

# Economic and social factors driving the third wave of democratization<sup>☆</sup>

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**Papaioannou, Elias, and Siourounis, Gregorios**—Economic and social factors driving the third wave of democratization

We identify permanent democratic transitions during the Third Wave of Democratization and the nineties, when many former socialist countries moved towards representative rule. Using political freedom indicators, electoral archives, and historical resources in 174 countries in the period 1960–2005, we identify 63 democratic transitions, 3 reverse transitions from relatively stable democracy to autocracy and 6 episodes of small improvements in representative institutions. We also classify non-reforming countries to stable autocracies and always democratic. We then use the data set to test theories on the prerequisites for democracy in these countries that enter the Third Wave as non-democracies. Examining initially autocratic countries enables us to address issues of sample selection (in the beginning of the sample most developed countries were already democratic) and reverse causality (democracy can be both a cause and a consequence of wealth, for example). Our estimates reveal that democratization is more likely to emerge in affluent and especially educated societies. Economic development and education are also key factors determining the intensity of democratic reforms and how quickly democratic transitions will occur. These results appear robust to controls like the social environment (religion and fractionalization), natural resources, trade openness and proxies of early institutions. *Journal of Comparative Economics* 36 (3) (2008) 365–387. Dartmouth College, 6106 Rockefeller Hall, Hanover, NH 03755, USA; University of Peloponnese, 22100 Tripolis Campus, Greece.

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## 1. Introduction

A vast literature that dates back to Aristotle has tried to understand the determinants of political freedom (Aristotle, 1992). According to the modernization hypothesis, democracy is more likely to emerge and consolidate in educated and affluent societies (Lipset, 1959, 1994). In contrast, Max Weber (1930) and Samuel Huntington (1993) have em-

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phasized the role of the social environment. Religion, culture and fractionalization rather than income are the key determinants of political freedom. Following this presumption many express skepticism on the success of the recent steps towards democracy in many parts of the world. Yet, others argue that oil and natural resource abundance, rather than income or social norms, is the key impediment to democracy in the Middle East and Africa. Moreover, liberal economists, such as Milton Friedman (1962), believed that economic liberalism is the key underlying factor leading to political freedom.

Building on these influential conjectures and the early contribution of Martin Seymour Lipset (1959) on the economic and social preconditions of democracy, many empirical studies have tried to detect the significant correlates of democracy.<sup>1</sup> Recently, the empirical literature has tried to move away from correlations and identify causal relationships (e.g. Acemoglu et al., in press; Glaeser et al., 2004; Lopez-Cordova and Meissner, 2005). The efforts to advance on causality have, however, sidelined important issues of measuring and identifying properly political regimes. For example, most empirical studies on the determinants (or the growth effects) of democracy employ mechanically one of the available political freedom indicators neglecting how these proxies are compiled. Yet, using mismeasured dependent variable weakens the power of the statistical model; it may also produce biased estimates, since the error does not necessarily take the classical form (Munck and Verkuilen, 2002; Bollen and Paxton, 2000).<sup>2</sup>

In this paper we aim to contribute to this literature on both the measurement and the causality front. To do so, we first construct a new data set of political regimes and transitions during the recent “*Third Wave of Democratization*” (Huntington, 1993; henceforth 3rd Wave) and the nineties, when many former socialist countries switched to democracy (some, alongside independence).<sup>3</sup> Our data set construction builds on previous work of Przeworski et al. (1996, 2000) and other researchers (e.g. Golder, 2005) that have codified political regimes during the post Second World War period. We go one step further by addressing some of the limitations of previous codifications and extending the coverage of the political transitions in the period 1990–2005. To achieve this and resolve some of the conceptual, measurement and aggregation problems we exploit multiple measures of political freedom, historical resources, and electoral archives.

Second, we use the newly constructed data set to test the main theories of democratization in those countries that entered the 3rd Wave as non-democratic. This approach stands in contrast to previous work that pools in the estimation always democratic, always autocratic, and transition countries (e.g. Barro, 1999).<sup>4</sup> Pooling contaminates the estimates by reverse causation, since it is not clear if income or education, for example, are causes or consequences of democracy. This problem is magnified since the distribution of political regimes at the beginning of the sample is not random. For example, the richest and more educated countries in the 1950s and the 1960s were all democracies.<sup>5</sup> Studying

<sup>1</sup> See, among others, Barro (1999), Bollen and Jackman (1985, 1995), Londregan and Poole (1996), Boix and Stokes (2003), Muller (1995), and Epstein et al. (2006).

<sup>2</sup> Addressing measurement error is important for many reasons. First, democracy is correlated with other features of institutional development, such as regulatory efficiency, corruption, legal quality (see La Porta et al., 1999). Measuring, thus, carefully democracy is needed if one is to investigate the causes and consequences of each feature of the institutional environment. Second, political freedom indicators aggregate various institutional features, not necessarily related to democracy and electoral norms. Third, testing democratization theories requires the identification of regime switches. Yet, most indicators measure the level of political freedom and do not identify regime transitions. For example, the Polity and the Freedom House indicators by construction do not aim to distinguish democratic from autocratic regimes and thus are not well-suited to study political transitions. Fourth, addressing measurement error is important when one investigates the effect of democratic transitions on economic performance, since using mismeasured explanatory variables yields biased estimates (e.g. Papaioannou and Siourounis, in press).

<sup>3</sup> According to Huntington (1993) “. . . the first wave began in America in the early nineteenth century and culminated at the end of World War I with about thirty countries having democratic regimes. Mussolini’s march in Rome in 1922 began a reverse wave, and in 1942 there were only twelve democracies left in the world. The Allied Victory in World War II and decolonization started a second movement towards democracy, which, however, patterned by the early 1960s when about thirty-six countries had democratic regimes. . . The Third wave began. . . on Thursday, April 25, 1974 in Lisbon, Portugal.”

<sup>4</sup> This problem is less severe in studies that examine the correlates of regime changes (e.g. Przeworski et al., 2000) and the work of Acemoglu et al. (2005, in press) that explores the within country effect of changes in income on changes in political freedom. Yet, the “within” studies fully remove the cross-country variation that is quite important in this context. Since the democracy indicators are (by construction) truncated the “within” studies examine the correlation between income and democracy in countries that experience transitions, while they do not utilize variation in always autocratic and always democratic countries.

<sup>5</sup> Boix and Stokes (2003) make an analogous critique. They address sample-selection using data covering the entire nineteenth and twentieth centuries. Their long-horizon analysis suggests that income is strongly associated with both the likelihood of democratic transition and the consolidation of democracy.

initially non-democratic countries is useful to isolate the one-way effect of income, education, and other factors on democratization. While using predetermined values and focusing on non-democratically governed countries does not fully resolve endogeneity (since there might be long-term trends), this approach is conceptually appealing, since most democratization theories and models examine the conditions of democratic transition in oligarchic societies.

In our analysis we distinguish between five broad theories on the determinants of democracy. Theoretical work emphasizes the role of development and education (e.g. Lipset, 1959; Bourguignon and Verdier, 2000; Glaeser et al., 2007), fractionalization (Aghion et al., 2004), religion (e.g. Huntington, 1993), natural resources (Ross, 2001), economic liberalism (e.g. Friedman, 1962), and early institutions (Acemoglu et al., *in press*) as the main determinants of representative government. We test these influential conjectures by employing various cross-sectional probabilistic models in countries that entered the 3rd Wave as non-democracies. Our estimates reveal that democracy is more likely to emerge and consolidate in developed and especially educated societies. Human capital rich nations experience deeper political reforms and democratization tends to occur earlier. The effect of education in predicting subsequent democratic transitions retains significance even when we control for religion, fractionalization, natural resources, openness, and early institutions. Our analysis shows that natural resource abundance and some religious norms block democratization. We also find that extractive early institutions are correlated with democratization, but to a less extent than education or income. Furthermore trade openness is not systematically linked to democratization during the 3rd Wave.

The paper is structured as follows. In the next section we detail our methodology in constructing the data-set of political regimes and transitions. In Section 3 we lay down the main democratization theories and present descriptive statistics on the main correlates of the 3rd Wave. In Section 4 we estimate multivariate cross-sectional probabilistic models on the likelihood of democracy in countries that entered the 3rd Wave as non-democracies. In the last section we summarize.

## 2. Methodology

### 2.1. Definition and criteria

Coming up with a definition of democracy is not straightforward. Dahl (2000) notes that “*democracy has meant different things to different people in different periods*”; likewise Przeworski et al. (1996) argue that measuring political freedom is “*just too interesting to be resolved by a definitional fiat*.” Thus, in our methodology we do not impose a particular definition, but building on recent work in conceptualizing and measuring democracy (e.g. Munck and Verkuilen, 2002), we try to capture four key aspects of representative government, when classifying political regimes.

The first aspect is “*free, competitive and fair*” elections. The conduct of elections appears in almost all definitions of democracy we came along. Schumpeter (1970), for example, describes democracy as “*... the institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of competitive struggle for the people’s vote*.” Similarly, the choice of leaders through competitive elections is a key ingredient in Lipset’s (1960) definition of democracy “*as the political system which supplies regular constitutional opportunities for changing the governing officials, and a social mechanism which permits the largest possible part of the population to influence major decisions by choosing among contenders for political office*”. We went over many sources to identify relatively fair and impartial elections. This was crucial since in many countries, that all agree are non-democratic, elections do take place but are either marked by fraud or are monopolized by the party in power (Golder, 2005).

Second, we require that there is an actual transfer of power resulting from the elections. As Mainwaring et al. (2000) write “*elected authorities must have the real governing power, as opposed to a situation that in which elected officials are overshadowed by the military or by a non-elected shadow figure*.” Thus, we identify permanent democratization episodes when there is a *de facto* transfer of power to a democratically elected government. In Bolivia, for example, the military did not recognize the outcome of the relatively free and impartial elections of 1980. The elections were recognized two years later when the brutal regimes of García Meza and Celso Torrelio ended. So, 1982 (rather than 1980) marks the transition year to democracy.

