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CULTURE, INSTITUTIONS AND DEMOCRATIZATION

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ABSTRACT

We construct a model of revolution and transition to democracy under individualistic and collectivist cultures. The main result is that, despite facing potentially larger collective action problems, countries with an individualistic culture are more likely to end up adopting democracy earlier than countries with a collectivist culture. Our empirical analysis suggests a strong and robust association between individualistic culture and average polity scores and length of democracy, even after controlling for other determinants of democracy emphasized in the literature. We provide evidence that countries with collectivist culture are also more likely to experience autocratic breakdowns and transitions from autocracy to autocracy.

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1. Introduction

Understanding the determinants of democratization has always been one of the key questions in social sciences. Recent decades have seen great progress in democracy across the world. According to Freedom House (1999), there was not a single liberal democracy with universal suffrage in the world in 1900. By 2000, 120 of the world's 192 nations were liberal democracies. Various theories, based on formal models and informal arguments, have been proposed to explain the underlying causes of democratization. The dominant theory of democratization in social sciences, modernization theory, holds that, as the level of economic development in a country increases, it will tend to become democratic (Lipset, 1959), or stay democratic (Przeworski and Limongi, 1997). Yet, it is far from clear whether worldwide convergence towards democracy will continue. Autocratic tendencies have appeared in democratic countries such as Russia or Turkey. A key question is whether China, the biggest country in the world with miraculous growth over the last four decades, will evolve towards democracy. So far, little evidence points in that direction. There are thus reasons to be skeptical that countries should all become democratic as they develop economically. Could modernization theories have overlooked slow-moving forces such as culture that may facilitate or hamper transition to democracy? Strikingly, although culture is often considered a bedrock of many social and economic processes, the role of culture in democratization has been largely ignored until now.

In this paper, we present a simple formal model of democratization that includes the individualistic/collectivist dimension of culture. A key difference between these cultural types is that a collectivist culture creates a stronger pressure towards conformity and a stronger aversion for radical institutional innovation. We show that, starting from an initial situation of autocracy, a collectivist society is less likely to adopt a democratic regime than an individualistic society, irrespective of whether a collectivist culture may be more effective in overcoming collective action problems. In our model, collectivist societies often end up in equilibrium having a "good" autocracy, i.e. an autocracy that does not act in a predatory way toward its citizens because good autocracies tend not to be overthrown by collectivist societies, unlike in individualistic societies. This outcome happens because of the stronger aversion for radical institutional innovation in collectivist societies. Furthermore, if political institutions may influence culture over time, our central prediction continues to hold: collectivist societies are less likely to end up with democracy. Note that these results do not follow automatically from a

congruence between individualistic values and democracy. Countries with individualistic cultures must still overcome the collective action problems to make a transition from autocracy to democracy, which is a non-trivial barrier. Indeed, we do observe countries with relatively high individualism scores and low democracy scores (e.g. Morocco). Yet, a striking result of our model is that even if one assumes that the collective action problem is much more acute in individualistic societies, they are still more likely to end up with democracy over time compared to collectivist societies.

We test the predictions of the model empirically, using the well-known Hofstede measure of individualism/collectivism. We find a strong and robust effect of individualism on average polity scores between 1980 and 2010. A one standard deviation increase in the individualism score is associated with as much as four point increase in polity scores, a large magnitude. This result holds even when we control for all the variables that have been used in the literature on democratization, including measures of economic development. We also document evidence that countries with collectivist cultures have a higher frequency of autocracy breakdown, suggesting lower collective action failure in collectivist cultures. We do find strong evidence that in collectivist cultures, conditional on autocratic breakdown, transition to autocracy is more likely while in individualistic cultures, transition to democracy is more likely. While the main result is tested using the well-known polity data, these last results are tested using the new data on autocracies and autocratic transitions put together by Geddes et al. (2014). Interestingly, other cultural variables, such as trust or other cultural dimensions constructed by Hofstede (2001)—power distance, uncertainty avoidance, masculinity, long term orientation—do not have a significant or a robust effect on average polity scores whereas the effect of individualism is very robust.

Because there may be a two-way causality between democracy and culture, we use instrumental variables to analyze the effect of culture on democratization. The first instrumental variable is a measure of historical pathogen prevalence. This variable has been argued (see e.g. Fincher et al. 2008, Murray and Schaller, 2010) to have a direct effect on the choice of collectivist culture as stronger pathogen prevalence created better survival prospects for communities that adopted more collectivist values, putting stronger limits on individual behavior, showing less openness towards foreigners and putting strong emphasis on tradition and stability of social norms. The second instrumental variable is a measure of genetic distance

between countries based on differences in frequencies of blood types across countries. This instrument is used as a proxy for vertical cultural transmission from parents to children. Since the genetic pool evolves relatively slowly and it is unlikely that neutral genetic markers (e.g., blood types) changed since the industrial revolution, one can use genetic distance in terms of such markers to instrument cultural differences.[1] Because of the pitfalls related to cross-country regressions, we must be careful in interpreting these instrumental variable regression results as causal. Nevertheless, our findings are consistent with culture playing an important role in transitions from autocracy to democracy as well as in transitions from autocracy to autocracy.

Our paper contributes to an immense body of work on the determinants of democratization. Since Lipset's (1959) seminal work, a large literature, both theoretical and empirical, has been devoted to understanding the determinants of democratization. Lipset emphasized the role of economic development and, thus not surprisingly, most disputes on democratization have been about whether economic development is a fundamental determinant of democracy. Lipset was taking a broad view of economic and social modernization creating conditions for a greater demand for democracy. In recent years, debates about the importance of economic development have been revived after the work of Przeworski and Limongi (1997). Using data between 1950 and 1990 for 135 countries, they showed that the correlation between income and democracy was explained not so much by economic development leading to democratization, but rather by the fact that once countries have achieved a certain level of economic development, they usually never revert to authoritarian regimes. Countries could opt for democratic or dictatorial regimes for reasons that are unrelated to economic development but if richer countries develop stable democracies, one will see a strong correlation between income per capita and democracy.[2] Acemoglu and Robinson (2006) argued that democratization was mostly an elite strategy to

[1] More recently, some scholars have claimed that there is a direct link between genes and political behavior such as political participation and ideology (Fowler *et al.* , 2008, Hatemi and Mc Dermott, 2012). These studies focus however on individual political behavior and individual political psychology, not on how average genetic endowments affect a collectivity or a country's culture. This difference is very important. The individual approach postulates a direct approach between an individual's genetic endowment and that individual's psychology or political behavior. In contrast, we use the *correlation* between cultural traits and genetic distance to address potential endogeneity of culture.

[2] Persson and Tabellini (2009) built a model and showed empirical support for a theory of a positive feedback between the capital of democratic experience and economic development. Persson (2005) showed that the form of democracy mattered for income development: the introduction of parliamentary democracy with proportional electoral rule produced the most growth-promoting policies.

commit to redistributive transfers in response to revolutionary threats.[3] Some of the recent studies question causation from development to democracy or even the correlation between the two. Acemoglu et al. (2005, 2008) showed that the relationship between income (or education) and democracy, is mostly a feature of cross-sectional data and that when performing panel data analysis, one ceases to find a significant relationship between these variables.[4] Acemoglu et al. (2014) in recent work even found that democracy has an effect on growth, a reverse effect compared to modernization theory. On the other hand, Boix and Stokes (2003) found that by taking data far enough in the past (to the second half of the nineteenth century), one can establish a significant relation between income per capita and democracy. Treisman (2012) also found an effect of economic development in the medium to long run, with democratic transitions happening more often after the exit of a dictator.

To find a mention of cultural determinants of democracy, one has to go back to Almond and Verba (1963) who emphasized the importance of civic culture as a prerequisite for democracy in a comparative study of five countries (Italy, Germany, the US, the UK, and Mexico). More recently, Inglehart and Weizel (2005), using the World Values Survey, argued that modernization leads to changes in values towards more self-expression and stronger emphasis on individual liberty. According to them, these changes in values are behind the stronger support for democracy. Their study is the closest to ours as the values they emphasize are close to individualism as we define it (more on this below). However, their focus is not the effect of culture on democracy. Instead, they emphasize the cultural change brought about by modernization. Our approach is different: we take culture as slow-moving (Roland, 2004)[5] and thus potentially affecting faster-moving variables, such as political institutions. While our research suggests that individualism affects both income per capita and democracy, we do not rule out a separate effect of income on democracy. Furthermore, we document that, in contrast to other measures of culture (e.g., religion, trust), individualism is a robust predictor of democracy. To the best of our knowledge, our paper is the

[3] Bruckner and Ciccone (2011) found that transitory negative income shocks related to negative rainfall shocks have a positive effect on democratization in Sub-Saharan Africa.

[4] Grosjean and Senik (2011) found no link between income and support for democracy in the context of transition countries.

[5] There is now a large empirical literature showing that culture has a very strong inertia, from research showing the long run effects of cultural differences between groups of early settlers in the US (see Fischer, 1989 or Grosjean, 2014) to research showing the persistence of culture of ancestors'country of origin among US immigrants (see e.g. Guiso et al., 2006, Tabellini, 2008, Algan and Cahuc, 2010).

first to systematically explore how culture (individualism) can influence democratization processes.

The paper is organized as follows. In section 2, we present the model. In section 3, we present the empirical analysis. In section 4, we give some brief comparative narratives on regime change and democratization in countries with different cultures, using the examples of Ghana, India and Pakistan. Section 5 concludes.

2. The model

The model embeds cultural differences in a model of democratization and revolution. Consider a polity composed of two classes of infinitely lived citizens: rich and poor. The size of the population is normalized to one. The rich are present in proportion $\delta < \frac{1}{2}$. The average income of the rich is $y^r = \theta y/\delta$ whereas the average income of the poor, present in proportion $1-\delta > \frac{1}{2}$, is $y^p = (1-\theta)y/(1-\delta)$ where y is average income and θ ($\geq 1/2$) is an indicator of income inequality.

The initial regime is autocracy. We will make the distinction between good and bad autocrats. We assume that a bad autocrat acts in a predatory way and takes away all income from the citizens. Therefore, after-tax income of the rich and poor is assumed to be equal to zero. We assume that a good autocrat does not tax or redistribute. Everybody, rich and poor, prefers good autocrats to bad autocrats. A good autocrat is randomly drawn with probability α and bad autocrat with probability $(1-\alpha)$. We assume that a ruler stays in power forever unless there is a successful revolt to overthrow the ruler.

In each period, citizens are able to overcome their collective action problem and to successfully overthrow the ruler with probability q_k ($k = I$ for individualism or $k = C$ for collectivism). We do not need for the results below to make any particular assumptions about the ranking of q_k between different cultures. A natural assumption might be $q_C > q_I$: collectivist culture can help overcome free rider problems if there is a social norm of just revolt against an unjust autocratic ruler. Indeed, people with collectivist culture will conform to the social norm and derive social status reward from doing so (failure to conform may lead to being ostracized). On the other hand, one may also make an argument that $q_C < q_I$. In collectivist societies, allegiances are based on tribal or clan affiliation. If various tribes or clans deeply distrust each other and are in conflict, they may have a more difficult time overcoming collective action

problems than people in those individualistic cultures that have dense civil society networks and a culture of citizenship participation.

In periods when citizens are able to overcome their collective action problems, usually called revolutionary situations, citizens in all cultures may choose to overthrow the regime or to keep it. While it seems obvious that citizens will want to overthrow a bad autocrat, it is not a priori obvious that they want to replace a good autocrat.

