The Role of Freedom, Growth and Religion in the Taste for Revolution

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Abstract

Property rights, whose security is often threatened by civil conflict, are a necessary condition for the establishment of a market economy. Yet a fundamental and unresolved empirical question is whether the lack of political and civil freedoms is one of the root causes of greater insecurity. This paper takes a new approach to provide an answer by using micro-data on the revolutionary tastes of 106,170 people in 61 nations between 1981 and 1997. Controlling for country effects, year effects and endogeneity, the level of freedom has strong and robust negative effects on revolutionary support. A one standard deviation rise in freedom, equivalent to a shift from Argentina to the US, decreases the support for a revolt by 3 percentage points, or 38% of the standard deviation of the proportion of people who want one. Higher GDP growth rates can buy off part of the increase in revolutionary support when freedoms are constrained. There is also evidence that being religious reduces revolutionary tastes although the size of the effect varies with the extent of freedom and disappears entirely in non-free nations.

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I. Introduction

One of the suspected causes of civil conflict has been the denial of freedom to part of a nation's populace. To the extent that this problem has been accompanied by insecure property claims as one group tries to overthrow another to gain its freedom, the establishment of a market economy may become impossible. Whether or not to support regimes whose legitimacy is questioned for this reason has also posed a major policy dilemma for the United States. The costs of insecurity caused by the lack of freedoms in a nation may even extend beyond its own borders. For example, some have argued that the origins of the September 11th World Trade Center attack lie in the perceived illegitimacy of the Saudi government and its relationship with the United States.[1] There are several fundamental empirical questions that arise here. First, does lack of freedom result in greater support for rebellion? If so, what is the cost of buying off the potential threat of greater instability? What kind of role does ideology play? This paper is an attempt to answer these questions. To do so, we use a large international survey of the revolutionary tastes of over 100,000 people and find that freedom has a statistically robust negative effect on the taste for revolution. A one standard deviation change in freedom explains 38% of the standard deviation in the proportion of people who want to revolt. Increases in GDP can buy off part of the increase in revolutionary support when freedoms are constrained.

The approach taken in this paper differs from previous studies in the conflict literature by focusing on the micro-structure of revolutionary tastes (instead of studying the effect of freedom on conflict at an aggregate level).[2] In terms of Hirshleifer's (1995) distinction between preferences and opportunities as two of the basic ingredients for conflict, we seek to identify the determinants of the first. The data come from a question that asks people whether they want the entire way their society is organised to be radically changed by revolutionary action, putting the approach in the spirit of a literature that uses survey data to test for the determinants of individual preference parameters. A number of these papers have focused on a specific government policy. For example, Alesina, Glaeser and Sacerdote (2001) use World Values Survey questions to argue that Americans have less

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[1] Rather than push for political reform, one view argues that successive administrations have *"indulged Riyadh's penchant for buying off trouble as long as the regime also paid its huge arms bills, purchased Boeing aircraft, kept the price of oil within reasonable bounds, and allowed the United States to use Saudi air bases"* (Martin Indyk, *Foreign Affairs* (2002)).

[2] An exception is Johnson, McMillan and Woodruff (2002) who use surveys to measure the security of property rights in order to obtain estimates of the effect on the threat of appropriation on firms' decisions to reinvest profits.

desire for generous welfare than Europeans since Americans believe that their society is mobile so the poor feel that they can move up (whereas in Europe they feel 'stuck').[3] Luttmer (2001) uses the U.S. General Social Survey to argue that greater racial heterogeneity lessens support for welfare spending. Survey questions that ask people to judge the extent of corruption are exploited by Ades and Di Tella (1999) to study the effects of industrial policy. Other authors have studied the determinants of preferences over the whole government or institutional framework of a nation. For example, Frey and Schneider (1978) focus on the determinants of the popularity of the U.S. President. Support for different political parties is analyzed by Alt (1979), Hibbs (1982) and Nadeau, Niemi and Amato (1994). The effect of political institutions that differ along consensus-majoritarian lines on citizen satisfaction with democracy was studied by Anderson and Guillory (1997).[4] In the present paper, rather than measuring satisfaction across different types of democratic institution, or support for one member or party of government versus another, the focus is on people whose dissatisfaction is so extreme that it threatens to overturn the entire organization of their nation.