Third, we require that there are no sizable parts of the population excluded from the franchise. Using information from Vanhaanen (2003) on electoral participation, we require that at least a third of the population should be eligible for vote. Consequently, South Africa during the apartheid era is classified as non-democracy.

The fourth aspect is regime stability. Huntington (1991) writes “. . . *Stability is a central dimension in the analysis of any political system.*” Thus, we exclude transition episodes where democracy was short-lived. Imposing the stability requirement is in line with most theories of political organization that focus on the determinants and/or the aftermath of permanent regimes.

## 2.2. Sample

We begin with all 208 “countries” from the World Bank’s (2005) World Development Indicators Database. We drop (34) non-independent territories and small states, namely: Andorra, Aruba, Netherlands Antilles, American Samoa, Bermuda, Channel Islands, Faeroe Islands, Greenland, Guam, Hong Kong, Isle of Man, Liechtenstein, Macao, Maldives, Monaco, San Marino, Northern Mariana Islands, Mayotte, New Caledonia, Puerto Rico, French Polynesia, Timor-Leste, West Bank and Gaza, Virgin Islands, Cayman Islands, Marshall Islands, Palau, Samoa, the Solomon Islands, Micronesia, Vanuatu, St. Vincent and the Grenadines, St. Lucia, St. Kitts and Nevis. Our sample, thus, covers 174 countries.

An open question was how to treat the newly established countries that emerged after the fall of the Iron Curtain. These 22 countries are: Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Georgia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Former Yugoslavian Republic of Macedonia (FYROM), Moldova, Russia, Serbia and Montenegro, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Since the Soviet Union, Yugoslavia and Czechoslovakia were classified as non-democracies, we include in the democratization sample those nations that managed to consolidate representative government (the Baltic republics, for example). The new independent states that have not established representative institutions are classified as non-democracies (e.g. Belarus, Uzbekistan; see Table 1 Panel B).

A related issue was how to handle some African countries, which in the early independence years (in the sixties) had democratic constitutions, but quickly turned non-democratic. Benin, for example, was classified according to most sources as democracy during 1960–1962, but after the 1963 military coup that ousted President Hubert Maga moved to autocratic status; similar examples include Congo, Kenya, Uganda, and Nigeria. Since in most of these countries no elections were held, we classify them as non-democracies from the onset.

## 2.3. Algorithm

### 2.3.1. Democracy indicators

We start by analyzing the evolution of the most widely used and with the broadest coverage democracy indicators: the Polity democracy index, the Freedom House political rights and civil liberties indicators, and the Przeworski et al. (1996, 2000) regime classification.

The Center for International Development and Conflict Management at the University of Maryland produces various quantitative measures of political institutions in its Polity project. This database is described in Marshall and Jaeggens (2004) and is based on work by Ted Robert Gurr (Gurr, 1974; Gurr et al., 1990). We focus on the composite democracy index. The index ranges from  $-10$  to  $+10$  with higher values indicating higher levels of political freedom. It reflects the degree of competitiveness in political participation, the openness in the selection of the legislature, and the constitutional constraints on the executive. It also incorporates subjective information on checks and balances to executive powers, the degree of restrictions in electoral participation, and the extent to which the political participation is regulated. Among the available measures, the Polity index is probably the most comprehensive, capturing key aspects of democratic rule in a clear and transparent way. Its main limitation, from our viewpoint, is that this index by construction does not aim to classify political regimes, since it measures the level of political freedom. In addition the Polity index is not available for some small countries.

Based on Raymond Gastil’s (1978) work the Freedom House (2006) (FH) project reports a score of political rights and a score of civil liberties protection. Both measures range from 1 to 7 with lower values indicating a higher level of protection. Data are reported on an annual basis since 1972–1973. FH also designates to each country a trichotomous polity characterization. Countries whose average score of political rights and civil liberties is less than 2.5 are assigned “free,” while those with a greater score than 5.5 are designated as “not free”; countries with an average rating between 2.5 and 5.5 are designated “partly free.” Recent studies in political science (e.g. Munck and Verkuilen, 2002; Mainwaring et al., 2000) show that the FH method is biased against socialist regimes, left-wing governments, and

Table 1

Country sample

Panel A: Base Sample of the Third Wave

Panel A: Base Sample of the Third Wave				Panel B: New Independent States			
Full democratization	Partial democratization	Always authoritarian	Borderline and reversals	Always democratic	Full and partial democratization	Always authoritarian	
Argentina (1983)	Albania (1992)	Afghanistan	Jordan	<b>Borderline</b>	Antigua	Ireland	<b>Full</b>
Benin (1991)	Bangladesh (1991)	Algeria	Kenya		Australia	Israel	
Bolivia (1982)	Djibouti (1999)	Angola	Kuwait	Central African	Austria	Italy	Croatia (2000)
Brazil (1985)	Ethiopia (1995)	U. Arab Emirates	Laos	Republic (1993)	Bahamas	Jamaica	Czech Rep. (1993)
Bulgaria (1991)	Guatemala (1996)	Bahrain	Liberia	Comoros (1990)	Barbados	Japan	Estonia (1992)
Cape Verde (1991)	Indonesia (1999)	Bhutan	Libya	Iran (1997)	Belgium	Luxembourg	Latvia (1993)
Chile (1990)	Lesotho (1993)	Brunei	Mauritania	Nepal (1991)	Belize	Malta	Lithuania (1993)
Dom. Rep. (1978)	Madagascar (1993)	Burkina Faso	Morocco	Niger (1999)	Botswana	Mauritius	Slovak Rep. (1993)
Ecuador (1979)	Malawi (1994)	Burundi	Myanmar	Pakistan (1988)	Canada	Namibia	Slovenia (1992)
El Salvador (1994)	Mozambique (1994)	Cambodia	North Korea		Colombia	Netherlands	
Ghana (1996)	Nicaragua (1990)	Cameroon	Oman		Costa Rica	New Zealand	
Greece (1975)	Nigeria (1999)	Chad	Qatar		Cyprus	Norway	<b>Partial</b>
Grenada (1984)	Paraguay (1993)	China	Rwanda	<b>Reversals</b>	Denmark	Papua New Guinea	
Guyana (1992)	Suriname (1991)	Congo, Dem.	Saudi Arabia		Dominica	Sri Lanka	Armenia (1998)
Honduras (1982)	Tanzania (1995)	Congo, Rep.	Sierra Leone	Gambia (1994)	Fiji	Sweden	Georgia (1995)
Hungary (1990)	Turkey (1983)	Cote d'Ivoire	Singapore	Lebanon (1975)	Finland	Switzerland	Moldova (1994)
Korea, Rep. (1988)	Zambia (1991)	Cuba	Somalia	Zimbabwe (1987)	France	Trinidad & Tobago	FYROM (1991)
Mali (1992)		Egypt	Syria		Germany	United Kingdom	Russia (1993)
Mexico (1997)		Equatorial Guinea	Sudan		Iceland	United States	Ukraine (1994)
Mongolia (1993)		Eritrea	Swaziland	<b>Intermediate</b>	India	Venezuela	Serbia-Montenegro (2000)
Panama (1994)		Gabon	Togo		Kiribati		
Peru (1980)		Guinea	Tunisia	Malaysia			
Philippines (1987)		Guinea-Bissau	Uganda	Tonga			
Poland (1990)		Haiti	Vietnam				
Portugal (1976)		Iraq	Yemen				
Romania (1990)		Seychelles					
Senegal (2000)							
South Africa (1994)							
Spain (1978)							
Thailand (1992)							
Uruguay (1985)							

Panel A gives the base sample countries. Panel B reports the new independent states that followed the separation of Czechoslovakia, USSR, and Yugoslavia. Countries are grouped based on political regimes and transitions during the period 1960–2005. There are seven categories. (1) “Always authoritarian” are those countries that are throughout the sample period autocratic. (2) The “full” democratization group includes countries that abandoned autocratic ruling in the period 1960–2005 and in addition get an almost perfect score in civil rights and political liberties protection. (3) The “partial” democratization group includes countries that abandoned autocracy in the period 1960–2005, but the level of civil rights protection is not perfect. (4) “Borderline democratization” countries implemented political reforms towards democratic rule, but civil liberties and freedoms are still at a very low level. (5) “Always democratic” countries are throughout the sample period democratically ruled. (6) “Intermediate” countries get a far from perfect democratic score but have not experienced a regime change. (7) “Reversals” indicate countries that experienced a political set-back, moving from a relatively stable democracy to autocratic status. Section 2 provides details on our algorithm in grouping countries and identifying political transitions. The Appendix gives a brief description of the transition. The year of democratic transition is given in parenthesis.

closed to international trade countries. FH also tends to assign lower democracy scores to non-US aligned countries. The FH index is quite broad (“maximalistic”), reflecting besides democratic rule, corruption, openness, freedom of the press, and bureaucratic efficiency. Thus, its usefulness in studying democratic rule is questionable since it blends many institutional features, not necessarily related to political freedom.

Przeworski et al. (1996, 2000) construct a binary regime classification index that is *a priori* more appropriate for studying transitions. The index, however, stops in 1990 and does not cover the democratizations that occurred in the nineties.<sup>6</sup> Przeworski et al. apply a minimalist definition of democracy mainly requiring the conduct of contested elections, without however investigating their quality. The Dominican Republic, for example, is classified as democratic in the sixties and seventies, since elections were held in 1970 and 1974. In both elections, however, President’s Joaquin Balaguer power was not seriously contested, since “*the only viable, broad-based opposition party, boycotted both elections to safeguard the well-being of those who would have been their candidates*” (US Library of Congress Country Reports). Likewise, Brazil’s transition to democracy is recorded in 1979, even “*though the head of state was chosen by the state and ratified by an electoral college designed to ensure subservience to the military’s choice*” (Mainwaring et al., 2000). Przeworski et al. also require that a political party can not be in power forever for a country to be classified as democratic. As Acemoglu and Robinson (2006) note, this requirement puts some widely accepted democratic countries, such as Botswana and Japan, in the group of autocratic nations.