Since the poor are the majority, the decision to engage or not in collective action is theirs. Even if the rich would not want to engage in collective action, we assume that the decision of the poor is the one that matters.[6] If they engage in collective action, they will either replace the old autocrat with a new, possibly good, autocrat or introduce a radical institutional innovation and replace autocracy with democracy. In case of successful collective action, it is assumed that an autocrat will be replaced by another autocrat (possibly a good one, which happens with probability α) with probability σ_k, and that he will be replaced by democracy with probability $(1-\sigma_k)$. We assume that $\sigma_C > \sigma_I$ and this assumption will matter for our results. One justification for this assumption is that collectivist cultures have a higher level of conformism and a lower propensity to engage in institutional innovations. Another, probably deeper, justification is that collectivist values put a heavier emphasis on the difference between a benevolent ruler and a bad ruler, on political stability and the capacity of a good ruler to wisely arbitrate between different clans and groups. In contrast, individualistic values put a heavier emphasis on individual freedom, on equality of citizens before the law, and on limited government.[7]

Note that in this model, there is uncertainty about what institutional regime will obtain after the decision to revolt. The decision taken is only to engage in collective action, but the outcome is uncertain. This aspect of the model seems quite realistic. For example, during the Arab Spring of 2011, it was not clear whether democratic regimes or new autocratic regimes with changed rulers were going to emerge. As of 2016, this uncertainty has still not yet been fully resolved in various countries of the region. The above assumption on the values of σ_k means that the uncertainty over the outcome of collective action is influenced by deep cultural parameters. Figure 1 summarizes the timing of actions and outcomes.

[6] This part of the model should not be interpreted too literally. In many regime changes, parts of the elite spearhead revolutions, coups and abrupt regime changes in the name of the people. Popular support for regime change is nevertheless critical for its success.

[7] See Gorodnichenko and Roland (2012) for a fuller discussion of the cross-cultural differences between individualism and collectivism and their implications for economic and institutional behavior.

The main cultural differences in the model (differences in q_k and σ_k) are undoubtedly in reduced form because existing theories of how collective action problems are overcome and theories of the dynamics of collective action are far from satisfactory. Nevertheless, the current model makes some progress in our knowledge of institutional change by introducing a cultural component to theories of revolution and democratization.

To simplify algebra, we assume that once democracy is introduced, it remains forever. We thus rule out by assumption coups by the rich to abolish democracy.[8] Under democracy, the poor are the majority and tax the rich. They are better off under democracy than under even a good autocratic ruler whereas the rich prefer the latter since there is no redistribution under a good autocrat. The value function for income class *i* ($i = P$ for poor and $i = R$ for rich) under democracy is:

$$V_D^i = \frac{y^i + \tau * (y - y^P) - C(\tau)y}{1 - \beta}$$

where $\tau^P = \arg\max\{y^P + \tau * (y - y^P) - C(\tau)y\}$ and $C(\tau)y$ is the distortionary cost from redistributive taxation.

Under a predatory ruler, the poor will always prefer to revolt. However, under a good autocrat, the decision to revolt may lead to democracy with a certain probability, which makes the poor better off, but it may also lead to the arrival of a predatory ruler.

Under a predatory ruler, the value function for the poor (henceforth we skip the superscripts as we concentrate only on the decisions and payoffs of the poor) is:

$$V_B = 0 + \beta\{q_k\sigma_k[\alpha V_G + (1 - \alpha)V_B] + q_k(1 - \sigma_k)V_D + (1 - q_k)V_B\}$$

where *B* stands for the predatory, bad ruler and *G* for the good ruler. Note that V_G depends on whether the poor decide to revolt against a good autocrat. The value function for the poor under a good autocrat if they decide not to revolt (N) is:

$$V_{GN} = \frac{y^P}{1 - \beta}$$

whereas if they decide to revolt (R), it is:

$$V_{GR} = y^P + \beta\{q_k\sigma_k[\alpha V_{GR} + (1 - \alpha)V_B] + q_k(1 - \sigma_k)V_D + (1 - q_k)V_{GR}\}$$

Note that the expression for V_{GR} is similar to that of V_B. Indeed, we have that

$$V_{GR} - V_B = y^P + \beta(1 - q_k)(V_{GR} - V_B) = \frac{y^P}{1 - \beta(1 - q_k)}$$

[8] Acemoglu and Robinson (2006) consider a model where the rich change the regime by a coup.

We can then derive the following proposition:

Proposition 1: There exists a threshold level $\bar{\sigma}_k < 1$, above which there will be no revolutionary action and below which there will always be revolutionary action under a good ruler.
Proof of proposition 1: See the appendix.

Proposition 1 says that under a very collectivist culture (high σ_C), there will never be a revolt against a good autocrat whereas under a very individualistic culture (low σ_I), there will always be one. This result is interesting because, even if collectivist cultures were better able than individualistic cultures to overcome their collective action problem, this higher ability would be trumped by the higher degree of conformism (high σ_C).

The comparative statics is also interesting. By doing the appropriate calculations, one can see that when σ_k is sufficiently high (close to 1) a higher q_k will lead to a stronger preference not to revolt, whereas when σ_k is sufficiently low (close to 0), a higher q_k will lead to a stronger expected payoff from revolting. The latter result is intuitive but the former is surprising. It means that a higher ability to overcome the collective action problem leads to preference for no revolt when the degree of conformity is high. Intuitively, there is a trade-off involved in the decision to revolt. With some probability the revolt will lead to democracy, which will enhance welfare for the poor, but with some probability, it will lead to a bad autocrat. When q_k is high (and σ_k is high), the latter becomes a more probable event.

Another comparative static result of the model is that low income inequality (low θ) reduces the advantage of democracy over a good autocracy. In a fully egalitarian society with a good autocrat, there is indeed, in the model, no advantage to adopting democracy.

We can draw several other implications from this basic initial analysis. A first implication is that, if collectivist societies have a higher q_k, they will revolt with a higher probability when faced with a bad autocrat. This is because there will always be a revolt against a bad autocrat under all cultures, but collectivist cultures will better be able to overcome their collective action problem against a bad autocrat. In his famous *History of Government from the Earliest Times (1997)*, Samuel Finer stated that there were many more peasant revolts in ancient China than in Europe in the pre-industrial world (p.523, p. 799). While we do not have good data to test this statement directly, it is nevertheless interesting and worth further examination. In the empirical

section, we will use available data to examine collective action in different cultures. A second implication that is independent of the level of q_k is that having a good autocrat in a collectivist society will lead to higher regime stability under autocracy because of the absence of revolt.

The main result we would like to test, and also the most interesting one, follows from Proposition 1. More collectivist societies characterized by a high σ_k tend not to revolt when they have a good autocrat. More individualistic societies characterized by a low σ_k will tend to decide to engage in revolt even if q_k is very low. As a result, individualistic societies are unambiguously more likely to end up adopting democracy over time. This is expressed in Proposition 2:

Proposition 2: Independently of the level of q_k, societies with a σ_k lower than $\bar{\sigma}_k$ have a strictly higher probability of ending up with democracy than societies with a higher σ_k, above $\bar{\sigma}_k$ as long as $\alpha > 0$.

Proof of proposition 2: See the appendix.

Intuitively, under a good autocrat, there will be no revolt under a collectivist culture, in contrast to what is the case in an individualistic culture. The non-intuitive part of the proposition is that however low (but still non zero) the level of q_k, individualistic cultures are more likely to end up with a democracy. The reason is that collectivist societies will tend with positive probability to replace a bad autocrat with another autocrat rather than with democracy, as long as $\alpha > 0$. If they get a good autocrat, they will not revolt any more, and if they get a bad autocrat they will revolt but will, with positive probability, put another autocrat in place. However high q_C and however low q_I, the result of proposition 2 always holds.

In the model, culture is exogenous to institutions. What happens if we allow culture to be influenced by existing institutions? Suppose we permit the cultural parameters of our model to change as a function of the length of time spent under a given regime. Indeed, Persson and Tabellini (2009) have given evidence that pro-democracy values are reinforced over time the longer people live under democracy. Assume thus, in the framework of our model, that σ_k declines over time after democracy has been introduced. Assume also that σ_k increases over time under a "good" autocratic regime and that these changes only take place under peaceful conditions, i.e. under conditions where no revolt takes place. It follows that this will not change the results of our model. Indeed, democracy and "good" autocracy are both absorbing states,

depending on the values of σ_k. Once democracy has been reached, it will not be reversed, and so variation in the level of σ_k will not modify the results of the model. On the other hand, there will be no revolt under a good autocrat if σ_k is above $\bar{\sigma}_k$. If living under a good autocrat further increases σ_k, then there will still not be any revolt against the good autocrat. The results of the model are thus unchanged, if we allow culture to move slowly in these regimes.

Before turning to the data, it is useful to compare the predictions of our model with the results of mainstream models such as Acemoglu and Robinson (2006). The current model shares certain basic features with the Acemoglu-Robinson model: there are two groups, the elite and the poor, there is also a Markov structure, and the effect of inequality is similar. The differences are, however, conceptually very substantial. In their model, the decisions are taken by the elite. In our model, decisions (to revolt or not) are taken by the people, or their representatives within the elite, and uncertainty over the outcome of collective action plays a much larger role. In their model, there is absolutely no cultural component and the elites decide between either endogenously redistributing to the poor when they revolt, in order to avert a revolution, or to establish democracy as a commitment to redistribution. The probability of success of collective action plays an important role in their model. The higher the probability of successful collective action, the more likely it is that the elites will prefer to redistribute income to the poor to avoid a revolution. On the other hand, if that probability is lower, they will choose instead to establish democracy to avoid a revolution. In contrast, in our model the probability of success of collective action (q_k) is not playing a significant role in determining long-term outcomes. It is instead the cultural parameter σ_k that determines the long-run probability that a country adopts democracy. Furthermore, to the extent collective action is easier in collectivist culture (we provide below some evidence consistent with this claim), our model predicts a less likely transition from autocracy to democracy in countries with collectivist culture, which as we discuss below is consistent with the data, while models in the Acemoglu-Robinson spirit predict the opposite.

3. Empirical analysis

We now turn to the empirical analysis of the link between culture and democratization. Because we have no time series for our data on culture, and in particular on individualism and collectivism, and the available data are at the country level, our empirical investigation will, by necessity, mostly be devoted to cross-country analysis.

A. Data

We take the Polity IV index averaged between 1980-2010 as a measure of democratization. Polity scores take values between -10 and +10. Negative scores are for autocracies and the more negative the score the more autocratic the regime. Positive scores are for democracies and a score of +10 goes to fully institutionalized democracies. Note that many countries have a score of +10. Taking an average over 30 years is useful because many countries switched from autocracy to democracy during that period and the average score reflects the time since democracy was established as well as the quality of democracy. This period covers many democratization episodes that took place during the so-called third wave of democratization (Huntington, 1991) but it does not cover yet the results of the Arab Spring. Although Polity IV data go back much further in time, we focus on the more recent period because our cultural data were generated starting from the 1970s. The geographical distribution of polity scores is shown in Panel A of Figure 2.