Previous empirical studies have produced a diverse array of ambiguous findings on the relationship between freedom and civil conflict. A recent literature review lists *"a number of possible causes of civil war [that] are still being debated"*. The first is *"the role of political grievance and lack of democracy"* (see Sambanis (2001)). One recent strand of work using panel evidence has argued that there is no relationship between lack of civil liberties or democratic freedoms and the likelihood of a civil war. For example, Miguel, Satyanath and Sergenti (2003) find that although economic growth has a negative effect on the likelihood of civil conflict in Africa (using rainfall variation as an instrument) the relationship does not vary with level of democracy. They conclude that institutional characteristics may have minimal impact in mitigating the effect of economic shocks although note that most countries in their sample were relatively autocratic (see pg 16). In addition to low income other studies have identified the importance of rough terrains and large populations (e.g., Fearon and Laitin (2003)) and also natural resources (e.g., Collier and Hoeffler (2002) who use data on 46 civil wars since 1960). These papers emphasize the constraints that geography and money may place on the opportunities that rebels have available to overthrow a regime. Unless revenues from trading diamonds or oil, for

[3] Alesina and La Ferrara (2000) also study preferences for redistribution using a question that asks whether *"the government ought to reduce the income differences between rich and poor"*.

[4] These authors use a question that asks whether you are *"very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the way democracy works"*. Easton (1975) and Mishler and Rose (1996) study support for democracy in Eastern Europe.

example, are available to fund the rebels' movement and there is a reservoir of (poor) men who can be recruited as foot soldiers, they may fail regardless of the grievance held. The political processes and structures able to be exploited by rebels may also influence their chances of success.[5] When these factors form binding constraints, economic and political liberalization may even increase the chances of a revolt occurring if it creates more opportunities for those outside the regime.[6] Another strand of literature has instead argued that grievances (i.e., shared dissatisfaction of group members about their cultural, political and economic standing compared to other groups) play a fundamental role in creating the conditions necessary for civil conflict. These may stem from a failure to gain the expected benefits from modernization leading to 'relative deprivation' or from discrimination and denial of a group's rights and liberties. Such differential treatment may lessen a regime's legitimacy and lead to revolt (e.g., Gurr (1971) and Gurr and Moore (1993)). If greater democratization builds political institutions that can channel and respond to grievances then revolts may be avoided. Using cross-sectional evidence, Hegre, Ellingsen, Gates and Gleditsch (2001) argue that the most stable regimes lie at the extremes of autocracy and democracy, with intermediate ones being the most conflict prone (possibly because they allow more opportunities for rebels to exploit). Glaeser (2001) describes how a market for grievances may operate when self-interested politicians have incentives to supply unpleasant tales about minority groups to a demanding public that has a taste for 'hatred'.[7]

The present paper can be seen as an attempt to reconcile these literatures in the sense that it allows us to determine if less freedom is always a cause of greater revolutionary pressures (on average over time). Whether more civil conflict in fact erupts depends on highly unpredictable factors and variables that are difficult to measure (such as repression and opportunities for action) which may explain some of the ambiguous previous findings. For example, "revolutionary bandwagons" and "information cascades" appear to be common whereby each people's decision whether or not to join a revolt depends crucially on what they observe doing. These effects, studied by Kuran (1991) and Lohmann (1994), imply that it is possible for many people to privately support revolt but be unwilling to act unless they can observe others doing so.[8] If they finally do decide to rebel there may

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[5] See Tullock (1974) and Tilly (1978).

[6] Coleman (1990) cites examples from revolts in France, Iran, Poland and South Africa.