After reviewing carefully all indicators, we identify a sudden jump/drop on either of them when:

- (1) The Polity index jumps from a negative to a positive value and vice versa.
- (2) The FH regime status characterization changes.
- (3) The Przeworski et al. classification moves from autocratic to democratic status and vice versa.

To avoid capturing instability we require that the indicators remain in the new status for five years.<sup>7</sup> We also went over other democracy data sets, such as the Vanhaanen (2003) “polyarchy” project that besides data on electoral participation reports a democracy index based on electoral contestability and the Mainwaring et al. (2000) detailed coding of transitions in Latin America.

### 2.3.2. Historical sources

Next, we delved into historical resources to document the events that lead to the changes in the democracy indicators. This helps us understand the nature of each event and spot transitions not reflected in the aforementioned indicators. Our main resources were:

- (1) The Freedom House and Polity Project country reports.
- (2) The 2006 Country Studies/Area Handbook of the Federal Research Division of the United States Library of Congress.
- (3) The Central Intelligence Agency World Factbook.
- (4) The US Department of State’s (2003) “Country Background Notes.”
- (4) Zarate’s (2006) “Political Collections.”
- (5) For some countries where these sources did not have adequate coverage, we used other country-specific sources.

### 2.3.3. Electoral archives

We then went over electoral data sets to identify the exact timing of legislative and presidential elections. Specifically, we utilized (1) Adam Carr’s “Psephos” Election archive; (2) the “Wikipedia: Elections around the World” database; (3) the “Election Results Archive” produced by the Center on Democratic Performance at Binghamton University; and (4) the “Database of Political Institutions” (Beck et al., 2001) that reports data on the competitiveness and the timing of elections. In most cases jointly with the elections there is also an adoption of a constitution that institutionalizes the change of power. The adoption of the new constitution and the elections either coincide or differ

<sup>6</sup> Recently Adam Przeworski has updated the series up to 2002 (data available from: <http://politics.as.nyu.edu/object/przeworskilinks.html>).

<sup>7</sup> Examples of brief spikes in the two democracy indicators that do not represent the institutionalization of representative rule, include Nigeria (in the early eighties), Burkina Faso (in 1978–1979), and Argentina (in the early seventies). Changing the requirement to three, four, six or seven years yields a similar chronology.

by one (two) year(s). In this case we use the latter date. In South Korea (Korea, Rep.), for example, internationally deemed “*free and fair*” elections were held on December 1987. The new democratic constitution that established a multi-party democracy came into effect the following year. We therefore use 1988 as the democratization year.

#### 2.3.4. Intensity of democratic reforms

Besides identifying countries that move in and out of autocratic (and democratic) rule, we categorize transitions based on the intensity of reforms into “full” and “partial” democratizations.<sup>8</sup> To classify a country as experiencing a “full” democratization, we require that *both* the FH status designation is “free” and the Polity score is greater than +7. We applied this strict criterion to minimize self-selection concerns. Examples of “full” democratization include Spain after Franco’s death or Chile after Pinochet’s fall. In “partial” democratization countries, although representative institutions have been established, the level of political liberties has not reached that of “fully” democratized countries. We also identify six borderline cases of democratic transitions, namely Comoros (1990), Iran (1997), Nepal (1991), Niger (1999), Pakistan (1988),<sup>9</sup> and the Central African Republic (1993). In these countries in spite of some progress, political freedom is still at a very low level.

#### 2.4. Democratization data set

Our algorithm yields 63 permanent democratization episodes in the period 1960–2005. From those, 39 incidents are classified as “full” and 24 as “partial” democratizations. We also identified 3 countries, namely Gambia, Lebanon, and Zimbabwe, that experienced a political set-back, moving from a relatively stable democracy to autocratic status (one could also add Pakistan in this list). Non-transition countries are split into three groups: *Stable democracies* are throughout the sample period democratic (e.g. the United States, Sweden, and Japan). *Stable autocracies—always authoritarian* countries are throughout the sample period non-democratically governed (e.g. Afghanistan, Saudi Arabia, and Uganda). *Stable intermediate* are countries with far from perfect democratic institutions that did not experience, however, neither a significant move towards democracy nor towards autocracy. This group includes Malaysia and Tonga (one could add Turkey and Papua New Guinea.) Table 1 lists the classification. In the Supplementary Appendix we report a description of the transition for each reforming country.<sup>10</sup> We also give details on the evolution of the Polity, the FH, and the Przeworski et al. classification around the transition. The Supplementary Appendix Table 1 also compares our classification with the Przeworski et al. (1996, 2000) categorization, the Freedom House trichotomous regime split, and the Polity measure when we use the median value of the index (i.e. zero) to distinguish democratic and autocratic regimes.

**Look-ahead bias** Imposing the stability criterion and categorizing countries based on the intensity of reforms raises concerns of look-ahead bias. We have constructed the data set after observing whether countries reverted back to autocracy. In addition, we assign a “full” democratization status to countries that have managed to reach a perfect level of representative institutions throughout the past 30 years, while at the time of the transition it was far from clear whether this would be the case. For example, we assigned a “full” democratization status to Spain, having observed *ex post* that the transition was relatively smooth. Yet, in the years following General Franco’s death it was not clear whether Spain will transit to democracy and quickly reach a perfect level of political freedom. While look-ahead bias can not be ruled out, it is most likely of minor importance to our empirical analysis that explores the cross-sectional variation.

### 3. Initial conditions and the Third Wave

In this section we discuss the main theories on the determinants of democracy and quantify differences in the main variables stressed as key determinants of democratization using values before the 3rd Wave (mid seventies, when the first transitions occurred). Table 2 reports means and standard deviations for countries that have remained autocratic throughout the sample period (“*always authoritarian*”—column (1)), the group of countries that democratized during

<sup>8</sup> Huntington (1993), who favors a binary distinction for political regimes, explicitly allows for a trichotomous classification.

<sup>9</sup> Pakistan is probably the most difficult country to classify, since it experienced a democratic transition in 1985, but after 1998 it reversed back to autocracy.

<sup>10</sup> The Supplementary Appendix is available at: <http://www.dartmouth.edu/~elias> or <http://econ.uop.gr/~gsiour>.

Table 2  
Descriptive analysis

	Always authoritarian (1)	All democratization (2)	Always democratic (3)	Full democratization (4)	Early democratization (5)				
	Statistics	Statistics	Test of means	Statistics	Test of means	Statistics	Test of means	Statistics	Test of means
<b>Panel A: Modernization Hypothesis</b>									
GDP p.c. in 1975	2297.38 (1927.51) 28	3516.57 (2800.58) 42	1219.19 (565.18) <b>(0.03)</b>	10538.89 (5494.93) 35	8241.51 (997.69) <b>(0.00)</b>	4347.04 (2975.56) 28	2049.65 (670.00) <b>(0.00)</b>	5553.55 (827.26) 14	3256.16 (903.91) <b>(0.00)</b>
Schooling in 1975	1.72 (1.02) 25	3.59 (1.92) 37	1.87 (0.38) <b>(0.00)</b>	6.41 (2.50) 34	4.68 (0.47) <b>(0.00)</b>	4.04 (1.94) 26	2.31 (0.43) <b>(0.00)</b>	4.13 (1.38) 14	2.40 (0.42) <b>(0.00)</b>
Life expectancy in 1975	51.46 (9.98) 51	57.67 (9.73) 49	6.21 (1.97) <b>(0.00)</b>	68.41 (7.45) 41	16.95 (1.81) <b>(0.00)</b>	60.93 (8.70) 32	9.47 (2.08) <b>(0.00)</b>	63.11 (6.85) 15	11.65 (2.25) <b>(0.00)</b>
<b>Panel B: Social Structure Theories</b>									
Ethnic fragmentation	55.04 (26.66) 50	46.96 (25.29) 48	−8.08 (5.25) <b>(0.13)</b>	29.97 (21.45) 41	−25.07 (5.08) <b>(0.00)</b>	41.72 (23.35) 31	−13.32 (5.64) <b>(0.02)</b>	34.41 (22.38) 15	−20.64 (6.90) <b>(0.01)</b>
Religious fragmentation	40.66 (24.17) 51	39.56 (24.69) 49	−1.10 (4.89) <b>(0.82)</b>	47.21 (22.67) 41	6.56 (4.90) <b>(0.18)</b>	34.82 (22.69) 32	−5.84 (5.25) <b>(0.27)</b>	30.59 (19.26) 15	−10.06 (6.02) <b>(0.11)</b>
Muslim share	45.91 (42.51) 51	17.96 (31.35) 49	−27.95 (7.45) <b>(0.00)</b>	2.51 (5.16) 41	−43.40 (6.01) <b>(0.00)</b>	7.74 (22.22) 32	−38.17 (7.13) <b>(0.00)</b>	7.22 (25.63) 15	−38.69 (8.90) <b>(0.00)</b>
Confucian share	9.01 (24.24) 51	4.40 (19.25) 49	−4.62 (4.37) <b>(0.29)</b>	4.05 (18.09) 41	−4.96 (4.42) <b>(0.36)</b>	6.70 (23.63) 32	−2.31 (5.38) <b>(0.67)</b>	1.59 (6.15) 15	−7.43 (3.74) <b>(0.05)</b>
<b>Panel C: Natural Resource Curse</b>									
Oil producer	0.25 (0.44) 51	0.04 (0.20) 49	−0.21 (0.07) <b>(0.00)</b>	0.05 (0.22) 41	−0.21 (0.07) <b>(0.00)</b>	0.00 (0.00) 32	−0.25 (0.04) <b>(0.00)</b>	0.00 (0.00) 15	−0.25 (0.06) <b>(0.00)</b>
Diamond	0.118 (0.330) 51	0.082 (0.277) 49	−0.036 (0.060) <b>(0.55)</b>	0.122 (0.331) 41	0.004 (0.069) <b>(0.95)</b>	0.094 (0.296) 32	−0.024 (0.069) <b>(0.73)</b>	0.067 (0.258) 15	−0.051 (0.081) <b>(0.53)</b>