To measure individualism/collectivism, we use the country level data developed by Hofstede (2001) who initially used surveys of IBM employees in about 30 countries in the 1960s. To avoid cultural biases in the way questions were framed, the survey was translated into local languages by a team of English and local language speakers. With new waves of surveys and replication studies, Hofstede's measure of individualism has been expanded to more than 90 countries.[9] The individualism score measures the extent to which it is believed that individuals are supposed to take care of themselves as opposed to being strongly integrated and loyal to a cohesive group. Individuals in countries with a high level of the individualism index value personal freedom and status, while individuals in countries with a low level of the index value harmony and conformity. Hofstede's index, as well as the measures of individualism from other studies, uses a broad array of survey questions to establish cultural values. Factor analysis is used to summarize data and construct indices. In Hofstede's analysis, the index of individualism is the first factor in work goal questions about the value of personal time, freedom, interesting and fulfilling work, etc. This component loads positively on valuing individual freedom, opportunity, achievement, advancement, recognition and negatively on valuing harmony, cooperation, relations with superiors. Although Hofstede's data were initially collected mostly with the purpose of

[9] The most current version of the data is available at http://www.geert-hofstede.com/. The timing of this and other variables is provided in Appendix Table A1.

understanding differences in IBM's corporate culture, the main advantage of Hofstede's measure of individualism is that it has been validated in a large number of studies. The ranking of countries across various studies and measures (see Hofstede (2001) for a review) is very stable. Hofstede's measure has been used extensively in the cross-cultural psychology literature, which views the individualism-collectivism cleavage as the main cultural cleavage across countries (see Heine, 2008). The Hofstede data also correlate quite well with the more recent data by Schwartz (1994, 2006).[10] Panel B of Figure 2 shows the geographic distribution of individualism scores.

Empirically, the causality between individualism and democracy can go both ways. One can argue, as we do in this paper, that individualistic culture has a positive effect on democracy, but one can also make an argument in the other direction: the more people live under democracy and are accustomed to the protection of the rights of individual citizens, the more they espouse an individualistic world view with its values of freedom and opportunity, equality of citizens before the law and constraints on the executive (see for example Persson and Tabellini, 2009). This would not change the results of the model, but would affect the empirical analysis. Ideally, we would like to have a measure of individualism and collectivism much earlier in time, prior to democratization history. Unfortunately, we do not have such data. We are therefore forced, in an attempt to deal with the potential endogeneity of culture, to use instrumental variables.

Our main instrumental variable is based on epidemiological data put together by Murray and Schaller (2010) for 230 geopolitical regions (mostly nations) on historical pathogen prevalence in the early-to-mid 20th century, extending the work of Fincher et al. (2008).[11] These historical data are very important because they give a good idea of the pathogen environment populations were facing in the past, including the very distant past, and in any case before the post-WWII epidemiological revolution when big public health changes started to occur. Panel C of Figure 2 shows the geographical distribution of historic pathogen prevalence. Given a strong correlation between pathogen prevalence and collectivism, the above studies argue that stronger pathogen prevalence pushed communities to adopt more collectivist values emphasizing tradition, putting stronger limits on individual behavior, and showing less openness towards foreigners. Collectivism is thus understood as a defense mechanism created to cope with greater

[10] Schwartz's cultural dimensions of intellectual and affective autonomy correlate positively with individualism while the dimension of embeddedness correlates negatively with individualism. These cultural dimensions are also interpreted in a very similar way as Hofstede's individualism-collectivism index.

[11] The study use 9 pathogens: leishmanias, trypanosomes, malaria, schistosomes, filariae, dengue, typhus, leprosy and tuberculosis.

pathogen prevalence. Obviously, historical pathogen prevalence is only one of the possible reasons for the adoption of collectivism. Nevertheless, as an instrumental variable, it can provide a very useful role in measuring the effect of individualism on democratization. Historical pathogen prevalence can also be argued to satisfy the exclusion restriction since historical pathogen prevalence is not likely to have a direct effect on political regime choice. Indeed, one cannot claim that autocracy is more efficient than democracy, or vice-versa, in dealing with pathogen prevalence. Autocracy suffers from lack of transparency, as was seen in China a few years ago with the SARS epidemic, and is not necessarily more efficient in dealing with a humanitarian disaster, as was the case with the catastrophic handling of the 2008 massive flooding from cyclone Nargis in Myanmar. Likewise, democracy may or may not lack speed in response to a major health epidemic.[12]

In some specifications we use another instrumental variable in conjunction with historical pathogen prevalence: the Euclidian distance between the frequency of blood types A and B in a given country and the frequency of those blood types in the USA, which is the most individualistic country in our sample. This is a measure of genetic distance. To the extent that culture is transmitted mainly from parents to children (see for example Fernandez et al. 2004, Fernandez and Fogli, 2006, and the models by Bisin and Verdier, 2000, 2001), so are genes. Populations that interbreed a lot should be genetically and culturally close because a similar parental transmission mechanism is at work in both cases. Therefore, measures of genetic distance can be seen as a proxy measure of differences in cultural values. Note that these are "neutral" genetic markers that have no direct effect on fitness (i.e., ability to think, run, work, etc.) and thus economic, cultural or political outcomes. Because genetic pools evolve slowly, these markers are very unlikely to be affected by economic outcomes, and thus we can exclude reverse causality in our instrumental variable estimates. To be clear, this particular identification strategy *does not* postulate that the first stage captures a direct causal effect between genes (here blood types) and culture. Instead, this strategy exploits the *correlation* between cultural and genetic transmission from patents to offspring. We combine this variable with the other instrumental variable mentioned above and apply standard statistical tests for the exclusion restriction. Our measure of

[12] One could argue that higher pathogen prevalence should be correlated with a more centralized form of government given the externalities from disease transmission. However, centralization of government is not directly related to the type of political regime.

genetic distance successfully passes these tests, and one can thus feel more comfortable using it as instrumental variable.[13]

The genetic data originate from Cavalli-Sforza et al. (1994), which provides measured genetic markers for roughly 2,000 groups of population across the globe. These data contain allele frequencies (alleles are variants taken by a gene) for various ethnic groups. Using the frequency of blood types is attractive because, apart from being neutral genetic markers, the frequency of alleles determining blood types is the most widely available genetic information and thus we can construct the most comprehensive (in terms of country coverage) measure of genetic distance. Since the genetic data are available at the level of ethnic groups while our analysis is done at the country level, we have aggregated genetic information using ethnic shares of population from Fearon (2003). Gorodnichenko and Roland (2010) provide more details on how genetic distance is constructed.[14]

B. Individualism and democracy in cross-section

We now present the empirical results of the effects of individualism on average polity scores. The first three columns of Table 1 report results for the basic OLS and IV regressions. The effect of individualism is strongly significant with OLS and with IV, whether we take only historical pathogen prevalence as an instrument, or together with blood distance. Note that in the two IV regressions, the first stage is very significant, indicating no problem of weak instrument. Moreover, the *p*-value of 0.856 for the overidentifying restriction test confirms that one cannot reject the null of the instrumental variables being correctly excluded at any standard significance level. Note that the IV coefficients are somewhat higher than the OLS coefficient, indicating a potential measurement error. If we take the IV coefficient in column 3 as a baseline indicator, it means that a one standard deviation increase in individualism (say from Iran to Finland, or Argentina to Switzerland) should lead to a 4 point increase in the average polity score.

[13] Using a smaller sample of countries, Gorodnichenko and Roland (2010) test overidentifying restrictions for the blood distance and other genetic instrumental variables with arguably more direct effects on individualism and collectivism and find that one cannot reject the null of correct exclusion restrictions.

[14] A potential disadvantage of blood type distance as an instrumental variable is that it could be an instrument for other cultural variables, which may also be argued to affect political regime choice. Having two plausible instruments is nevertheless an advantage in empirical analysis because one can use formal tests of the exclusion restriction.

In columns 4 to 6, we perform the same regressions but include controls for conflict. Countries plagued by conflict may indeed be more likely to have democracy suspended or eliminated during periods of conflict. We thus include four variables from the International Country Risk Guide, averaged between 1985 and 2009. These variables measure perceptions of risk for 1) cross-border conflict, 2) civil disorder, 3) ethnic tensions and 4) war. Even with more controls, the IV first stages are strong and the p-value for the overidentifying restriction is far above conventional significance levels. Note that the inclusion of controls for conflict tends to increase the size of the coefficient for individualism. We will include these four controls in the rest of our empirical specification to control for these potentially confounding factors.

One may be concerned that, perhaps, controlling for other cultural dimensions can eliminate statistical and economic significance of the individualism-democracy relationship. For example, Hofstede identified four other cultural dimensions: power distance, masculinity, uncertainty avoidance and long-term orientation.[15] Fish (2002) found a negative correlation between democracy and Islam. Inglehart (1999) argues that interpersonal trust is conducive to stable democracies. In Table 2, we assess whether including these cultural characteristics alters the strength of the individualism-democracy link. Specifically, we control for the four additional Hofstede indexes, the share of Muslim population in 1970 (these data are from Barro and McCleary (2003)), and generalized trust (taken from the World Values Survey (WVS); an average value across available waves of the WVS). The share of Muslim population has a significantly negative coefficient, which is consistent across specifications.[16] The only other cultural characteristic with similar consistency across specifications is uncertainty avoidance. Interestingly, although trust, the cultural variable the most used by economists, is positively correlated with Polity IV scores, this correlation disappears once we control for individualism scores. The magnitude of the coefficient on individualism is largely unchanged across specification.

[15] Power distance measures the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. Uncertainty avoidance measures a society's tolerance for ambiguity. Masculinity measures a preference in society for achievement, heroism, assertiveness and material rewards for success. Cultures with high long-term orientation scores are characterized by emphasis on persistence (perseverance), ordering relationships by status, the possibility of having many truths (depending on time and context), thrift, and having a sense of shame.

[16] When introducing shares of other religions (results not shown), the share of Muslims remains strongly negatively significant and is the only strongly robust variable. The share of Jews is typically positively associated to democracy. Given that Jews are a minority in all countries except Israel, the most natural interpretation is that Jews, who have been persecuted in the past, have migrated to the more stable democratic countries in the world.

In Table 3, we focus on four key economic factors typically linked to the prevalence of democracy: income, institutions, inequality, and natural resource rents. As highlighted in the introduction, since Lipset (1959), discussions on the determinants of democracy have turned around measures of economic development. We use the log of income (at purchasing power parity) per worker in 2000 from the Penn World Tables as a control for the level of economic development to maximize the coverage of countries.

Acemoglu and Robinson (2006) and others argue that extractive/non-inclusive institutions create barriers for transitions to democracy.[17] To quantify the quality of institutions, we follow Acemoglu et al. (2001) and measure the quality of institutions as the score for protection against expropriation rights from the ICRG averaged over the 1985-2009 period.

Inequality has also been argued to be related to democratization. It is a key variable in Acemoglu and Robinson's models of democratization. A higher level of inequality makes democracy more advantageous, as it will lead to higher levels of redistribution. On the other hand, very high levels of inequality may lead the elite to stage coups to eliminate the associated tax burden. We measure inequality with the Gini coefficient for net income. This variable is taken from the Standardized World Income Inequality Database. To minimize measurement errors and short-term volatility in the series, we take a median value of the inequality over the 1960-2009 period.

Finally, we employ a measure of natural resource rents. Ross (2001), Wantchekon (2002), Dunning (2008) and others provide evidence suggesting that countries rich in natural resources may tend to be less democratic ("the political resource curse"). To account for this determinant, we use the share of natural resource rents in the gross domestic product. The share is averaged over 1980-2010 and taken from the World Development Indicators.

From an econometric point of view, these additional controls could be problematic in several respects. First, Gorodnichenko and Roland (2010, 2011) document a potential causal effect of individualism on income per capita and the quality of institutions. Hence, there could be an identification problem when both variables are used as regressors. Second, there might be reverse causality, i.e., democracy may affect the level of economic development, quality of institutions, level of inequality, and the extractive/non-extractive nature of the economy. Such

[17] Acemoglu et al. (2008) claim that income has no effect on democracy and that the comovement between these two variables is determined by institutions (the rule of law) that affect both democracy and successful economic development.

endogeneity not only yields biased estimates of the coefficients on these economic variables but it is also likely to generate a downward bias in the estimate of the coefficient on individualism.[18] As a result, the estimated coefficient on individualism scores likely provides a lower bound for the "true" coefficient. In short, one should exercise caution in interpreting regression coefficients in this specification, and also bear in mind that the estimated effect of individualism on democracy is likely to be understated.