[7] Theoretical papers modeling the choice between investing in appropriative versus productive activities include Grossman (1991), Acemoglu and Robinson (2000, 2001), Garfinkel and Skaperdas (1996) and Hirshleifer (1995). The earliest relevant work is Karl Marx's (1887) *Das Kapital*.

[8] See also Olson (1965) for a description of how the free-rider problem undermines collective action. Movements may have to rely on charismatic leaders to make them cohesive. Roemer (1998) uses ideology to help explain group action.

be a sudden explosion of numbers.[9] There are several other issues that may have obscured identification of the causes of civil conflict. These include *"disagreement [surrounding] the very definition of a civil war"*.[10] The dependent variable used in most studies has been a threshold absolute number of battle deaths (usually 1,000) that is not scaled by population size and is often hard to measure accurately. Only limited time variation in this dummy can usually be exploited. Omitted variables may also help explain why autocracies experience relatively less civil conflict even though they may be where grievances are most extreme. The possibility of endogeneity of civil liberties and democratic freedoms has also so far been ignored. If, for example, people get the freedoms that they want by rebelling then a positive relationship between these variables may be observed.

A growing literature in economics has also addressed the links between religion and the economy. For example, Iannaccone (1998) shows how religious membership can be explained as a club good whereby rational individuals may wish to join even when self-sacrifice is demanded in the form of standards concerning dress, diet, grooming, sexual conduct, entertainment and social activities. He also reviews Adam Smith's (1776) arguments in favor of 'religious competition' and claim that civil strife may arise from regulation and suppression of religious freedoms. Berman (2000) models social interactions within a religious community as a signaling device of commitment in order to participate in a mutual insurance arrangement.[11] We are able to test not only whether religious people are more or less inclined to revolt but also whether they respond differentially to a denial of their freedoms (compared to non-religious people). To the extent that they already may have (willingly) given up freedoms to join a religious 'club' they may rebel less; to the extent that their freedoms to practice religion are constrained, they may rebel more.

The paper is organized as follows. Section II describes the data and reports several different

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[9] For a computational model that simulates these effects, see Epstein (2002). Lohmann (1994) discusses the case of the 1989-90 uprising in East Germany that quickly led to the collapse of the communist regime.

[10] Sambanis (2001) discusses the idiosyncratic definitions of civil war. Since there are many different objective measures that could be used, such as sabotage, rallies or terrorism, it is difficult to choose between them. Events such as political strikes are hard to classify. Francisco (1993) uses person-days of protest per 100,000 people per week. He notes that most studies "of protest and revolt use other measures, especially political deaths".

[11] Barro and McLeary (2002) study how economic performance and political institutions are related to religious participation and beliefs. Guiso, Sapienza and Zingales (2002) use survey data to identify the relation between religion and attitudes judged favorable to growth. See also Glaeser and Sacerdote (2002), Glaeser and Glendon (1997), Montalvo and Reynal-Querol (2002) and Fox (1999). Huntington (1991) discusses how cultural and ethical norms affect the legitimacy of democratic practices. Marx (1844) famously observed that religion is *"the opium of people"*.

validation tests in which we correlate tastes for revolt with personal and government actions. Section III outlines the empirical strategy and section IV the main results. Section V concludes.

II. Data Description and Validation

II.a. Data Description

The source of our data on revolutionary tastes is the three waves of the World Values Survey Series (1981-84, 1990-92, 1995-97) that interviewed a random sample of 168,482 people in 64 nations.[12] Of these, 130,278 individuals in 61 nations answered the question: *"On this card are three basic kinds of attitudes vis-à-vis the society in which we live in. Please choose the one which best describes your own opinion"*. The three response categories are: *"The entire way our society is organised must be radically changed by revolutionary action"*, *"Our society must be gradually improved by reforms"*, and *"Our present society must be valiantly defended against all subversive forces"* (The *"Don't know"* and *"Not asked in this survey"* categories are not included in our data set). Appendix 1 contains a summary of the survey.