Table 2 (continued)

	Always authoritarian	All democratization	Always democratic	Full democratization	Early democratization				
	(1)	(2)	(3)	(4)	(5)	Statistics	Test of means		
	Statistics	Statistics	Test of means	Statistics	Test of means	Statistics	Test of means		
<b>Panel D: Liberal Hypothesis</b>									
Trade openness	0.09 (0.27) <i>32</i>	0.14 (0.35) <i>44</i>	0.04 (0.07) <b>(0.57)</b>	0.61 (0.49) <i>34</i>	0.52 (0.09) <b>(0.00)</b>	0.17 (0.38) <i>32</i>	0.08 (0.09) <b>(0.38)</b>	0.29 (0.47) <i>14</i>	0.19 (0.14) <b>(0.17)</b>
Trade share	69.83 (45.93) <i>28</i>	62.00 (54.23) <i>43</i>	-7.83 (11.99) <b>(0.52)</b>	62.26 (44.01) <i>35</i>	-7.57 (11.43) <b>(0.52)</b>	59.38 (58.29) <i>29</i>	-10.45 (13.87) <b>(0.45)</b>	34.59 (28.34) <i>14</i>	-35.24 (11.52) <b>(0.00)</b>
<b>Panel E: Early Institutions Theories</b>									
Executive constraints at independence	0.26 (0.26) <i>49</i>	0.28 (0.28) <i>45</i>	0.02 (0.05) <b>(0.78)</b>	0.66 (0.42) <i>32</i>	0.40 (0.08) <b>(0.00)</b>	0.27 (0.27) <i>29</i>	0.01 (0.06) <b>(0.90)</b>	0.20 (0.18) <i>14</i>	-0.07 (0.06) <b>(0.28)</b>
Independence	0.21 (0.27) <i>51</i>	0.52 (0.34) <i>49</i>	0.25 (0.06) <b>(0.00)</b>	0.53 (0.38) <i>41</i>	0.26 (0.07) <b>(0.00)</b>	0.60 (0.32) <i>32</i>	0.33 (0.06) <b>(0.00)</b>	0.75 (0.28) <i>15</i>	0.48 (0.08) <b>(0.00)</b>
Settler mortality	233.68 (171.48) <i>28</i>	295.11 (632.88) <i>29</i>	61.43 (121.91) <b>(0.62)</b>	67.88 (51.22) <i>17</i>	-165.80 (34.71) <b>(0.00)</b>	283.34 (679.09) <i>18</i>	49.66 (163.31) <b>(0.76)</b>	79.00 (20.78) <i>8</i>	-154.68 (33.23) <b>(0.00)</b>
Population density in 1500	8.53 (17.64) <i>33</i>	2.33 (4.02) <i>35</i>	-6.20 (3.14) <b>(0.06)</b>	3.14 (6.24) <i>18</i>	-5.39 (3.40) <b>(0.12)</b>	1.54 (1.32) <i>21</i>	-6.98 (3.08) <b>(0.03)</b>	1.10 (0.76) <i>10</i>	-7.42 (3.08) <b>(0.02)</b>

The table reports summary statistics and test of means for the main variables proposed by the Modernization Hypothesis (Panel A), Social Structure Theories (Panel B), Natural Resource Curse Theories (Panel C), the Liberal Hypothesis (Panel D), and Early Institutions Theories (Panel E) as major determinants of democratic transitions. All time-varying values correspond to 1975 (before the Third Wave of Democratization).

Column (1) reports descriptive statistics in the “always authoritarian” group (i.e. countries that remained throughout the sample period autocratic). Column (2) reports descriptive statistics in the “democratization” group of countries (i.e. countries that experienced a successful democratic transition in the period 1960–2005). Column (3) reports descriptive statistics in the “always democratic” group (i.e. countries that have been democratically ruled throughout the 1960–2005 period). Column (4) reports descriptive statistics in democratization countries that experienced a full consolidation of democratic institutions in the period 1960–2005 (“Full Democratizations”). Column (5) reports descriptive statistics in the democratization group of countries that democratized before 1990 (“Early Democratizations”). New independent countries that emerged after the collapse of Czechoslovakia, USSR, and Yugoslavia are excluded from the analysis, since these countries were non-existent in the mid 1970s (these countries are reported in Table 1; Panel B).

Mean values, standard deviations in parenthesis and the number of observations in italics are reported for each group of countries. The table also reports tests of mean equality comparing the “always autocratic” with the other four groups. The table reports the difference, the standard error (in parenthesis) and the *p*-value of difference significance (in bold italics). Table 1 reports the country classification. The Democratization Appendix gives a brief description of the democratic transition for each reforming country. The Data Appendix reports detailed variable definitions and sources.

the Third Wave (“*democratization*”—column (2)), and countries that were already democratic before the 3rd Wave (“*always democratic*”—column (3)). In columns (4) and (5) we report descriptive statistics for democratization countries that implemented sizable reforms (“*full democratization*”) and countries that democratized before the nineties (“*early democratization*”). This distinction enables us to investigate whether initial conditions also correlate with the intensity and the speed of reforms. Table 2 also reports a test of mean equality comparing the “*always authoritarian*” with the other groups.<sup>11</sup>

### 3.1. Modernization theory

The modernization hypothesis asserts that economic development and education are the key prerequisites for democracy (Lipset, 1959, 1994). Wealth and education may affect the likelihood of democratization through many channels. First, industrialized and bourgeoisie societies are complex and difficult to govern under a centrally planned system. Second, the ruling class may benefit from democracy and thus will not oppose reforms. Bourguignon and Verdier (2000) build a model where it is in the interest of the elite to promote education and democracy, since democracy fosters human capital accumulation, which in turn spurs growth and minimizes the likelihood of expropriation. Third, education may lead the elite to initiate, rather than oppose, democratization. Lipset (1959) referred to opinion polls that concluded “... the single most important factor differentiating those giving pro-democracy responses to others has been education.” Fourth, Glaeser et al. (2007) build a model where education fosters democracy through socialization and by shaping group incentives. In their set-up democracy requires a wide popular base, but offers weak incentives for its supporters. Oligarchy offers stronger incentives, albeit to a smaller fraction of the population. Since education reduces the costs of political participation it assures that an adequate fraction of the population is engaged in the political process, which in turn promotes democracy. Glaeser, Ponzetto and Shleifer also present survey evidence linking education level and social activities.

- *Reduced Form Hypothesis* [ $H_1$ ]: Other things being equal, democratization is more likely to occur and stabilize in developed and especially educated societies.

There is a significant correlation between the level of education and democracy across countries. In Fig. 1 countries are grouped into five categories of roughly equal number of observations depending on the education level in 1975. Fig. 1 illustrates that among the non-democratic countries with more than four years of schooling, all but Singapore moved to democratic government. In contrast, of the fourteen non-democratic countries with less than one year of schooling, only three (Mali, Benin and Mozambique) implemented democratic reforms. This hints that education was a key driving force behind the 3rd Wave.

In Table 2 Panel A we quantify differences in the main variables stressed by the modernization theory as key determinants of democratization. The test of means in column (2) shows that initially autocratic countries that moved to democracy had more than 50% higher GDP p.c. than countries that remained autocratic. Differences in education are even more pronounced. While countries that have remained autocratic over the past three decades had 1.72 average years of schooling in 1975, countries that managed to opt out from autocracy had on average 3.59 years of schooling. These differences are magnified when we compare the “*always authoritarian*” group of countries (in column (1)) with the sub-samples of “*full*” (column (4)) and “*early*” (column (5)) democratizations. This hints that education may not only affect the likelihood of democratization, but also how fast and deep democratic reforms will be. In Panel A we also tabulate differences in life expectancy across the various group of countries. Using life expectancy accounts for the unavailability of education and income for many countries. In line with the modernization hypothesis, life expectancy was significantly higher in countries that democratized during the 3rd Wave than in countries that have remained autocratic (on average by 6.2 years).

<sup>11</sup> We exclude from our empirical analysis the new independent states that emerged after the fall of Czechoslovakia, Soviet Union, and Yugoslavia (listed in Section 2.2), since these countries were non-existent in the 1970s. The results are similar if we were to include these new countries in the analysis. We also exclude “*borderline democratization*” countries and nations that experienced a reverse transition from the empirical analysis. The results are similar if we include borderline democratization countries in the authoritarian or the democratization group.