We find that income is indeed positively correlated with Polity IV scores, but controlling for income or the other potential determinants does not appear to diminish the strength of the relationship between individualism and democracy.[19] Note that income is not significant in the IV regressions, which could be because of the identification problem mentioned above. In contrast, the share of natural resource rents in GDP is robustly negatively correlated with Polity IV scores. Inequality and the quality of institutions seem to have no robust association with democracy once we condition on other predictors. Importantly, results in Table 3 suggest that, even after controlling for economic factors emphasized in previous work, the effect of individualism is large and statistically significant.

In Table 4, we introduce controls for other variables that previous work has associated with democracy: education, measures of fractionalization and economic openness. Bourguignon and Verdier (2000), for example, build a model where education is both an engine of growth and of political participation. Column (1) includes the education index (average over 1980-2005) from the *Human Development Report*. We see that individualism and education are both statistically significant. In column (2), we introduce measures of ethnic, cultural and ethno-linguistic fractionalization from Fearon (2003). None of these variables comes out as significant, while individualism remains strongly significant. A similar result obtains in column (3) when we control for openness, measured as the ratio of exports plus imports to gross domestic product (in current prices, year 2000) and provided by Penn World Tables. The IV regressions in columns (4) through (6) yield similar results.

Conditional on the quality of our instrumental variables, we conclude that individualism has a significant and robust causal effect on the polity score, even after including controls that

[18] Gorodnichenko and Roland (2010) provide a more detailed discussion of this econometric problem.
[19] Results are similar when we use consider measures of output for earlier periods. See Appendix Table A2.

have been used in the literature, such as conflict, religion, income, institutions, education, fractionalization and openness.

C. Long-difference analysis

A potential drawback of cross-sectional analysis of democratization is that it does not exploit the time variation of the data. Fortunately, it is possible to perform panel data analysis of the polity score to understand the dynamics of democratization within a country. However, culture is slow-moving and it would be surprising to see important effects of culture on the basis of annual time variation. Furthermore, given that cultural attributes are likely to be measured with error, panel regressions based on annual data can exacerbate attenuation biases (see Griliches and Hausman 1986). Not surprisingly, analyses of cultural attributes almost invariably focus on cross-sectional variation.

In an attempt to strike a balance between a desired specification and data constraints, we report in Table 5 results based on "long-difference regressions" where the dependent variable is the difference in the polity index between 1960 and 2000 and regressors are the log difference of income per capita and the difference in the level of primary education during that same period as well as individualism and the polity score in 1960. This approach enhances the signal-to-noise ratio for the variables and one may thus obtain a crisper view of how variables are related. With long differences, individualism remains significant, except in columns (1) and (5), but this is mostly due to outliers. The coefficient on individualism is significant when we use Huber robust regressions.

D. Years of democracy, collective action, collectivism and regime transitions

We have so far used as dependent variable the average polity score between 1980 and 2010. An important advantage of this measure is that it incorporates the quality of democracy in a country as well as its length after 1980. In this subsection, we try to further explore dynamic aspects of the democratization process in the context of our model. In a first step, we examine the relationship between individualism and the frequency of democracy, which is defined as the fractions of years a country has continuously had a non-negative polity score. One may interpret this frequency as measuring the length of democracy in a country. While this measure does not take into account the quality of democracy, one can argue that this measure is closer to the model as the latter predicts that individualist cultures will on average adopt democracy earlier. We ran the same regressions as

in Tables 1-5 using length of democracy as the dependent variable and we reached essentially the same conclusions as before. In Table 6, we present some of the most salient results.

Column 1 presents the simple OLS regression of fraction of years in democracy on individualism. A one standard deviation in the individualism score leads to a 24 percentage point increase in the length of democracy. The instrumental variable regression in column 2, using historical pathogen prevalence and blood distance to the U.S. as instrumental variables predicts a 34 percent increase in response to a one standard deviation increase in the individualism score. The over-identification test clearly indicates that we cannot reject the null of the IVs being correctly excluded. Columns 3 and 4 control for log of income per worker, quality of institutions and the share of natural resource rents in gross domestic product. Although the point estimates on individualism scores are somewhat smaller, the effect continues to by economically and statistically significant. In columns 5 and 6, we add controls for education, religion, conflict, and measures of ethnic/cultural/linguistic fractionalization. In all these regressions individualism always has a significant effect on the length of democracy.

We did not make any assumptions in the model about whether collectivist cultures have a higher probability of successful collective action compared (q_C) to individualist cultures (q_I), and our main result did not hinge on this. It would nevertheless be useful to see if the data can give us some indication about whether there is more collective action under collectivism. In relation to this, we investigate whether collectivist autocracies have a higher likelihood of breakdown, be it through mass protests or coups, which would tend to suggest that there is more collective action success in more collectivist countries. In order to do this, we rely on the database assembled by Geddes et al. (2014). This database focuses on autocracies and, to our knowledge, is the best source documenting transitions from an autocratic regime to either democracy or another autocracy.

We define the probability of an autocracy breakdown as the number of autocracy breakdowns (coups, revolutions, elections, etc.) divided by the number of years a country has been under autocracy. This statistic from the Geddes et al. (2014) comes the closest to our parameter q_k. Figure 3 shows that there is a clear negative correlation between individualism and autocracy breakdown. In Table 7, we provide some regressions using autocracy breakdown as the dependent variable and the set of controls identical to those in Table 6. In all specifications the coefficient for individualism is negative, suggesting that among countries with an autocratic

regime, those having a collectivist culture are more likely to experience autocracy breakdown. The coefficient is significant in all OLS regressions, but the IV coefficients are mostly not significant. The evidence presented here is weaker than in previous tables, but overall tends to suggest that there may be less collective action failure in collectivist cultures.

Importantly, the Geddes et al. (2014) database also makes it possible to analyze transitions from autocracy to autocracy and transitions from autocracy to democracy. The model clearly predicts that, in collectivist societies, there will be more transitions from bad autocracies to good autocracies because $\sigma_C > \sigma_I$). While it is difficult to distinguish empirically "bad" and "good" autocrats, we can examine the link between individualism and collectivism and the probability of regime changes. We define the probability of autocratic transition as the proportion of autocracy breakdowns leading to autocracy in a country. Because these variables are likely to very often take the value of 0 or 100, we performed tobit regressions with censoring points at 0 and 100. The results are presented in Tables 8, where we take the same controls as in Table 7. We observe clearly that transitions from autocracy to autocracy are significantly negatively associated with individualism (and thus positively associated with collectivism) in all specifications. Hence, both the polity data and the Geddes et al. (2014) data on autocracies and autocratic transitions give empirical support for these predictions of the model.

4. A case study of culture and regime transitions

In this section, we give some historical examples that are consistent with the features of our model. While this narrative account is necessarily limited and non-exhaustive, it facilitates interpretation of the model and its empirical tests.

Ghana has an individualism score of 20, the same as China, Vietnam, Singapore, Bangladesh or Thailand. It has the lowest individualism score in Africa, together with Nigeria. Ghana is thus among the most collectivist countries in the world. Ghana has had a strong history of collective action. During the colonial period, it had one of the most powerful anti-colonial movements, under the leadership of Kwame Nkrumah. Ghana was the first country in Sub-Saharan to achieve independence in 1956. Nkrumah espoused a socialist ideology. After independence, he gradually became a dictator, concentrating all powers in his hands, instituting a single party state, controlling the different branches of government and instituting increasingly repressive laws. Nkrumah was deposed in 1966 by a military coup. Democracy was introduced by

the military, elections were held in 1969 but there were soon massive protests against austerity policies introduced by the democratically elected government. Another military coup followed and democracy was abolished. Several years later, protests developed against the military regime. Under the pressure of these protests, a referendum was held in 1978 to establish a union government to replace the military regime with a government representing both military and civilian leaders. Parties were still not allowed under the union government. After the success of the referendum, more strikes and demonstrations developed to ask for the establishment of full democracy. In 1979, parties were allowed to operate legally again. Very soon, there was a failed military coup under the leadership of Air Force officer Jerry Rawlings who was arrested. Riots led to Rawlings being freed from jail and to the so-called June 4 revolution putting Rawlings in power. While democracy was again shortly being reestablished, strikes against the economic policies of the new democratic government led in 1981 to a coup led by Rawlings. In 1992, the latter organized a transition to democracy under which he was elected president of Ghana, a post he held until 2001. Ghana is currently one of the respected democracies in Sub-Saharan Africa with a polity score of 8 in 2004.

There are several striking facts about Ghana. First, there has always been strong collective action, before and after independence. Second, until recently, Ghana was mostly an autocracy. The two most famous autocrats, Nrkumah and Rawlings enjoyed a high level of popularity during a great part of their tenure. Nkrumah was overthrown in the middle of the cold war and Rawlings presided over the transition to democracy, becoming elected leader after being a military dictator. The experience of Ghana resonates with some of the features of our model, in particular the higher propensity to collective action under the collectivist culture, and the emergence of "good autocrats".

The experience of Ghana stands in sharp contrast to that of India, which also had a strong independence movement but established democracy right after independence, and never became autocratic, despite ups and downs in the quality of its democracy. India has an individualism score of 48, the highest among developing countries, a score only slightly lower than that of Spain (51) or Israel (54). India's success with democracy can be explained in many ways, but it is nevertheless striking to note that, being one of the most individualist countries in the developing world, India has had a stable democracy.

Pakistan, geographically close to India, has an individualism score of 14, one of the lowest in the world. While initially democratic after the Partition, Pakistan became autocratic in

1958 following martial law declared by president Mirza, following a series of short-lived governments. Mirza himself was ousted by General Ayub Khan. The latter then introduced land reform and a series of reforms that were quite popular as they delivered good economic performance. He then introduced a presidential system in 1962 and was elected president. Ayub Khan may be seen as a "good dictator" who implemented useful reforms. Indeed, he was quite popular during most of his tenure. He stayed in power until 1969 when he was deposed by a coup. Since then, Pakistan has alternated between military regimes and short-lived democracies. Although Pakistan and India shared British colonial rule for a long time, the contrast between India and Pakistan's post-WWII political history is quite striking.

5. Conclusions

We have presented a model integrating culture in democratization processes. Assuming that a collectivist culture displays a stronger taste for conformity and a stronger aversion to institutional innovation even if it might be better at overcoming collective action problems, the model predicts that, starting from autocracy as the initial regime, an individualistic culture will have a higher likelihood of switching to democracy than a collectivist culture. The reason is that a collectivist culture will tend to stick to a "good" non-predatory autocracy, which will not be the case with an individualistic culture.

Predictions of the model have strong, robust support in the data, controlling for existing determinants identified in the literature.. To the extent one believes our instrumental variable analysis, these effects may be interpreted as causal. Using long-difference regressions, we also find long-run effects of individualism on polity scores. Using the Geddes et al. (2014) data base on autocracies, we also found that collectivist autocracies have higher frequency of regime breakdowns than individualist autocracies. Consistent with the model, collectivist countries are more likely to experience a transition towards autocracy while individualist countries are more likely to experience a transition towards democracy.