Table 1a shows the proportions of individuals who desire revolutionary action, versus those who do not (i.e., the ones who desire either gradual reforms or the present society valiantly defended) for the entire sample, the unemployed, religious persons and also by income quintile and freedom status. Of the full sample, 9.8% of respondents declare a preference for revolution in their country rising to 14.1% for the unemployed. Of those people who belong to a religious denomination, 9.2% want a revolution whereas for those not belonging, 10.3% have a preference for one. Whereas 7.8% of Christians want to revolt, 18.3% of Muslims do. There is a monotonically declining proportion of people who support a revolution as we go up the income quintiles, ranging from 10.8% in the bottom one to 6.9% in the top one.

Our freedom data come from two sources. The first is 'Freedom House', an independent institutional effort to monitor the progress and decline of political rights and civil liberties in nations across the world. The annual survey is a year-long study produced by regional experts, consultants and human rights specialists who gather in-depth knowledge of the political transformations affecting nations by

[12] The countries surveyed include almost 80 percent of the world's population. The World Values Data Set was also used to obtain indicators of trust and civic norms in Knack and Keefer's (1997) study of the determinants of social capital.

meeting a cross-section of political parties and associations, human rights monitors, religious figures, representatives of the private sector, trade unions, academics and journalists. The freedom index we use is a composite measure obtained by averaging two separate indices, *Political Rights* and *Civil Liberties*. Political rights take account of the extent to which voters are offered the chance to make a free choice among candidates and to what extent the candidates are chosen independently of the state. Civil liberties take account of the extent of freedom of expression, assembly, association and religion. These are distinguished by an established and generally equitable system of law. Each country is ranked on a seven-point scale from '1' (most free) to '7' (least free). Appendix 1 contains more detailed information about the checklists used for creating the scales.

Table 1a also shows how tastes for revolt are correlated with the level of freedom. Freedom House presents a simple three-way classification of countries using their 1-7 scale, ranging from *Not Free* (1-2.5) to *Partly Free* (2.5-5.5) to *Free* (5.5-7). Using this split, average revolutionary support varies from 18.1% down to 6.2% (i.e., a sizeable drop as freedoms are acquired). Table 1b shows how these effects are spread across Muslims, depending on whether they are a minority or majority religious group in their country. The drop in support for Muslim minorities (from 22.1% to 1.7%) as freedoms are acquired is even greater than for the general population. Levels of support, if anything, appear to be higher when Muslims are in the majority.

We also use an independent source of data from the 'Polity Project' to measure the degree of democratization in nations. Eckstein and Gurr (1975, pg 26) provide a "simple, general definition of all governments as subsets of the class of 'authority patterns' ". They define authority patterns as "a set of asymmetric relations among hierarchically ordered members of a social unit that involves the direction of the unit....The direction of a social unit involves the definition of its goals, the regulation of conduct of its members, and the allocation and coordination of roles within it." Eckstein and Gurr (1975) identify three salient norms as bases of regime legitimacy: personal (executive recruitment), substantive (executive constraints) and participation (political competition). The Polity Project's focus is on the authority patterns that characterize states operating within the world's state system. This index is on a 21 point scale (from -10 to +10) and ranges from the most autocratic and least democratic regimes (-10) to the least autocratic and most democratic ones (+10). See the appendix for more details about how the scales are created.

II.b. Data Validation

There are several potential problems with using these survey data. The responses may be noisy and untruthful. Preferences for revolt may also not be associated with actions that pose a credible threat to the government.[13] They may simply reflect a general disaffection with society. Some of these issues can be addressed empirically and in this section we present several pieces of evidence that lend support for taking these data seriously.