Change in democratic institutions	Average Years of Schooling (in 1975)				
	<1.0 years	<2.0 years	<3.0 years	<4.0 years	>4.0 years
Always authoritarian	Nepal <sup>B</sup> , Niger <sup>B</sup> , Sudan, Central African Republic <sup>B</sup> , Sierra Leone, Togo, Afghanistan, Rwanda, Myanmar	Haiti, Algeria, Congo, Dem. Rep., Liberia, Uganda, Tunisia, Egypt, Iraq, Cameroon Iran <sup>B</sup> , Pakistan <sup>B</sup> , Kenya, Congo, Rep.	Syrian Arab Republic, Bahrain, United Arab Emirates, Jordan	Swaziland, Kuwait, China	Singapore
Partial democratization	Mozambique	Bangladesh, Guatemala	Zambia, Malawi, Turkey, Indonesia, Nicaragua	Lesotho, Paraguay	
Full democratization	Mali, Benin	Senegal	Ghana, Honduras, El Salvador, Brazil, Portugal	Dominican Republic, Mexico, Thailand, Bolivia, Ecuador	Peru, South Africa, Guyana, Panama, Poland Philippines, Argentina, Spain, Uruguay, Chile, South Korea, Greece, Hungary
Always democratic	Papua New Guinea	Botswana	India	Jamaica, Colombia, Venezuela, Mauritius	Sri Lanka, Costa Rica, Trinidad and Tobago, Fiji, Italy, Malta, France, Cyprus, Iceland, Ireland, Austria, Finland, Japan, Norway, Germany, Israel, Netherlands, Belgium, United Kingdom, Switzerland, Sweden, Barbados, Denmark, Canada, Australia, United States, New Zealand

The figure groups countries based on average years of schooling before the 3rd Wave (in the vertical dimension) and based on political transitions during the period 1960–2005 (in the vertical dimension). Row (1) reports “*always authoritarian*” countries that have remained throughout the sample period autocratic (including “*borderline democratization*” countries, indicated with <sup>B</sup>). Row (2) reports “*full democratization*” countries that experienced a successful democratic transition in the period 1960–2005 and also get an almost perfect score in civil rights and political liberties protection. Row (3) reports “*partial democratization*” that abandoned autocracy in the period 1960–2005, but the level of civil rights protection is not perfect. Row (4) reports “*always democratic*” countries that are throughout the sample period (1960–2005) democratically governed. Educational attainment statistics come from Barro and Lee (2001). Table 1 reports the country classification. Section 2 reports details on the classification of countries.

Fig. 1. Initial schooling and subsequent democratization.

### 3.2. Social structure

#### 3.2.1. Fragmentation

Influential scholars have emphasized the role of the ethnic and religious composition of the society in political development. Aristotle, for example, argued that democracy is the ideal regime for a society with many ethnic groups, since it is the polity that can best safeguard their liberties. Yet, ethnic diversity can block democratization if it is associated with a polarization of political life (Dahl, 2000). Aghion et al. (2004) formally model the trade-off between

delegation of power and “*policy insulation*” (ex post control of politicians). Their model yields an ambiguous effect of polarization on insulation.

- *Reduced Form Hypothesis* [ $H_2^F$ ]: Ethnic and religious diversity have an ambiguous effect on democratization.

Table 2 Panel B tabulates differences in the ethnic and religious fragmentation of the various groups of countries. The two fragmentation indicators are retrieved from Alesina et al. (2003) and reflect the probability that two randomly selected individuals do not belong to the same ethnicity and religion. Countries that democratized during the 3rd Wave are somewhat less fragmented than countries that have remained autocratic. The ethnic (religious) fragmentation index is 55% (40.7%) for the “*always authoritarian*” group, while 47% (39.5%) for democratization countries. Yet, these differences are statistically insignificant hinting that fragmentation had a small effect during the 3rd Wave.<sup>12</sup>

### 3.2.2. Religion

Many commentators advocate the importance of religious norms in political development. Democratization may be blocked by religions that have a strong hierarchical structure and dogmas characterized by an unchallenged hierarchy. In addition, close links between clergy and the state may impede democratization. Huntington (1993) argues that traditionally strong ties between religious leaders and the State were present in Catholic, Orthodox, Muslim and Confucian countries. These religions tend also to be hierarchical and resistant to change. Huntington also argues that while the Catholic Church decided to abandon its traditional prejudices against representative rule in the mid-seventies, the Muslim clergy decided to re-emphasize its focus on tradition.

- *Reduced Form Hypothesis* [ $H_2^R$ ]: Other things being equal, democratization is less likely in countries where close links between clergy and state exist.

In Table 2 Panel B we tabulate differences in the religious composition. In line with previous studies (e.g. Barro, 1999), there is a significant negative correlation between Muslim share and the likelihood that a non-democratic country will democratize. The difference in the Confucian share between always autocratic and democratization countries is small (4.6%) and statistically insignificant.

### 3.3. Natural resource abundance

Many argue that the real impediment to democratization in the Middle East or Africa is not religion or the lack of development, but their oil-rich soil. Natural resources enable the ruling class to buy foreign and domestic support blocking political reforms. Acemoglu et al. (2004) formalize this intuition and provide illustrative descriptions of Mobutu’s and Trujillo’s “kleptocratic” practices in Congo and the Dominican Republic respectively. Similarly a vast literature in political science has emphasized the negative impact of natural resources (oil, gold and diamonds in particular) on democracy (e.g. Ross, 2001; see also Caselli, 2006).

- *Reduced Form Hypothesis* [ $H_3$ ]: Democratization is less likely in oil-rich and natural-resource abundant countries.

In Panel C we investigate differences in natural resources using a binary indicator that takes on the value one when the country is a main oil exporter and zero otherwise. Thirteen of the fifty-one “*always autocratic*” countries are classified as major oil exporters, while only Indonesia and Nigeria among the forty-nine countries that democratized during the 3rd Wave are major oil-producing countries. This hints that natural-resource abundance played a significant

<sup>12</sup> We also explored differences in the societal composition across “*always authoritarian*,” “*democratization*,” and “*always democratic*” countries employing the Montalvo and Reynal-Querol (2005) polarization indicators. The difference of the polarization with the fragmentation measures is that while the latter increase monotonically with the share of small groups, the former measures the distance from a bimodal distribution of groups (the polarization index reaches a maximum when there are two groups of equal size in a country). The descriptive statistics reveal differences in religious, but not ethnic polarization between “*always autocratic*” and “*democratization*” countries. On average, religious polarization in countries that have remained autocratic is 63%, while the average score in the democratization group is 50%. Yet, once we control for income or education this difference turns statistically insignificant.

role during the 3rd Wave. We also examine the importance of diamond production in blocking political reform using an indicator variable that takes on the value one for countries that produce more than 1% of global output. Roughly 11% (6 out of 51) of “*always authoritarian*” countries are major diamond producers. Yet, there are no significant differences with countries that democratized during the 3rd Wave (column (2)) or “*always democratic*” countries (column (3)). Although, diamonds have helped financing autocratic regimes and civil wars in Sierra Leone, Liberia, and Congo, many diamond producing countries are democratic (e.g. Namibia, Botswana) or have moved to representative rule during the 3rd Wave (e.g. Ghana, South Africa). We also experimented with gold production without detecting significant differences among the various groups of countries.

### 3.4. The liberal hypothesis

Liberal economists advocate the importance of economic openness in fostering democracy. Friedman (1962) argued that “*economic freedom is also an indispensable means toward the achievement of political freedom,*” while Landes (1998) writes “... *if the gains from trade in commodities are substantial, they are small compared to trade in ideas.*” Besides the diffusion of liberal norms, trade may also proxy for middle class’ role. During the Renaissance and the Enlightenment, for example, trade expansion empowered the bourgeoisie to exert pressure on European Monarchs to expand political rights (see De Long and Shleifer, 1993).

- *Reduced Form Hypothesis [H<sub>4</sub>]*: Other things equal, democracy is more likely to occur and consolidate in open to international trade countries.

In Panel D we explore differences in trade openness among “*always authoritarian*,” “*democratization*,” and “*always democratic*” countries using the share of exports and imports to GDP (data taken from the Penn World Tables 6.1 Edition) and a dummy variable that takes on the value one if a country has low tariffs and low quotas (taken from Wacziarg and Welch, 2003). The test of means in column (3) suggests that “*always democratic*” countries had significantly more open trading systems than the “*always autocratic*” group. Yet, when we compare non-democratic countries before the 3rd Wave (columns (1) and (2)) we do not get clear results, since the difference in trade openness between “*always autocratic*” and “*democratization*” group of countries is small (4%) and statistically insignificant. In addition, when we use the share of exports and imports to GDP “*always autocratic*” rather than “*democratization*” countries appear to be more open.

### 3.5. Early institution theories

Acemoglu et al. (2001, 2002) argue that due to institutional persistence colonial institutions had a large effect on contemporary economic development. In parallel work Acemoglu et al. (in press) apply early institution theories in the context of political development, arguing that colonization and early institutions around independence had long-lasting repercussions also in political development. Their main idea is that countries where colonizers established despotic political institutions found it hard to move towards democracy after independence. In contrast, democracy was more likely to emerge and consolidate in countries with more liberal political systems around colonization and independence.

- *Reduced Form Hypothesis [H<sub>5</sub>]*: Democracy is less likely in countries where Europeans set up extractive institutions and in countries with low levels of property rights protection around independence.

It is, however, non-trivial to empirically test this conjecture since it is difficult to measure accurately institutional performance in the 17th, 18th and 19th centuries. Moreover, in regions where Europeans migrated massively, besides establishing sound institutions they also brought their human (and maybe their social) capital (Glaeser et al., 2004). Thus, a significant correlation between colonial features and contemporary political development does not necessarily imply that colonization’s impact works (only) through institutions.

Acknowledging these caveats, in Table 2 Panel E we report summary statistics for four different proxies of early institutions. We, first, tabulate differences in property rights protection around independence, using data on executive constraints from the Polity database (that goes back to 1800). Compared to the “*always autocratic*” group of countries

(in (1)), “*always democratic*” nations (in (3)) have on average better property rights protection around independence. Yet, there are no significant differences when we compare democratized countries with those that entered the 3rd Wave as non-democratic. The standardized 0–1 executive constraints at independence index is on average 0.26 in “*always autocratic*” countries (column (1)) and 0.28 in countries that democratized (column (2)).

Second, we exploit the CIA Fact-book and construct an index of country-age (normalized to 0–1). Acemoglu et al. argue that country age may affect the democratization path, because former colonies that became independent in the 18th and 19th centuries had more time to modify extractive colonial institutions than countries that became independent during the 20th century. In line with this idea, the descriptives show that “*always democratic*” and “*democratization*” countries are on average older countries than “*always autocratic*” nations.