Our theoretical and empirical results have important implications. In particular, as countries with collectivist cultures develop economically, they will not necessarily evolve towards democracy or might do so more slowly or possibly only under the effect of an exceptional crisis. This implication is in stark contrast with modernization theories. Countries like China, Vietnam or Singapore, which have experienced considerable economic success in recent decades have not

adopted Western-style democracies. Similarly, countries that have experienced a genuine democratization process like Taiwan, Thailand, Indonesia and Korea have done so relatively recently and their average polity score over the last 30 years have not been better than Guatemala, Panama or Peru.

We must nevertheless be very cautious in interpreting these implications. There are many determinants of democracy and culture is only one of those forces. Our research nevertheless suggests that the role of culture, and in particular of individualism and collectivism as fundamental cultural dimension, cannot be ignored in understand democratization processes.

References

Acemoglu D., and J. Robinson (2006) *Economic Origins of Dictatorship and Democracy*. Cambridge University Press.

Acemoglu, D., and J. Robinson (2000) "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective," *Quarterly Journal of Economics* 115(4), 1167-1199.

Acemoglu, D., S. Johnson, and J. Robinson (2001) "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review* 91: 1369-1401.

Acemoglu, D., S. Johnson, J. Robinson, and P. Yared (2005) "From Education to Democracy?" *American Economic Review Papers and Proceedings* 95(2), 44-49.

Acemoglu, D., S. Johnson, J. Robinson, and P. Yared (2008) "Income and democracy," *American Economic Review* 98, 808-42.

Acemoglu, D., S. Naidu, P. Restrepo and J. Robinson (2014) "Democracy Does Cause Growth" NBER working paper No 20004.

Algan, Y., and P. Cahuc (2010) "Inherited Trust and Growth," *American Economic Review* 100(5), 2060-2092.

Almond, G., and S. Verba (1963) *The Civic Culture. Political Attitude and Democracy in Five Nations*. Sage Publications New York.

Barro, R.J., and J.W. Lee (2012) "A New Data Set of Educational Attainment in the World, 1950–2010", mimeo Harvard University.

Barro, R.J., and R.M. McCleary (2003) "Religion and Economic Growth Across Countries," *American Sociological Review* 68(5), 760-781.

Bisin, A., and T. Verdier (2000) "Beyond The Melting Pot": Cultural Transmission, Marriage, And The Evolution Of Ethnic And Religious Traits," *Quarterly Journal of Economics* 115, 955-988.

Bisin, A., and T. Verdier (2001) "The Economics of Cultural Transmission and the Dynamics of Preferences," *Journal of Economic Theory* 97, 298-319.

Boix, C., and S. Stokes (2003). "Endogenous Democratization" *World Politics* 55(4), 517-549.

Bourguignon, F., and T. Verdier "Oligarchy, Democracy, Inequality and Growth," *Journal of Development Economics* 62(2), 285-313.

Bruckner, M., and A. Ciccone (2011) "Rain and the Democratic Window of Opportunity," *Econometrica* 79(3), 923–947.

Cavalli-Sforza, L. L., P. Menozzi, and A. Piazza (1994) *The History and Geography of Human Genes.* Princeton University Press.

Dunning, T. (2008) *Crude Democracy: Natural Resource Wealth, and Political Regimes,* Cambridge University Press Cambridge U.K.

Fearon, J. (2003) "Ethnic and Cultural Diversity by Country," *Journal of Economic Growth* 8(2), 195-222.

Fincher, C.L., R. Thornhill, D.R. Murray, and M. Schaller (2008) "Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism" *Proceedings - Royal Society. Biological sciences* 275(1640), 1279-1285.

Finer, S. (1997) *The History of Government*, volumes I-III, Oxford University Press, Oxford.

Fischer, D. H. (1989) *Albion's seed: Four British folkways in America*. New York: Oxford University Press.

Fish, S. (2002) "Islam and Authoritarianism," *World Politics* 55(1), 4-37.

Fowler, J., L. Baker, and C. Dawes (2008) "Genetic Variation in Political Participation," *American Political Science Review* 102, 233-248.

Freedom House, 1999. *Democracy's Century: A Survey of Global Political Change in the 20th Century*.

Geddes, B., J. Wright and E. Frantz (2014) "Autocratic Breakdown and Regime Transitions: A New Data Set," *Perspectives on Politics* 12(2), 313-331.

Gorodnichenko, Y., and G. Roland (2010). "Culture, Institutions and the Wealth of Nations", forthcoming in *Review of Economics and Statistics*.

Gorodnichenko, Y., and G. Roland (2011) "Which Dimensions of Culture Matter for Long-Run Growth?" *American Economic Review Papers and Proceedings* 101(3), 492-498.

Gorodnichenko, Y., and G. Roland (2012) "Understanding the Individualism-Collectivism Cleavage and its Effects: Lessons from Cultural Psychology." In Aoki, M. T. Kuran and G. Roland (ed.) *Institutions and Comparative Economic Development*, Palgrave McMillan (forthcoming).

Griliches, Z., and J.A. Hausman (1986) "Errors in variables in panel data," *Journal of Econometrics* 31(1), 93-118.

Grosjean, P. (2014) "A history of violence: the culture of honor as a determinant of homicide in the US South," *Journal of the European Economic Association* 12(5), 1285–1316.

Grosjean, P., and C. Senik (2011) "Democracy, Market Liberalization and Political Preferences" *Review of Economics and Statistics* 93(1), 365-381.

Guiso, L., P. Sapienza, and L. Zingales (2006) "Does Culture Affect Economic Outcomes." *Journal of Economic Perspective*s 20(2), 23-48.

Hatemi, P.K., and R. McDermott (2012) "The Genetics of Politics: Discovery, Challenges and Progress," *Trends in Genetics* 28(10), 525-533.

Heine, Steve J. (2008) *Cultural psychology*. W. W. Norton & Company.

Hofstede, G. (2001) *Culture's Consequences: Comparing Values, Behaviors, and Organizations Across Nations*. 2nd edition. Sage Publications.

Huntington, S. (1991). *The Third Wave: Democratization in the Late Twentieth Century* University of Oklahoma Press.

Inglehart, R. 1999. "Trust, well-being and democracy," in *Democracy and trust*, M.E. Warren. ed., Cambridge ; New York : Cambridge University Press, 88-120.

Inglehart, R., and C. Weizel (2005) *Modernization, Cultural Change and Democracy: The Human Development Sequence*, Cambridge University Press, Cambridge UK.

Lipset, S.M. (1959) “Some Social Requisites of Democracy: Economic Development and Political Legitimacy,” *American Political Science Review 53, 69-105.*

Murray, D. R., and M. Schaller (2010) “Historical prevalence of infectious diseases within 230 geopolitical regions: A tool for investigating origins of culture,” *Journal of Cross-Cultural Psychology* 41, 99-108.

Persson, T. (2005) “Forms of Democracy, Policy and Economic Development” NBER Working Paper No 11171.

Persson, T., and G. Tabellini (2009) “Democratic Capital: The Nexus of Political and Economic Change,” *American Economic Journal*: *Macroeconomics* 1, 88-126.

Przeworski, A., and F. Limongi (1997) “Modernization: Theories and Facts,” *World Politics* 49, 155-183.

Ross, M. (2001) “Does Oil Hinder Democracy?” *World Politics* 53, 325-361.

Schwartz, S.H. (1994) “Beyond Individualism/Collectivism: New Cultural Dimensions of Values” in Uichol K. et al, eds., *Individualism and Collectivism: Theory, Method, and Applications*. Sage.

Schwartz, S.H. (2006) “A Theory of Cultural Value Orientations: Explication and Applications,” *Comparative Sociology* 5(2-3), 137-182.

Tabellini, G. (2008) “Institutions and Culture,” *Journal of the European Economic Association* 6(2-3), 255-294.

Treisman, D. (2012). “Income, Democracy and the Cunning of Reason”, mimeo UCLA.

Wantchekon, L. (2002) “Why Do Resource Dependent Governments have Authoritarian Governments?” *Journal of African Finance and Development* 2, 57-77.

APPENDIX

Proof of Proposition 1:

Under a good ruler, the poor prefer not to revolt if:

$$V_{GN} = \frac{y^P}{1-\beta} \geq V_{GR} = y^P + \beta\{q_k\sigma_k[\alpha V_{GR} + (1-\alpha)V_B] + q_k(1-\sigma_k)V_D + (1-q_k)V_{GR}\}$$

Using the expression for $V_{GR} - V_B = y^P + \beta(1-q_k)(V_{GR} - V_B) = \frac{y^P}{1-\beta(1-q_k)}$

we get

$V_{GN} \geq V_{GR} \Leftrightarrow$

$\frac{y^P}{1-\beta} \geq y^P + \beta\left\{q_k\sigma_k\alpha\frac{y^P}{1-\beta(1-q_k)} + q_k\sigma_k\left(V_{GR} - \frac{y^P}{1-\beta(1-q_k)}\right) + q_k(1-\sigma_k)V_D + (1-q_k)V_{GR}\right\} \Leftrightarrow$

$\frac{y^P}{1-\beta} \geq y^P + \beta\left\{q_k(1-\sigma_k)V_D - (1-\alpha)q_k\sigma_k\frac{y^P}{1-\beta(1-q_k)} + (1-q_k(1-\sigma_k))V_{GR}\right\}$

Since the right hand side of the inequality is equal to V_{GR}, we have that

$V_{GN} \geq V_{GR} \Leftrightarrow$

$\frac{y^P}{1-\beta} \geq \frac{1}{1-\beta(1-q_k(1-\sigma_k))}\left\{y^P + \beta\left[q_k(1-\sigma_k)V_D - (1-\alpha)q_k\sigma_k\frac{y^P}{1-\beta(1-q_k)}\right]\right\}$

A quick look at this last inequality shows several things. First, a high degree of conformity (a high σ_k) implies the preference not to revolt. With $\sigma_k \longrightarrow 1$,

$$V_{GR} \longrightarrow \frac{1}{1-\beta}\left\{y^P - \beta(1-\alpha)q_k\frac{y^P}{1-\beta(1-q_k)}\right\} < \frac{y^P}{1-\beta}$$

Note now that when σ_k is low and tends towards zero, there will be a strict preference to revolt. Indeed, in that case:

$$V_{GR} \longrightarrow \frac{1}{1-\beta(1-q_k)}\{y^P + \beta q_k V_D\} \geq \frac{y^P}{1-\beta} = V_{GN} \Leftrightarrow V_D \geq V_{GN}$$

The latter inequality is always satisfied as democracy brings positive redistribution to the poor. Since $V_{GN} > V_{GR}$ for high values of σ_k and $V_{GN} < V_{GR}$ for low values of σ_k and since $\frac{\partial V_{GR}}{\partial \sigma_k} < 0$, by continuity, there exists a threshold value $\bar{\sigma}_k$, at which the poor are indifferent between revolting and not revolting. Above $\bar{\sigma}_k$, they prefer not to revolt against a good autocrat, and below $\bar{\sigma}_k$ they prefer to revolt against a good autocrat.

QED.

Proof of Proposition 2:

Under a collectivist culture with a high enough σ_k above $\bar{\sigma}_k$ such that the poor decide not to revolt, the probability of ending up with a democratic regime after t periods can be shown to be

equal to

$$(1-\alpha)q_k(1-\sigma_k)\sum_{j=0}^{t}\{q_k\sigma_k(1-\alpha)\}^j$$

When $t \to \infty$, the probability of having democracy converges to

$$\frac{(1-\alpha)q_k(1-\sigma_k)}{1-(1-\alpha)q_k\sigma_k}.$$

Note that this expression tends towards zero as $\sigma_k \to 1$.