First, surveyed preferences for revolt are significantly correlated with observable measures of rebellion. The World Values Survey contains information on the rebellious actions that our sample of 106,170 individuals have undertaken which include *Joined boycotts*, *Attended demonstrations*, *Joined unofficial strikes*, *Occupied buildings/factories* and *Signed petitions*. When each of these actions is represented by a dummy variable, their correlation coefficients with the corresponding individual's preference for a revolution are reported in Table 2a. The correlation with *Joined boycotts* is 0.07, *Attended demonstrations* is 0.08, *Joined unofficial strikes* is 0.07 and *Occupied buildings/factories* is 0.06 (all are significant at the 1 per cent level). One explanation as to why the mapping from preferences to the above actions is far less than one-to-one is that the free-rider problem has meant that despite many people wanting a radical change of government, costly participation is not individually rational (particularly when the benefits from a revolt may not be excludable.) The correlation coefficients between the measures of actual protest themselves are substantially higher. For example, the correlation between *Joined unofficial strikes* and *Occupied buildings/factories* equals 0.32. Each of these actions can also be regressed on the corresponding individual's taste for revolt (controlling for country and year fixed effects). Wanting to revolt is a significant positive factor that explains the subversive actions of individuals at the 1 per cent level across all measures of actual protest. People wanting a revolt have a 9 percentage point higher probability of joining in boycotts, 12 percentage point higher probability of demonstrating, 7 percentage point higher probability of joining unofficial strikes and a 4 percentage point higher probability of occupying buildings.

[13] If the social norm is not to support revolt, subjects may bias responses towards maintaining the status quo. However psychologists have found evidence that indicates this concern may be exaggerated (e.g., Rorer (1965) and Bradburn (1969)). Furthermore, at least part of the effect of social norms is able to be controlled for in our regression evidence. All interviews for our surveys are also conducted under condition of anonymity.

A related issue concerns whether or not a self-reported preference for revolt is just symptomatic of a general attitude of disaffection with society. For example, the same people who have a revolutionary preference may be pessimists who hold negative beliefs about the abilities of the government and business to deliver favorable social and private outcomes. We address this issue by correlating revolutionary tastes with beliefs that the environment needs protection, the country has been captured and is run for the benefit of a few, corruption is prevalent, the authorities should not be respected and that the future for all is bleak. The results are reported in Table 2b (full variable definitions are in Appendix 2). The correlation coefficient between *Taste for Revolt?* and *Environment Needs Protection* is -0.001, indicating that those individuals who feel disgruntled about industrial threats to the environment are not the same ones who want a full-scale revolution in their country. The correlation between having a revolutionary taste and holding a belief that the country is run for the few is 0.050 and with a belief that *Corruption is Prevalent* is 0.088. The latter may be related to the association of high corruption with a loss of regime legitimacy.[14] The stronger correlation between a belief that corruption is prevalent and that the country is being run for the few (=0.24) suggests that there are many disaffected people who nevertheless do not favor a revolt. There are low positive and negative correlations between wanting a revolt and the other indicators of more general pessimism, *Don't Respect Authority* and *Bleak Future*, equal to 0.006 and -0.021, respectively.

The relationship between revolutionary preferences and personal characteristics also has a similar structure across the different regions of the world (i.e., OECD, Asia, Africa and South America). Men are more likely, on average, to desire revolt than women in every one of these regions. For example, in Africa they have a 4.4 percentage point higher probability of wanting a revolution. In every region people who are on higher incomes, older and married are less likely, on average, to want a revolt. Unemployed people are more likely to want one (with the exception of Africa). These patterns are present in every country within Europe.[15] We are also able to test whether these same sorts of characteristics that predict revolutionary tastes are also able to predict, for example, beliefs that the environment needs protection, the country is being run for the benefit of a few and that corruption is prevalent. There is little evidence for this view. For example, wanting more protection for the environment is significantly correlated with being on a *high* income (so the negative effects of

[14] A literature in political science has focused on the role of corruption in determining legitimacy in political representation. della Porta (2000) and Seligson (2002) provide empirical evidence.
[15] Except for France where the unemployed are less likely to want to revolt.

a polluted environment appear to be felt more by the rich than the poor). The unemployed tend to be less concerned about environmental problems. In other words, those individuals who are worried about the environment are not the same ones wanting to revolt, at least in terms of their income and job status. A belief that the country has been captured by the few is not (significantly) correlated with personal income, whereas a belief that corruption is prevalent is negatively correlated with it. The self-employed and retired perceive there to be more corruption than the employed, and men are less likely to think that it is widespread than women. In contrast, men are *more* likely to want to revolt (across all regions of the world, at the 1 per cent level of significance), retirement has a negative effect and self-employment no effect. Consequently the evidence does not suggest that a common set of (observable) personal characteristics can describe a type of person who not only wants to revolt but also suffers from disaffection with a range of social problems.