Third, we tabulate differences in the mortality rates that European colonizers faced in the 18th–19th centuries. Acemoglu et al. (2001) argue that settler mortality proxies colonial institutions, because in regions where settler mortality was high, Europeans set extractive institutions to transfer resources back to the homeland. In contrast, in regions with favorable conditions, the colonizers migrated massively and transplanted the good institutions of the motherland.<sup>13</sup> While compared to “*always autocratic*” nations (column (1)) settler mortality was significantly lower in “*always democratic*” countries (column (3)), the descriptives show that settler mortality rates are on average quite similar between “*always autocratic*” nations and countries that democratized during the 3rd Wave (column (2)).

Fourth, we examine differences in urbanization rates around 1500. Acemoglu et al. (2002) argue that European colonizers established repressive institutions in densely populated regions to better control indigenous population. Their hypothesis is that population density before colonization should be negatively correlated with democracy. The descriptive statistics show that countries that are autocratic were significantly more densely populated before colonization than countries that democratized during the 3rd Wave (column (2)) or during the previous waves (column (3)).

#### 4. Cross-sectional estimates with initial values

To formally test the five main theories we estimate variants of the following cross-sectional probabilistic model:

$$P(D_i = 1 | X_{i,1975}, Z_i) = G(a + x_{i,1975}\beta_1 + z_i\beta_2).$$

The probability that an initially non-democratic country  $i$  will experience a successful democratic transition ( $D_i$ ) in the 1975–2000 period is a non-linear function of initial (in 1975) time-varying factors ( $X_{i,t}$ ), such as education and trade openness, and time-invariant characteristics ( $Z_i$ ), such as religion and fractionalization. We assume that  $G(\cdot)$  is the normal c.d.f. and estimate the (probit) model with maximum likelihood.<sup>14</sup> Following Barro (1999), Przeworski et al. (2000), Glaeser et al. (2004), and Acemoglu et al. (2005, in press), we employ the modernization theory at the core of our analysis. Thus, in all specifications we control for a proxy measure of development. Yet, for many countries we lack data on education and income. Schooling, which is theoretically the most appealing variable, is unfortunately not available for many (especially non-democratic) countries. GDP p.c. in 1975 is also missing for more than thirty non-democratic countries. Thus, to expand the sample and address selectivity issues, we also estimate models using life expectancy as a proxy for human capital and development.<sup>15</sup> In Tables 3–5 we therefore report three otherwise identical specifications using the natural logarithm of real per capita GDP, average years of schooling and life expectancy to proxy the stage of development (indexed (a), (b) and (c) respectively).

##### 4.1. Probit estimates

In Table 3 we test the modernization hypothesis against theories that emphasize the importance of religion ( $H_2^R$ ; in models (1a)–(1c)), fragmentation ( $H_2^F$ ; in models (2a)–(2c)), natural resource abundance ( $H_3$ ; in models (3a)–(3c)), and trade openness ( $H_4$ ; in models (4a)–(4c)) in democratization. Since probit coefficients are not easily interpretable, the Table reports marginal effects that measure the impact on the probability of a successful demo-

<sup>13</sup> Albouy (2006) has challenged the settler mortality data. He went back to the original sources and checked for misclassification, inconsistencies, and other issues. Using the new series Albouy shows that the relationship between settler mortality and contemporary institutions weakens. We also experimented using Albouy’s series to find quite similar (insignificant) results.

<sup>14</sup> The results are similar if we estimate linear probability models or if we perform logit estimation.

<sup>15</sup> For a similar approach, see Barro and McCleary (2005).

Table 3  
Cross-country estimates on the likelihood of successful democratic transition

	Social fragmentation			Religion			Natural resource—Oil			Trade openness		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)
Ln GDP in 1975	0.1536*			0.1262			0.1665**			0.1557**		
	(0.07)			(0.11)			(0.02)			(0.04)		
Schooling in 1975		0.2170***			0.1935***			0.2145***			0.1934***	
		(0.00)			(0.00)			(0.00)			(0.00)	
Life expectancy in 1975			0.0162***			0.0134**			0.0190***			0.0224***
			(0.01)			(0.01)			(0.00)			(0.00)
Ethnic fragmentation	−0.0025	0.0007	−0.0004									
	(0.33)	(0.80)	(0.87)									
Religious fragmentation	0.0018	−0.0029	0.0008									
	(0.51)	(0.34)	(0.72)									
Muslim				−0.0046***	−0.0031*	−0.0048***						
				(0.01)	(0.08)	(0.00)						
Confucian-Buddhist				−0.0008	−0.0050	−0.0041						
				(0.86)	(0.24)	(0.13)						
Oil							−0.3140	−0.4885**	−0.4247***			
							(0.16)	(0.03)	(0.01)			
Trade Share in 1975										−0.0004	−0.0011	−0.0004
										(0.77)	(0.36)	(0.74)
Pseudo <i>R</i> -squared	0.059	0.269	0.078	0.123	0.306	0.173	0.069	0.323	0.160	0.044	0.282	0.127
Countries	75	66	104	76	66	106	76	66	106	76	57	77

Cross-section probit estimates. Probit slope derivatives (marginal effects) are reported. The dependent variable equals zero for always autocratic countries and takes on the value one if a country that was non-democratically governed before the Third Wave began (in 1975), permanently abandoned autocratic rule in the 1975–2000 period. Estimation is performed in all countries that were non-democratic in the beginning of the sample. To test for the modernization hypothesis for each model the table reports three specifications, using the log of real p.c. GDP (columns indexed (a)), average years of schooling (columns indexed (b)), and life expectancy (columns indexed (c)). *p*-values based on heteroskedasticity adjusted standard errors are reported in parenthesis below the marginal effects. All specifications include a constant term (marginal effect not reported). Table 1 reports the categorization of countries to “always autocratic,” “partial democratization,” and “full democratization” countries. The Data Appendix gives detailed variable definitions and sources.

\* Statistical significance at the 10% level. \*\* Idem, 5%. \*\*\* Idem, 1%.

cratic transition of a small change in the explanatory variables at the average value of all the controls;  $p$ -values based on heteroskedasticity-adjusted standard errors are reported in parenthesis below the estimates.

Models (1a)–(1c) examine the effect of development conditional on fractionalization. In line with the descriptive evidence ethnic and religious fragmentation have an insignificant effect on democratization. This pattern prevails when we add in the specification the two fragmentation measures one by one or when we use the [Montalvo and Reynal-Querol \(2005\)](#) polarization indicators (results not reported). The coefficients, however, on all three development proxies are positive, supporting the modernization theory. Income is a significant correlate of future democratization at the 10% confidence level. The impact of education is higher than that of income both statistically and economically. Schooling enters with a coefficient that is at least three standard errors greater than zero. This hints that the positive impact of development on democratization mainly works through human capital. The marginal effect implies that a one standard deviation increase in average schooling in 1975 (1.8 years) raises the probability of a successful democratic transition in non-democratic countries by almost 40% ( $0.217 * 1.8$ ).<sup>16</sup> In model (1c) we use life expectancy to proxy human capital. This allows us to examine the development–democratization link in an enlarged sample of 106 countries. The results with life expectancy are also supportive to  $H_1$ .

In models (2a)–(2c) we condition on religion. The results suggest that democratization is less likely to emerge and stabilize in Muslim countries. The estimates imply that a 20% increase in the share of the population following Islam (approximately from Cameroon where the share is 22% to the Ivory Coast with 39%) is associated with a 6–9% decline in the probability that this country will permanently switch to democracy.<sup>17</sup> Turning now to  $H_1$  the effect of income in predicting future democratic transitions weakens once we control for religion. The coefficient on income in model (2a) becomes marginally insignificant (with a  $p$ -value of 0.11). Yet, education continues to exert a large and highly significant impact on democratization. The estimate on initial education continues to be significantly different than zero at the 1% confidence level, implying also a large economic effect. The estimates in model (2c) also support the modernization theory, showing that life expectancy correlates significantly with subsequent democratization.

In columns (3a)–(3c) we control for natural resources adding in the specification an oil indicator that takes on the value one when the country is a major oil exporter and zero otherwise. Our estimates suggest that the likelihood of a successful democratization in an oil-producing country is 45% lower than in a non oil-abundant country (at approximately the mean value of the other controls). The probit results continue to support (and if anything strengthen) the modernization hypothesis. Once we control for oil production, the coefficient on income increases and turns significant at the 1% level. Education and life expectancy continue to enter with positive and significant estimates.

To test for the liberal hypothesis in models (4a)–(4c) we augment the specification with the share of imports and exports to GDP in 1975. The marginal effect of trade openness is small and statistically indistinguishable from zero. We obtained similar (insignificant) results when we use the binary openness index (results not reported). This result is in line with [Rigobon and Rodrik \(2005\)](#), who using an identification through heteroskedasticity method and examining all countries, document also an insignificant (and if anything negative) correlation between democracy and trade.<sup>18</sup> While not supportive to  $H_4$  the estimates are in line with the modernization hypothesis. The coefficients on initial GDP, education and life expectancy in predicting subsequent democratic transitions retain their statistical and economic significance.

In [Table 4](#) we test the modernization hypothesis against theories that stress the importance of early institutions on democratization [ $H_5$ ]. Given the conceptual challenges in measuring institutions in the 17th–19th centuries, we present results with all four early institutions proxies proposed by [Acemoglu et al. \(in press\)](#). In models (1a)–(1c) we use a direct proxy of early institutions, executive constraints around independence. This has little impact in our results. Income, education and life expectancy continue to enter with positive and significant coefficients. In contrast, political institutions around independence have no significant effect in predicting democratic transitions during the 3rd Wave (once we control for economic development). In model (2) we add in the specification the standardized

<sup>16</sup> This is just an approximation, since the marginal effects measure the change in the probability of democratization of an infinitesimal change in education, evaluated at the mean value of the other explanatory variables. The analogous calculations for model's (1b) linear specification imply that a 1.8 increase in schooling is associated with an increased likelihood of democratization of approximately 28%.