Under an individualist culture with a low enough σ_k such that the poor decide to revolt against any type of dictator, the probability of ending up with a democratic regime after t periods can be shown to be equal to

$$q_k(1-\sigma_k)\sum_{j=0}^{t}\{q_k\sigma_k\}^j$$

With $t \to \infty$, the probability of having democracy converges to $\frac{q_k(1-\sigma_k)}{1-q_k\sigma_k}$ which is strictly positive as long as $q_k > 0$.

Compare now the probability of an individualistic culture (with σ_k below $\bar{\sigma}_k$) and the probability of a collectivist culture (with σ_k above $\bar{\sigma}_k$) of ending up with democracy as $t \to \infty$. A country with an individualistic culture will have a higher probability of ending up with democracy than a country with a collectivist culture as long as

$$\frac{q_k(1-\sigma_k)}{1-q_k\sigma_k} > \frac{(1-\alpha)q_k(1-\sigma_k)}{1-(1-\alpha)q_k\sigma_k}$$

One verifies that this inequality is strictly satisfied as long as $\alpha > 0$.

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Figure 1. Timing of events in the model

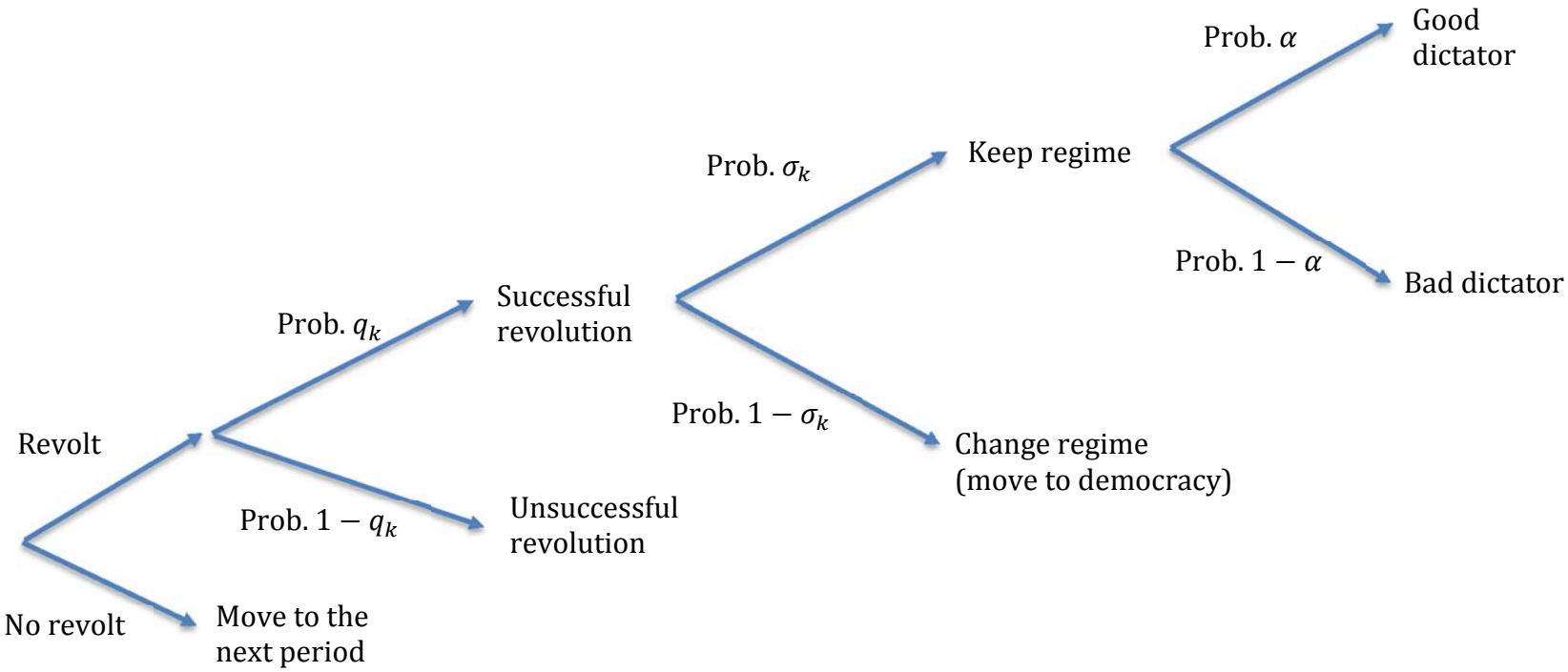
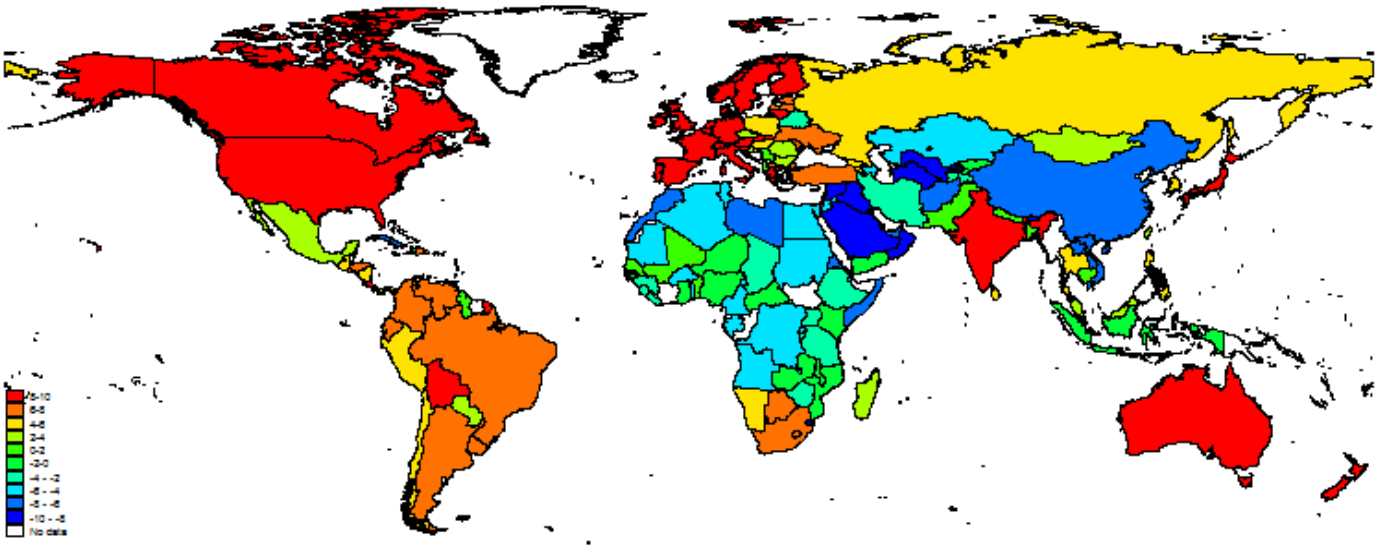
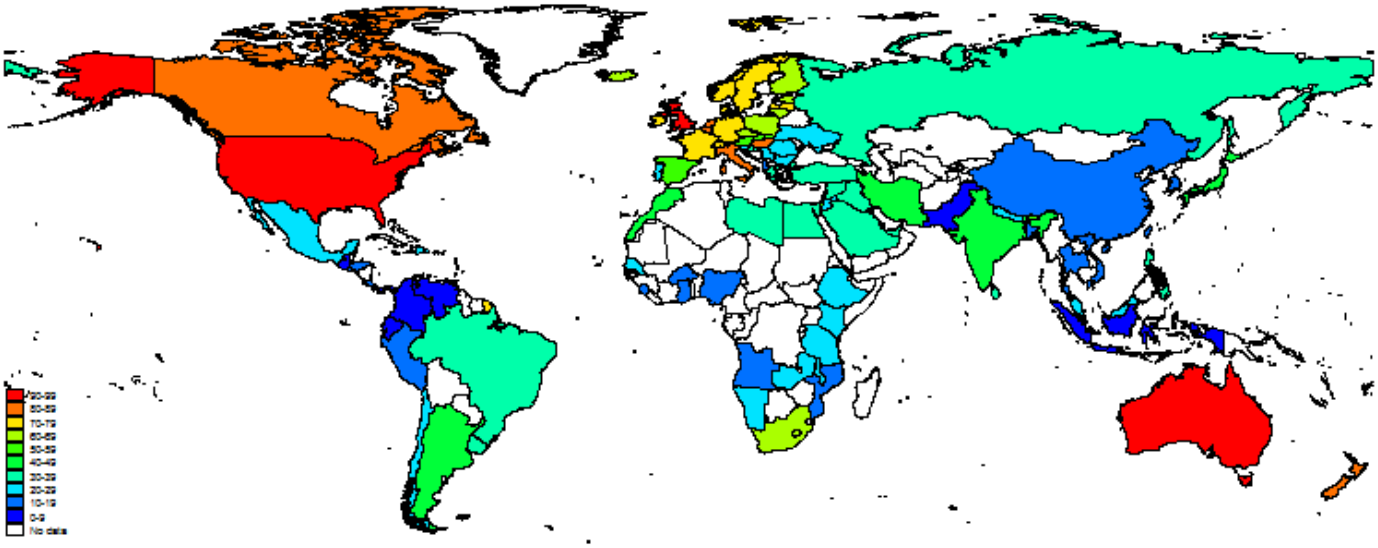


Figure 2. Geographical distribution of individualism, polity scores, and pathogen prevalence

Panel A: Polity score (Source: http://www.systemicpeace.org/polity/polity4.htm)



Panel B: Individualism (Source: http://geert-hofstede.com/)



Panel C: Pathogen prevalence (Source: Murray and Schaller 2010)