We also explore whether there is any evidence of differences in real behavior by governments in pro-revolt nations. Table 2c reports that the correlations across 40 countries between average levels of revolutionary support and arms imports (as % of total imports) is 0.47, military spending (as % of GDP) is 0.20 and military spending (as % of total government spending) is 0.40. The corresponding partial correlation coefficients, controlling for real income per capita, are 0.32 (significant at the 5 per cent level), 0.27 (at the 10 per cent level) and 0.14 (insignificant). High revolt countries are also associated with lower exports of arms (correlation=-0.18) and tend to spend less on education as a proportion of GDP (correlation=-0.57). Whereas it appears high revolutionary support may lead to real increases in the military as the government seeks to protect itself, spending more to educate people away from using force does not seem to be a preferred policy.[16] The table also reports the correlation between revolutionary support and whether or not the country was actually experiencing a civil conflict.[17] Out of the sample of 40 nations, there were 10 engaged in civil war where the average level of support was 15.9%, compared to 9.5% in the rest.

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[16] Previous studies have found participation in terrorism and political violence to be either unrelated or positively related to an individual's education. Russell and Miller (1983) report that about two-thirds of the 350 individuals engaged in terrorist activities in their sample were persons with some university training, university graduates or postgraduate students. Palestinian suicide bombers have been found to be at least as likely to come from high education backgrounds as low ones (see Kruger and Malečkovà (2003)).

[17] These are obtained from a data set of all civil wars across the world (see Doyle and Sambanis (2000)) where the most common definition of a civil war (i.e., as a conflict between a government and a non-government claimant that has resulted in at least 1,000 deaths per year) was used.

Another observable measure of internal conflict is the level of criminal activity. An advantage of using crime as a proxy for rebellion is that it does not necessarily rely on solving the collective action problem. A drawback is that the causes of crime may be unrelated to an individual's total rejection of the organization of society. For European countries we have consistent time series that measure levels of serious assaults and auto thefts. The partial correlation coefficient between the proportion of people wanting a revolt and assaults is 0.26, significant at the 1 per cent level, and for auto thefts it is 0.20, significant at the 5 per cent level (all measured at the national level and controlling for country/year fixed effects).

III. Empirical Strategy

III. a. Regression evidence

We relate an individual's taste for revolt across a sample that includes 20 countries in 1981-84, 36 countries in 1990-92 and 45 countries in 1995-97 to their freedoms, income and religiosity. There are various possible explanations as to why revolutionary support may increase as freedoms are taken away. First, freedom may have the quality of a public good and belong directly in people's utility function. Alternatively it may constrain the desired levels of consumption of other goods such as food, alcohol and clothing so that it enters people's indirect utility function. To the extent that lower freedoms increase the expected gain from a revolution which may relax these constraints, a greater proportion of the population may support one. Appendix 3 describes a simple model that captures these effects.