<sup>17</sup> These countries have similar (albeit somewhat lower than the mean value) life expectancy rates and income levels and a zero share of Confucian-Buddhist population. In addition, in these countries the share of the population that follows Islam is close to the mean value (34%).

<sup>18</sup> [De Long and Shleifer \(1993\)](#) present evidence of a reverse effect of political freedom on trade. Using historical data on urbanization they show that during the period 1050–1800 European regions with oppressive rulers experienced slower city growth.

Table 4  
Cross-country estimates on the likelihood of successful democratic transition

	Early institutions/Endowment theories											
	(5a)	(5b)	(5c)	(6a)	(6b)	(6c)	(7a)	(7b)	(7c)	(8a)	(8b)	(8c)
Ln GDP in 1975	0.2046** (0.01)			0.0694 (0.43)			0.1669 (0.13)			0.0268 (0.79)		
Schooling in 1975		0.2186*** (0.00)			0.1840*** (0.00)			0.3694*** (0.00)			0.2067*** (0.00)	
Life expectancy in 1975			0.0181*** (0.00)			0.0122** (0.02)			0.0297*** (0.00)			0.0161* (0.06)
Executive constraints at independence	0.2781 (0.28)	-0.3182 (0.17)	0.1353 (0.49)									
Years since independence				0.5691** (0.01)	0.3403 (0.11)	0.4972*** (0.01)						
Ln settler mortality							-0.0453 (0.60)	0.2159** (0.04)	0.0270 (0.76)			
Ln Population density around 1500										-0.1696** (0.01)	-0.0370 (0.61)	-0.1277** (0.03)
Pseudo <i>R</i> -squared	0.074	0.275	0.091	0.124	0.286	0.135	0.069	0.395	0.153	0.139	0.283	0.177
Countries	73	66	100	76	66	106	53	42	60	61	49	73

Cross-sectional probit estimates. Probit slope derivatives (marginal effects) are reported. The dependent variable equals zero for always autocratic countries and takes on the value one if a country that was non-democratically governed before the Third Wave began (in 1975), permanently abandoned autocratic rule in the 1975–2000 period. All values of the time-varying independent variables correspond to 1975 (before the Third Wave of Democratization). Estimation is performed in all countries that were non-democratic in the beginning of the sample. To test for the modernization hypothesis for each model the table reports three specifications, using the log of real p.c. GDP (columns indexed (a)), average years of schooling (columns indexed (b)), and life expectancy (columns indexed (c)).

*p*-values based on heteroskedasticity adjusted standard errors are reported in parenthesis below the marginal effects. All specifications include a constant term (marginal effect not reported). The table also reports McFadden's pseudo *R*-squared. Table 1 reports the categorization of countries to "always autocratic," "partial democratization," and "full democratization" countries. The Democratization Appendix provides details on the event identification methodology and gives a brief description of the transition. The Data Appendix gives detailed variable definitions and sources.

\* Statistical significance at the 10% level. \*\* Idem, 5%. \*\*\* Idem, 1%.

0–1 years-since-independence measure. The results show that among the initially non-democratic countries older nations had a higher likelihood to transit to democracy. Once we control for country age, the coefficient on GDP turns insignificant. Initial education continues to be a significant (at the 1% confidence level) predictor of subsequent transitions. The estimates in the enlarged sample (in (2c)) show that life expectancy in 1975 is also a significant correlate of democratization. Thus, controlling for institutions around independence and country age does not seem to attenuate the impact of education on democracy.

In Table 4 models (3a)–(3c) we use the log of settler mortality to proxy for colonial institutions. The sample drops considerably since the variable is mainly available for former colonies. While the coefficient on settler mortality is unstable, all three development proxies enter with positive estimates. The effect on income is marginally insignificant ( $p$ -value 0.13), whereas the estimates on education and life expectancy continue to be positive and significant at the 1% level. In columns (4a)–(4c) we use the log of population density in 1500 to proxy for colonial institutions. Urbanization in 1500 enters with a negative coefficient, offering some support to the Acemoglu et al. (in press) idea that early institutions have played an important role in political development. Controlling for historical variables has little impact on the empirical validity of the modernization theory. In line with  $H_1$  education continues to be a highly significant predictor of democratic transitions. Not only the estimate on education is significantly positive at the 1% confidence level, but the implied economic effect is similar to our previous estimates. The modernization hypothesis is also supported with the results in (4c) that show a significantly positive impact of initial life expectancy in democratic transitions during the 3rd Wave.

In Table 5 columns (1a)–(1c) we test jointly the main theories controlling simultaneously for fractionalization, religion, natural resources, trade openness, and institutions around independence. The estimate on income is positive, but statistically indistinguishable from zero. Yet education retains its statistical significance at the 1% level. The economic magnitude of education continues to be quantitatively large and similar to the previous estimates. The modernization theory is further supported by the estimates in the enlarged sample in column (1c). Life expectancy in 1975 is a significant predictor of subsequent democratization, even when we control for all the other possible correlates of political development. The results, thus, hint that the positive effect of development on democratization works mainly through education and human capital. This is in line with Lipset's (1959, 1960) emphasis on the human capital channel and the recent models of Bourguignon and Verdier (2000) and Glaeser et al. (2007) that stress the importance of education in political development. Turning now to the other theories, the estimates imply that the share of Muslims in the population and executive constraints at independence had also an impact on the recent democratization wave. In line with the previous results trade openness and fractionalization have not played a significant role during the 3rd Wave.

#### 4.2. Ordered analysis based on the intensity of reforms

The 3rd Wave did not bring the same level of political freedom in all transition countries. Some countries implemented large reforms, while in many democratization countries the level of civil liberties and political rights protection has not reached a perfect score. It is, thus, intriguing to test the main theories using an ordered model, utilizing the variability in the intensity of democratic reforms. Table 5, columns (2a)–(2c), reports ordered probit coefficients testing simultaneously all democratization theories. The dependent variable equals zero for “*always autocratic*” countries, equals one for “*partial democratization*” countries, and takes on the value of two for “*full democratization*” countries.

The ordered probit results strengthen the modernization theory. While income was an insignificant correlate of democratic transitions in the analogous binary model in (1a) (and in some other specifications in Tables 3–4), GDP p.c. in 1975 enters now with a statistically positive coefficient. Education and life expectancy continue to exert a significant (at the 1% level) effect on future democratization. This result is in line with the parallel work of Epstein et al. (2006), who using different techniques and pooling all countries together (democratic, autocratic, and transition) also show that employing a trichotomous separation of political regimes strengthens the modernization hypothesis.

The economic impact of education in explaining the intensity of democratic reforms is large. We can use the ordered probit coefficients to compute the probabilities that the country at the 75th percentile of education (3.7 years, approximately at the level of Ecuador with 3.99 years) and the country at the 25th percentile (1.17 years, approximately at the level of Haiti with 1.07 years) will remain autocratic, or will implement moderate democratic reforms, or will experience a full democratization. The unconditional estimates suggest that the probability that the country at the 75th percentile of education will experience a “*full*” democratization was 66%; the analogous probability that the

Table 5

Cross-country estimates on the likelihood, the intensity and the timing of democratic reforms all theories

	Binary Probit Marginal Effects			Ordered Probit Coefficients based on the intensity of reforms			Ordered Probit Coefficients based on the timing of reforms		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)
Ln GDP in 1975	0.1225 (0.22)			0.4786** (0.043)			0.4759** (0.03)		
Schooling in 1975		0.2002*** (0.01)			0.6249*** (0.00)			0.6779*** (0.00)	
Life expectancy in 1975			0.0183** (0.04)			0.0585*** (0.01)			0.0642*** (0.00)
Ethnic fragmentation	-0.0009 (0.76)	0.0028 (0.37)	0.0012 (0.73)	-0.0006 (0.92)	0.0128 (0.15)	0.0053 (0.48)	-0.0060 (0.35)	0.0045 (0.57)	0.0005 (0.95)
Religious fragmentation	-0.0048 (0.21)	-0.0064* (0.09)	-0.0051 (0.18)	-0.0152 (0.11)	-0.0243** (0.02)	-0.0165* (0.07)	-0.0128 (0.15)	-0.0204** (0.03)	-0.0131 (0.14)
Muslim	-0.0071*** (0.00)	-0.0028 (0.19)	-0.0064*** (0.00)	-0.0196*** (0.00)	-0.0110 (0.11)	-0.0179*** (0.00)	-0.0179*** (0.00)	-0.0083 (0.24)	-0.0159*** (0.00)
Confucian-Buddhist	-0.0024 (0.63)	-0.0070* (0.06)	-0.0043 (0.38)	-0.0027 (0.85)	-0.0154 (0.21)	-0.0080 (0.56)	-0.0093 (0.28)	-0.0243*** (0.00)	-0.0154* (0.06)
Oil	-0.0002 (0.91)	0.0002 (0.84)	-0.0002 (0.92)	-0.8334 (0.14)	-1.2182* (0.07)	-0.6464 (0.20)	-0.5119 (0.39)	-0.8339 (0.28)	-0.3086 (0.55)
Trade share in 1975	-0.2479 (0.32)	-0.3527 (0.26)	-0.1898 (0.42)	-0.0003 (0.93)	0.0008 (0.81)	-0.0003 (0.93)	-0.0024 (0.35)	-0.0019 (0.55)	-0.0031 (0.26)
Executive constraints at independence	0.6336** (0.02)	-0.2434 (0.35)	0.5119** (0.05)	1.5955*** (0.01)	-0.1671 (0.82)	1.3055** (0.01)	1.0685* (0.06)	-0.9867 (0.19)	0.8822* (0.08)
Pseudo <i>R</i> -squared	0.217	0.377	0.251	0.227	0.333	0.256	0.234	0.386	0.275
Countries	73	57	74	73	57	74	73	57	74

Columns (1a), (1b) and (1c) report cross-section probit marginal effects on the likelihood of democratization. The dependent variable equals zero for always autocratic countries and takes on the value one if a country that was non-democratically governed before the Third Wave began (in 1975), permanently abandoned autocratic rule in the 1975–2000 period. Columns (2a), (2b) and (2c) report cross-section ordered probit coefficients on the likelihood of democratization and the intensity of reforms. The dependent variable equals zero for “always autocratic” countries; it takes on the value one for “partial democratization” countries and the value two for “full democratization” countries. Columns (3a), (3b) and (3c) report cross-section ordered probit coefficients on the likelihood of democratization and the timing of democratic reforms. The dependent variable equals zero for always autocratic countries; it takes on the value one for countries that democratized in the nineties (“Late Democratizations”) and takes the value two for countries that democratized in the 1975–1989 period (“Early Democratizations”).