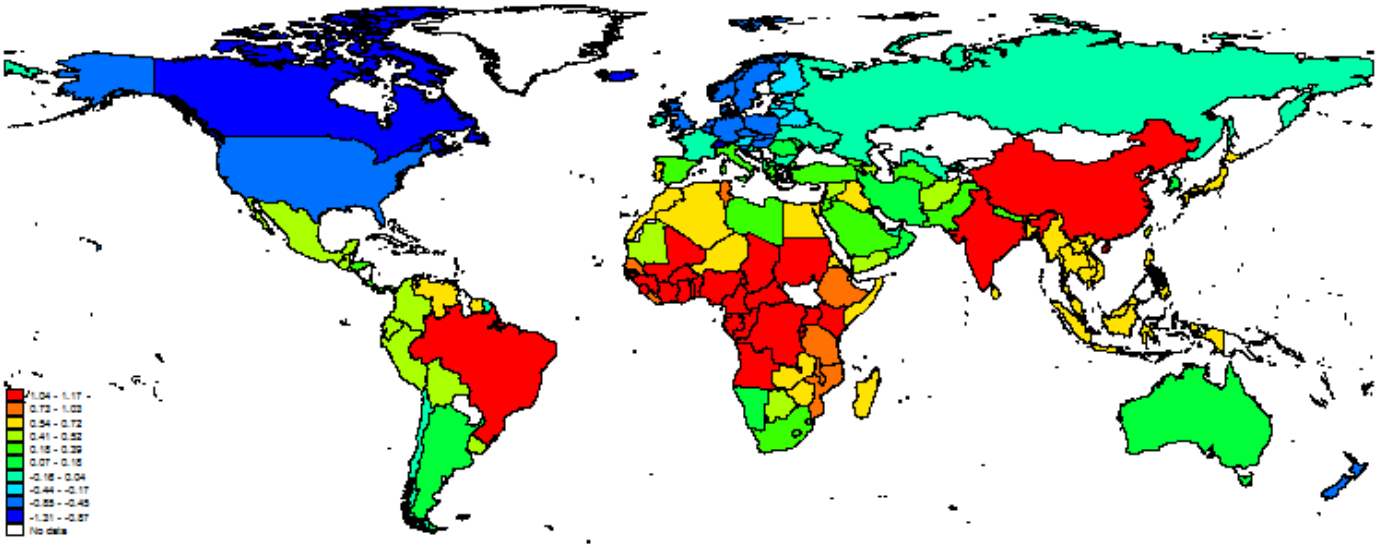
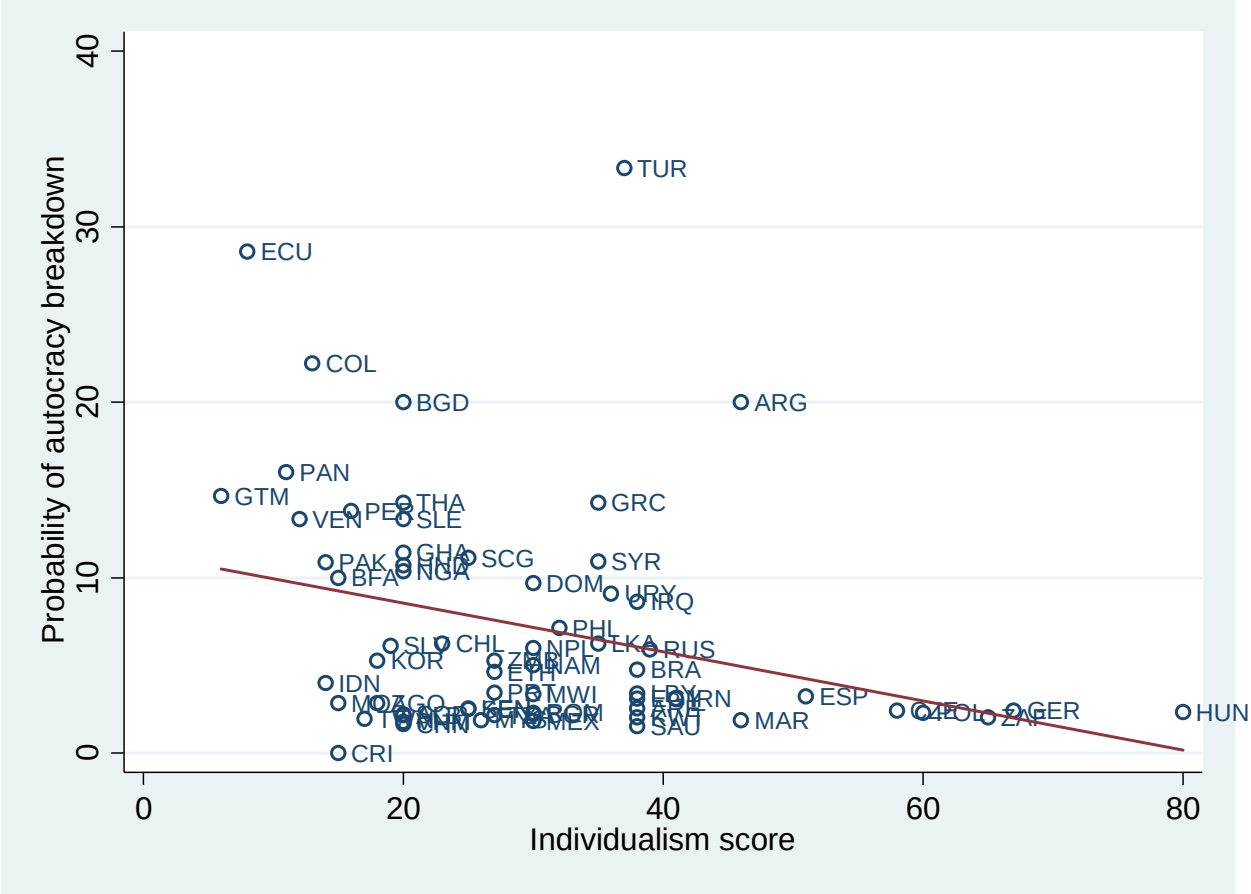


Figure 3. Individualism and the probability of autocratic breakdown.



Notes: Probability of autocracy breakdown is the fraction of years when a country has a change of autocrats conditional on starting as an autocracy. Source: Geddes et al. (2014).

TABLE 1: Individualism and democratization. Basic OLS and IV regressions.

Dependent variable: Polity score	OLS	IV pathogens	IV blood distance + pathogens	OLS	IV pathogens	IV blood distance + pathogens
	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	0.130***	0.201***	0.199***	0.160***	0.278***	0.250***
	(0.018)	(0.028)	(0.026)	(0.025)	(0.055)	(0.042)
Low risk of:						
- Cross-border conflict				0.137	-0.218	-0.132
				(1.408)	(1.422)	(1.403)
- Civil disorder				-2.152*	-4.443***	-3.884***
				(1.116)	(1.573)	(1.320)
- Ethnic tensions				0.944**	0.855*	0.877*
				(0.426)	(0.479)	(0.456)
- War				1.670	2.845	2.559
				(1.907)	(1.877)	(1.854)
Observations	96	96	96	92	92	92
R^2	0.236	0.166	0.170	0.334	0.196	0.255
1st stage F-stat		95.73	51.18		42.19	28.81
1st stage Partial R^2		0.445	0.515		0.277	0.392
Overid test p-value			0.856			0.319

Notes: The dependent variable is the average polity score for the 1980-2010 period from the Polity IV data base. *Individualism* is Hofstede's index of individualism. A larger value of the index corresponds to a greater level of individualism. The four conflict variables (*low risk of: cross-border conflict, civil disorder, ethnic tensions and war*) are taken from the International Country Risk Guide and are averaged between 1985 and 2009. A higher score means a lower risk of the variable. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. *Over-id test p-value* reports the p-value for the overidentifying restriction tests that instruments are correctly excluded. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 2: Individualism and Democratization with controls for different cultural dimensions.

Dependent variable: Polity score	OLS	OLS	OLS	OLS	OLS	IV pathogens	IV blood dist. + pathogens
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hofstede's cultural indexes							
Individualism	0.160***	0.105***	0.141***	0.110***	0.078***	0.170***	0.125***
	(0.025)	(0.028)	(0.028)	(0.021)	(0.025)	(0.062)	(0.042)
Power Distance		-0.102***			-0.079***	-0.028	-0.053
		(0.035)			(0.028)	(0.039)	(0.033)
Masculinity		-0.011			-0.013	-0.031	-0.022
		(0.025)			(0.022)	(0.024)	(0.022)
Uncertainty Avoidance		0.054*			0.045*	0.042**	0.044**
		(0.027)			(0.023)	(0.020)	(0.020)
Long-Term Orientation		0.040			-0.006	-0.003	-0.005
		(0.024)			(0.018)	(0.017)	(0.016)
Trust (WVS)			-0.022		-0.026	-0.032*	-0.029
			(0.026)		(0.020)	(0.019)	(0.018)
Share of Muslim population (1970)				-10.419***	-8.312***	-7.565***	-7.928***
				(1.464)	(1.862)	(1.909)	(1.779)
Observations	92	83	85	92	78	78	78
R^2	0.334	0.499	0.340	0.614	0.659	0.603	0.644
1st stage F-stat						23.69	19.87
1st partial R^2						0.237	0.356
Over-id test p-value							0.207

Notes: The dependent variable is the average polity score for the 1980-2010 period from the Polity IV database. *Individualism* is Hofstede's index of individualism. A larger value of the index corresponds to a greater level of individualism. *Power Distance*, *Masculinity*, *Uncertainty Avoidance*, and *Long-Term Orientation* are other dimensions of culture according to Hofstede's cultural dimension. *Trust* is a measure of generalized trust from the World Values Survey. *Share of Muslim populatio*n is from Barro and McCleary (2003) and refers to 1970. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. Column (6) uses *historical pathogens.* Column (7) uses both instrumental variables. Controls for *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are include but not reported. *Over-id test p-value* reports the p-value for the overidentifying restriction tests that instruments are correctly excluded. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Individualism and Democratization with controls for income, institutions, rents and inequality.

Dependent variable: Polity score	(1)	(2)	(3)	(4)	(5)
			Panel A: OLS		
Individualism	0.123***	0.148***	0.120***	0.122***	0.048*
	(0.035)	(0.027)	(0.027)	(0.023)	(0.027)
Log income per worker	2.332***				3.479***
	(0.771)				(0.701)
Protection against expropriation risk		0.309**			0.009
		(0.133)			(0.133)
Natural resource rent			-0.233***		-0.151**
			(0.047)		(0.057)
Gini coefficient				0.002	0.057
				(0.047)	(0.039)
R^2	0.423	0.374	0.498	0.350	0.612
			Panel B: IV (historic pathogen prevalence)		
Individualism	0.223***	0.258***	0.251***	0.275***	0.182**
	(0.071)	(0.056)	(0.062)	(0.064)	(0.080)
Log income per worker	1.427				2.103**
	(0.896)				(0.954)
Protection against expropriation risk		0.213			0.031
		(0.145)			(0.140)
Natural resource rent			-0.161***		-0.119*
			(0.062)		(0.064)
Gini coefficient				0.081	0.100*
				(0.066)	(0.059)
R^2	0.342	0.260	0.349	0.086	0.458
1st stage F-stat	17.37	34.72	35.76	26.41	9.473
1st stage Partial R^2	0.164	0.255	0.248	0.232	0.106
			Panel C: IV (historic pathogen prevalence + blood distance)		
Individualism	0.205***	0.244***	0.224***	0.224***	0.133**
	(0.052)	(0.040)	(0.045)	(0.045)	(0.053)
Log income per worker	1.586**				2.602***
	(0.795)				(0.874)
Protection against expropriation risk		0.225*			0.023
		(0.134)			(0.132)
Natural resource rent			-0.176***		-0.131**
			(0.055)		(0.057)
Gini coefficient				0.055	0.085*
				(0.056)	(0.049)
R^2	0.368	0.287	0.404	0.233	0.549
1st stage F-stat	14.79	27.34	25.23	20.29	11.51
1st stage Partial R^2	0.290	0.398	0.358	0.344	0.244
Overid test p-value	0.693	0.686	0.401	0.146	0.425
Observations	91	92	91	87	86

Notes: The dependent variable is the average polity score for the 1980-2010 period from the Polity IV data base. *Individualism* is Hofstede's index of individualism. A larger value of the index corresponds to a greater level of individualism. *Log income per worker*: log income (at purchasing power parity) per worker in 2000 from the Penn World Tables. *Protection against expropriation risk* (ICRG, average 1985 -2009). *Gini coefficient* of net income inequality is from the Standardized World Income Inequality Data base. *Natural resource rent* is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. This variable is measured in percent of GDP (average over 1980-2010) and taken from the World Development Indicators. Controls *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are included but not reported. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. *Over-id test p-value* reports the p-value for the overidentifying restriction tests that instruments are correctly excluded. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 4: Individualism and Democratization with controls for fractionalization, education, and openness.

