseline results further validating our findings.

Conclusions

Much of the debate on modernization has been empirical in nature. A turning point in this debate came with the contributions by Acemoglu et al. (2008; 2009), which showed that, if time and country fixed effects are taken into account, the influence of income on a country's degree of democracy disappears. Hence the conclusion reached by these scholars that country fixed effects are linked to critical junctures in the history of the respective countries.

The approach taken by Acemoglu et al., similarly to that of most contributions on the modernization hypothesis, regards a country's per capita income as indistinct. Therefore, it fails to distinguish between the production structure of different countries. In this paper, by contrast, we focus on the fact that an increase in a country's income can be associated with growing production diversification or with a low degree of diversification. When a country depends primarily on exports of natural resources, or when it is economically monocultural, its economy is characterized by low diversification. The opposite is the case when higher levels of income are associated with the expansion of different economic sectors.

We assume that only organized groups are in a position to exert pressure on policymakers so as to gain favours and transfers. As income and diversification increase, there is a greater number of interest groups that can bear the costs of organization. In this way they become able to exert pressure. The competition between large numbers of organized interest groups reduces the benefits of being organized. This creates the conditions for a gradual process of democratization.

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The hypothesis illustrated above was tested econometrically. Based on a sample of about 116 countries relative to the period between 1995 and 2015, this analysis shows that when time and country fixed effects are taken into account, a high level of diversification fosters a higher degree of democracy and the transition from autocracy to democracy. Conversely, a low degree of diversification makes democratic regimes more fragile and processes of democratization less likely.

A diversified economy stimulates the introduction of increasingly complex technologies and thus contributes to the attainment of higher levels of education. This process helps explain the close connection between diversification, level of education and level of democracy.

The hypothesis advanced in this paper, and its confirmation in the empirical analysis, offers some policy indications. In particular, democratization processes are facilitated where production diversification is pursued or where it has already been achieved. Where this is not the case, democratic regimes are fragile and unstable. An example of democratic instability can be found in the countries of Latin America, most of which base their economies on the production and export of commodities. By contrast, democracy has remained stable in countries such as the Netherlands and Norway, where a high degree of diversification of the economy has been maintained despite the fact that oil makes for a large share of their exports.

From the previous considerations, the indication emerges that the pursuit of production diversification policies favors democratization processes. The conditions under which these processes are made possible may be subject to further research.

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Appendix

Table 2 - Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Panel A. Dependent variables					
POLITY2	2502	3.4910	6.4786	-10	+10
FREEDOM	2572	3.6010	1.9715	1	7
B&R	2583	0.5687	0.4953	0	1
BOIX	2583	0.4243	0.4943	0	1

Panel B. Explanatory variables

GDP per capita	2479	8.978	1.281	1.946	11.707
CONC	2545	5.504	0.714	3.807	6.891
POP	2428	9.719	1.262	7.385	14.130
EDU	2201	7.722	0.326	6.956	8.225

Notes: Dependent variables are expressed in levels. Explanatory variables are expressed in logarithms. The table is divided into two panels. Panel A shows the dependent variables, that is, some indices of democracy; more precisely, two continuous indices (POLITY2 and FREEDOM) and two dichotomous indices (B&R and BOIX). Panel B shows the explanatory variables: GDP per capita is the GDP per capita in real terms, CONC is the index of export concentration, POP is the population and EDU is an index of human capital.