*P*-values based on heteroskedasticity adjusted standard errors are reported in parenthesis below the marginal effects (in (1)) and below the coefficients (in (2)–(3)). All specifications include a constant term. The table also reports McFadden’s pseudo *R*-squared. Table 1 reports the categorization of countries to “always autocratic,” “partial democratization,” and “full democratization” countries. The Democratization Appendix provides details on the event identification methodology and gives a brief description of the transition. The Data Appendix gives detailed variable definitions and sources.

\* Statistical significance at the 10% level. \*\* Idem, 5%. \*\*\* Idem, 1%.

country at the 25th percentile of education will implement large reforms was just 12.7%. In contrast, the probabilities that the two countries will experience a “*partial*” democratization are quite similar, 17.4% and 15.2% for the country at the 75th and the 25th percentile of education, respectively. Countries with low levels of education will most likely stay non-democratic. The estimated likelihood that the country at the 25th percentile of education in 1975 will remain autocratic is 72.1%, while the chance that the country at the 75th percentile of education will not experience a transition is just 13%.<sup>19</sup> Thus the model predicts that the most likely outcome for countries with high levels of schooling was to experience a full democratization. The most likely outcome for countries with low levels of education was to stay autocratic, and the most likely scenario for countries with intermediate level of schooling was to implement moderate partial democratic reforms. These estimates show that education does not merely shape the probability of democratization in autocratic countries, but it also influences how deep the political reforms will be.

Moving now to the other theories, openness to international trade and fragmentation continue to have an insignificant impact on democratization. In line with the binary probit results, there is also some evidence linking religion and institutions around independence with the intensity of democratization.

#### 4.3. Ordered analysis based on the timing of reforms

Besides the intensity of reforms, the timing of democratization differed during the 3rd Wave. Spain, Greece and Portugal, abandoned autocracy in the mid-seventies, most Latin America countries transit to democracy in the eighties, while many other countries democratized in the nineties. We explore these differences by examining how development, religion, openness, natural resources and early institutions affected the timing of transitions. Table 5, columns (3a)–(3c), reports ordered probit coefficients, where the dependent variable equals two for countries that democratized before 1990 (early democratizations), equals one for countries that democratized in the nineties (late democratizations) and zero for countries that have remained autocratic throughout the period 1975–2000. We use the 1990 as a cut-off between late and early transitions, because the fall of communism had an effect in many country’s political path (either because Soviet-supported regimes collapsed or because of spillover effects). The results further support the modernization theory. In all model permutations the coefficient on the variable proposed by  $H_1$  is positive and statistically significant. This implies that income and especially human capital are not only correlates of future democratization, but also useful in explaining how quickly these transitions will occur.

## 5. Conclusion

Few questions have received so much debate as to which economic and social factors determine democratic rule. In this paper we first construct a new data set of political regimes and transitions during the 3rd Wave of Democratization and the nineties, trying to address many of the measurement challenges that such an effort entails. To do so we exploit many political freedom indicators, numerous electoral and political archives, as well as many other historical sources. Studying 174 countries in the period 1960–2005, we identify 63 incidents of successful democratic transitions and 3 reverse transitions from democratic to autocratic rule. We further classify transition countries to “*full*” and “*partial*” democratizations and also identify 6 episodes of “*borderline*” democratizations that one could add in the democratized sample of countries under a loose criterion. We classify the non-reforming countries to stable autocracies and always democratic. In addition we assign 2 non-reforming countries in an intermediate group.

Second, we identify the correlates of successful democratic transitions during the 3rd Wave. To assuage reverse causation concerns we focus on countries that entered the 3rd Wave as non-democratic and examine which conditions explain why only half of the initially non-democratic countries managed to participate in the democratization wave. Employing descriptive analysis and various probabilistic models we show that democracy is more likely to emerge and consolidate in educated countries. Education is also a significant predictor of the intensity and the timing of political transitions. While this correlation may still be driven by an omitted or hard-to-account-for country feature, we show that the strong impact of education in predicting subsequent democratic transitions retains significance when we control for religion, fractionalization, trade openness, historical factors, and proxy measures of colonial institutions.

<sup>19</sup> The conditional estimates in model (2b) imply a similar effect. We discuss the unconditional ordered probit estimates because the multivariate models assume that the other explanatory variables are kept at their mean values. Model (2b) implies that the country at the 75th percentile of education had a 72% probability of a *full* democratization, while the country at the 25th percentile had just 15%.

We also find some evidence that religion and political institutions around independence were important drivers of the recent democratization wave. In contrast, trade openness and fragmentation do not systematically correlate with democratization in the period 1975–2000.

We believe that while income, education, religion, and history shape the probabilities for a successful democratic transition, these factors do not mechanically determine the political equilibrium. No single factor can fully explain the development of democratic institutions in all countries and all periods. Democratization in each region and country has emerged from a combination of economic, social, and political causes. Besides the driving factors identified in our analysis, time-varying factors, such as the end of civil conflict and economic crises, can play also a key role (see Brückner and Ciccone, 2008). In addition the accumulation of democratic capital may also be a significant driver of political transitions (see Persson and Tabellini, 2007). We believe that future research should explore these issues.

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## Appendix A. Variable definitions and sources

**Diamond:** Indicator variable that equals one for countries that are major producers of diamonds (more than 1% of global diamond value production in 2005). These (17) countries are: Angola, Australia, Botswana, Brazil, Central African Republic, China, Congo Democratic Republic, Ghana, Guinea, Liberia, Namibia, Russian Federation, Sierra Leone, South Africa, Tanzania, Venezuela, Zimbabwe. We also experiment with another indicator variable that also adds ten countries that also produce diamonds. These (10) countries are: Canada, Congo Republic, Gabon, Guyana, India, Indonesia, Côte d'Ivoire, Lesotho, Swaziland, United States. *Source:* Janse (2006).

**Executive Constraints at Independence:** Average value during the first ten post-independence years. If data for the first 10 years after independence is missing, we average over the first ten years of available data. The measure is normalized to lie between 0 and 1; the measure is constructed similarly to Acemoglu et al. (in press). *Source:* Marshall and Jaeggens (2004).

**Fragmentation Ethnic/Religious:** Index of ethnic/religious heterogeneity, constructed as one minus the Herfindahl index of the share of the largest ethnic/religious groups. It reflects the probability that two randomly selected individuals follow different ethnic/religious beliefs. *Source:* Alesina et al. (2003).

**Income:** Real GDP per capita based on purchasing power parity (PPP) in 1975. *Source:* Heston et al. (2002).

**Independence:** Years since independence in 1975, normalized between 0 and 1. For countries that became independent before 1800, we use the 1800 as independence date. The date of independence for Zimbabwe was changed to 1964 and for Iran to 1935. The measure is constructed similarly to Acemoglu et al. (in press). *Source:* Central Intelligence Agency (CIA) (2003).

**Life Expectancy:** Number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same in 1975. *Source:* World Bank (2005).

**Oil Producer:** Indicator variable that equals one for countries that are either members of the OPEC (Organization of the Petroleum Exporting Countries) or classified by the IMF as fuel exporting countries. It takes on the value of one in the following countries: Angola, United Arab Emirates, Bahrain, Brunei, Congo Republic, Algeria, Gabon, Iran, Iraq, Libya, Nigeria, Oman, Qatar, Saudi Arabia, Turkmenistan, Trinidad and Tobago, Venezuela (IMF fuel exporting countries) and the United Arab Emirates, Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, Venezuela (OPEC member countries).

**Population Density in 1500.** Indigenous population divided by arable land around 1500. *Source:* Acemoglu et al. (2002).

**Religion (Muslim, Confucian/Buddhist):** Share of each religious group in total population. *Source:* Alesina et al. (2003).

**Schooling:** Average years of schooling in the population aged 25 and above in 1975. *Source:* Barro and Lee (2001).

**Settler Mortality:** Mortality rates faced by European settlers around 1800–1900. *Source:* Acemoglu et al. (2001).

**Trade Openness:** A zero–one variable for trade openness based on five individual dummies for specific trade-related policies. A country was classified as closed if it displayed at least one of the following characteristics: (1) Average tariff rates of 40% or more; (2) Non-tariff barriers covering 40% or more of trade; (3) A black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s; (4) A state monopoly on major export; (5) A socialist economic system. *Source:* Wacziarg and Welch (2003).

**Trade Share:** The sum of exports and imports of goods and services measured as a share of gross domestic product. *Source:* Heston et al. (2002).

## Supplementary Appendix

Supplementary material associated with this article can be found, in the online version, at: doi: 10.1016/j.jce.2008.04.005.

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