Dependent variable:	OLS			IV		
Polity score	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	0.104***	0.143***	0.166***	0.130**	0.214***	0.263***
	(0.025)	(0.027)	(0.027)	(0.055)	(0.039)	(0.046)
Ethnical fractionalization		-5.078			-2.677	
		(4.272)			(4.201)	
Cultural fractionalization		-2.795			-2.182	
		(5.956)			(5.444)	
Ethno-linguistic fractionalization		0.896			-0.202	
		(4.072)			(3.663)	
Education index	16.320***			15.027***		
	(3.485)			(4.130)		
Openness			0.012			0.019*
			(0.011)			(0.011)
Observations	91	77	92	91	77	92
R^2	0.494	0.382	0.342	0.489	0.336	0.252
1st stage F-stat				17.05	45.67	26.95
1st stage Partial R^2				0.250	0.550	0.377
Overid test p-value				0.632	0.324	0.492

Notes: The dependent variable is the average polity score for the 1980-2010 period from the Polity IV data base. *Individualism* is Hofstede's index of individualism. A larger value of the index corresponds to a greater level of individualism. *Ethnical, cultural and ethno-linguistical fractionalization* are from Fearon (2003). *Education*: World Bank Human Development Report Education Index (average 1980-2005). Openness: Openness ratio in current prices (Penn World Tables). Controls for *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are included but not reported. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. *Over-id test p-value* reports the p-value for the overidentifying restriction tests that instruments are correctly excluded. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 5. Long-differences regression

Dependent variable: $Polity_{2000} - Polity_{1960}$	OLS	Huber robust regression	OLS	Huber robust regression	OLS	Huber robust regression
	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	0.029	0.033***	0.039*	0.027***	0.021	0.018**
	(0.024)	(0.007)	(0.021)	(0.007)	(0.024)	(0.007)
$\log\left(\frac{Y_{2000}}{Y_{1960}}\right)$			-1.255	0.678**	-0.244	0.811***
			(1.253)	(0.281)	(1.149)	(0.274)
$Education_{2000} - Education_{1960}$					-1.277	-0.384*
					(0.945)	(0.193)
$Polity_{1960}$	-0.659***	-0.966***	-0.722***	-0.953***	-0.875***	-0.958***
	(0.101)	(0.020)	(0.102)	(0.022)	(0.089)	(0.022)
Observations	70	70	58	58	51	51
R-squared	0.507	0.976	0.631	0.978	0.813	0.982

Notes: The dependent variable is the change in the polity score (source: Polity IV) between 1960 and 2000. *Individualism* is Hofstede's index of individualism. A larger value of the index corresponds to a greater level of individualism. *Y* is income per worker (source: Penn World Tables). *Education*: Barro-Lee (2012) primary education enrollment. Huber robust regression automatically identifies and downweighs influential observations/outliers. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 6: Individualism and Democratization. Fraction of years with democracy

Dependent variable:	OLS	IV	OLS	IV	OLS	IV
Fraction of years with democracy	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	1.128***	1.562***	0.734***	1.380***	0.674***	0.960***
	(0.173)	(0.270)	(0.206)	(0.386)	(0.224)	(0.300)
Log income per worker			8.273*	1.664	16.314**	13.681*
			(4.913)	(6.326)	(7.797)	(7.262)
Protection against expropriation risk			2.141**	2.376**	1.276	1.482
			(1.001)	(1.059)	(1.120)	(1.063)
Natural resource rent			-0.837***	-0.487	-0.140	-0.042
			(0.313)	(0.393)	(0.380)	(0.361)
Education index					-53.955*	-63.253**
					(29.397)	(25.968)
Ethnic fractionalization					8.155	12.232
					(25.278)	(24.146)
Cultural fractionalization					-14.509	-9.867
					(36.542)	(32.714)
Ethno-linguistic fractionalization					-8.628	-18.067
					(23.211)	(21.690)
Share of Muslim					-59.923***	-60.705***
					(12.643)	(11.421)
Observations	92	92	91	91	77	77
R^2	0.380	0.342	0.501	0.439	0.653	0.642
1st stage F-stat		28.81		14.05		17.81
1st stage Partial R^2		0.392		0.273		0.395
Overid test p-value		0.387		0.814		0.837

Notes: The dependent variable is the number of years since a country has established a democratic regime (the number of years with a continuous positive polity score from the Polity IV data base) as a fraction of the total number of years the country appears in the polity IV data base. *Individualism* is Hofstede's index of individualism. *Log income per worker*: log income (at purchasing power parity) per worker in 2000 from the Penn World Tables. *Protection against expropriation risk* (ICRG, average 1985 -2009). *Ethnical, cultural and ethno-linguistical fractionalization* are from Fearon (2003). *Education*: World Bank Human Development Report Education Index (average 1980-2005). *Natural resource rent* is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. This variable is measured in percent of GDP (average over 1980-2010) and taken from the World Development Indicators. *Share of Muslim populatio*n is from Barro and McCleary (2003) and refers to 1970. Controls *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are included but not reported. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. *Over-id test p-value* reports the p-value for the overidentifying restriction tests that instruments are correctly excluded. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 7: Probability of autocracy breakdown and Individualism.

Dependent variable:	OLS	IV	OLS	IV	OLS	IV
Probability of autocracy breakdown	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	-0.068	0.026	-0.120**	-0.120	-0.141**	-0.130*
	(0.047)	(0.070)	(0.048)	(0.074)	(0.056)	(0.071)
Log income per worker			2.847*	2.847*	3.101*	3.045**
			(1.508)	(1.624)	(1.595)	(1.452)
Protection against expropriation risk			-0.435	-0.435	-0.555	-0.543*
			(0.291)	(0.295)	(0.350)	(0.308)
Natural resource rent			-0.069	-0.069	-0.114	-0.111
			(0.057)	(0.053)	(0.093)	(0.076)
Education index					4.114	3.751
					(8.799)	(7.477)
Ethnic fractionalization					3.843	3.925
					(4.527)	(3.965)
Cultural fractionalization					-1.205	-1.074
					(6.280)	(5.480)
Ethno-linguistic fractionalization					0.627	0.410
					(4.577)	(4.184)
Share of Muslim					1.436	1.293
					(4.059)	(3.427)
Observations	63	63	62	62	55	55
R^2	0.374	0.337	0.439	0.439	0.416	0.415
1st stage F-stat		12.02		10.70		15.10
1st stage Partial R^2		0.368		0.283		0.407
Overid test p-value		0.978		0.713		0.763

Notes: The dependent variable is the probability of breakdown of autocracy for a country based on the dataset in Geddes et al (2014). *Individualism* is Hofstede's index of individualism. *Log income per worker*: log income (at purchasing power parity) per worker in 2000 from the Penn World Tables. *Protection against expropriation risk* (ICRG, average 1985 -2009). *Ethnical, cultural and ethno-linguistical fractionalization* are from Fearon (2003). *Education*: World Bank Human Development Report Education Index (average 1980-2005). *Natural resource rent* is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. This variable is measured in percent of GDP (average over 1980-2010) and taken from the World Development Indicators. *Share of Muslim populatio*n is from Barro and McCleary (2003) and refers to 1970. Controls *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are included but not reported. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. *Over-id test p-value* reports the p-value for the overidentifying restriction tests that instruments are correctly excluded. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

TABLE 8: Individualism and transition from autocracy to autocracy (Tobit regressions)

Dependent variable:	OLS	IV	OLS	IV	OLS	IV
Probability of transition from autocracy to autocracy	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	-5.941***	-7.978***	-3.830***	-5.738***	-3.807***	-3.837**
	(1.591)	(2.276)	(1.172)	(1.876)	(1.056)	(1.618)
Log income per worker			-45.862	-21.929	2.704	3.147
			(27.899)	(32.396)	(35.761)	(37.574)
Protection against expropriation risk			5.561	4.284	-0.706	-0.738
			(5.338)	(5.644)	(5.398)	(5.527)
Natural resource rent			6.118***	5.101***	4.270***	4.258***
			(1.870)	(1.750)	(1.597)	(1.531)
Education index					-121.069	-120.917
					(126.738)	(126.984)
Ethnic fractionalization					-66.145	-66.286
					(84.370)	(86.239)
Cultural fractionalization					70.798	70.052
					(118.219)	(123.922)
Ethno-linguistic fractionalization					95.526	96.131
					(92.415)	(95.123)
Share of Muslim					123.272**	123.113**
					(58.435)	(58.653)
Observations	84	84	83	83	72	72

Notes: The dependent variable is the probability of transition from autocracy to autocracy for a country after an autocracy breakdown, based on the dataset in Geddes et al (2014). *Individualism* is Hofstede's index of individualism. *Log income per worker*: log income (at purchasing power parity) per worker in 2000 from the Penn World Tables. *Protection against expropriation risk* (ICRG, average 1985 -2009). *Ethnical, cultural and ethno-linguistical fractionalization* are from Fearon (2003). *Education*: World Bank Human Development Report Education Index (average 1980-2005). *Natural resource rent* is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. This variable is measured in percent of GDP (average over 1980-2010) and taken from the World Development Indicators. *Share of Muslim populatio*n is from Barro and McCleary (2003) and refers to 1970. Controls *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are included but not reported. Instrumental variables for individualism: *historical pathogens* is the Historical Pathogen prevalence index from Murray and Schaller (2010); *blood distance* is the Euclidian distance of frequency of blood types A and B in a given country relative to their frequency in the USA. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX

Appendix Table A1. Timing and sources of the variables used in the paper.

Variable	Sources	Timing
Individualism, Power distance, Masculinity, Uncertainty Avoidance, Long-term orientation	Hosftede (2001), subsequent updates are available on http://geert-hofstede.com	The initial wave of individualism scores were constructed in the 1960s for about 30 countries. Additional countries were added gradually over time.
Frequency of blood types	Cavalli-Sfoza, Menozzi, Piazza (1994), Mourant, Kopec and Domaniewska-Sobczak (1976), Tills, Kopec, and Tills (1983)	Most data on the frequencies of blood types comes from 1940s and 1950s.
Output per worker	Penn World Tables (PWT)	We use year 2000 (from Penn World Table) in the baseline.
Ethnic shares	Fearon (2003)	Early 1990s
Historical pathogen prevalence	Murray and Schaller (2010), Fincher et al. (2008)	Early-to-mid 20th century
Protection against expropriation risk	International Country Risk Guide (ICRG)	Average value for 1985-2019.
Trust	World Values Survey	An average value across multiple waves since 1980s
Natural resource rent	World Development Indicators, measured in percent of GDP	Average value over the 1980-2010 period
Share of Muslim in population	Barro and McLeary (2003)	1970
Education index	*Human Development Report*	Average value over the 1980-2005 period
Openness	Penn World Tables (PWT)	2000
Gini coefficient	Standardized World Income Inequality Database	Median value over the 1960-2010 period
Democracy score	Polity IV	Average value over the 1980-2010 period
Fraction of years in democracy	Polity IV, fraction of years with positive Polity IV scores	1950-2004
Probability of autocracy breakdown, probability of transition from autocracy to autocracy	Geddes et al. (2014)	1946-2010

Appendix Table A2. Timing of income data.

Dependent variable: Polity score	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Individualism	0.123***	0.077*	0.087*	0.144***	0.144**	0.130*	0.157***
	(0.035)	(0.042)	(0.045)	(0.032)	(0.055)	(0.066)	(0.055)
Log income per worker (PWT, year 2000)	2.332***						
	(0.771)						
Maddison (2003) historical income per capita							
1900		1.754					
		(1.645)					
1870			3.066				
			(1.993)				
1820				3.556			
				(2.448)			
1700					2.749		
					(2.447)		
1600						2.929	
						(2.335)	
1500							2.036
							(2.729)
Observations	91	47	61	51	31	28	31
R^2	0.423	0.469	0.411	0.440	0.573	0.421	0.559

Notes: The dependent variable is the average polity score for the 1980-2010 period from the Polity IV data base. *Individualism* is Hofstede's index of individualism. A larger value of the index corresponds to a greater level of individualism. *Log income per worker*: log income (at purchasing power parity) per worker in 2000 from the Penn World Tables. Historical income data are from Angus Maddison's *The World Economy. Historical Statistics* (Paris: OECD, 2003). Controls *low risk of: cross-border conflict, civil disorder, ethnic tensions and war* (ICRG, average 1985 -2009) are included but not reported. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.