The results exploit cross-country and time-series variation. The probit regressions are of the form:

$$\textit{Taste for Revolt?}_{ict} = \alpha\, \textit{Freedom}_{ct} + \beta\, \textit{GDP per capita}_{ct} + \chi\, \Delta\textit{GDP per capita}_{ct} + \delta\, \textit{Personal Income Quintile}_{ict} + \gamma\, \textit{Religion}_{ict} + \varphi\, \textit{Macro}_{ct} + \lambda\, \textit{Micro}_{ict} + \eta_c + \mu_t + \varepsilon_{ict}$$

where $\textit{Taste for Revolt?}_{ict}$ is a dummy that takes the value 1 when individual, i, who lives in country, c, and year, t, holds a belief that *"The entire way our society is organised must be radically changed by revolutionary action"*. The variable, $\textit{Freedom}_{ct}$, is measured in different ways. First, we take the simple average of the two variables, *Political rights* and *Civil liberties*, that correspond to the *Freedom House* indices but are rescaled so the lowest value (1) is assigned to countries with the lowest political rights/civil liberties

and the highest value (7) is assigned to the countries with the most. We also run regression with these two variables entered individually. Second, we use the Polity measure of a nation's level of political democratization. This index is on a 21 point scale (from -10 to +10) and ranges from the most autocratic and least democratic regimes to the least autocratic and most democratic ones.

The variable, $GDP\ per\ capita_{ct}$, is measured as per capita income in 1992 US$ (in logarithms) and $\Delta GDP\ per\ capita_{ct}$ is its first difference (i.e., $\Delta GDP\ per\ capita = \log(1 + GDP\ growth\ rate) \approx GDP\ growth\ rate$). These data come from the World Development Indicators of the World Bank. A person's relative income position within a nation is proxied by $Personal\ Income\ Quintile_{ict}$ that refers to a set of five dummy variables corresponding to each of the income quintiles. $Religion_{ict}$ is a dummy indicating whether the person is religious or not.

The vector, $Macro_{ct}$, refers to a set of variables aggregated at the country level. These include *Trade openness* and *Social security*. The former is measured by the sum of imports and exports divided by the country's total GDP and the latter by the level of social security taxes (as a proportion of GDP). We also experimented with measures of inequality as proxied by the Gini coefficient from the World Bank Deininger and Squire (1996) 'high quality' data set. The vector, $Micro_{ict}$, refers to a set of personal characteristics of the respondents including their employment status, marital status, age and level of education. (The appendix contains a complete set of data definitions). We also include η_c which is a dummy variable for each cross-sectional unit (i.e., countries) and μ_t which is a dummy variable for each year. These help control for unobserved heterogeneity that may be correlated with nations' levels of freedom and income. The (i.i.d.) error term is ε_{ict}. Robust standard errors are computed that correct for heteroskedasticity. They are also clustered at the country level to control for correlation of the error term across observations that are contained within each cross-sectional unit (see Moulton (1986)). Table 3a provides summary statistics of the variables used and table 3b reports correlation coefficients.

III. b. The Potential for Endogeneity of Freedom

Increased support for revolt may result in changes to government policies and economic outcomes. None of the prior empirical studies of the determinants of civil war have controlled for endogeneity of variables that proxy for civil liberties and political or democratic rights (see Sambanis' (2001)

review). Examples of regimes' attempts at self-preservation in the theoretical literature include how political elites may extend voting rights to prevent revolt (e.g., Acemoglu and Robinson (2000)) and how land reform can be an optimal policy response to the threat of appropriation of the landed class' income (e.g., Grossman (1994)). An historical example comes from early seventeenth century England where the Crown's fiscal needs led to *"expropriation of wealth through redefinition of rights in the sovereign's favor"* and subsequently civil war. However after the Glorious Revolution of 1688, the winners (i.e., the Whigs) sought to redesign government institutions in such a way as to control the problem of *"the exercise of arbitrary and confiscatory power by the Crown"* (see North and Weingast (1989)). The former Communist block is also generally viewed as having opened up as a response to growing rebellion. Fording (1997) provides empirical evidence that welfare roles may have been expanded during the 1960's US civil rights movement to reduce protests. All of the above examples suggest that greater revolutionary support leads to greater freedoms (i.e., a positive correlation). However since there are other cases where regimes appear to have become more repressive in response to rebellions (e.g., China in the aftermath of the Tienanmen Square protests) the sign of this effect is uncertain.[18]

To deal with these sorts of concerns, we draw on the literature that studies the determinants of the quality of government and institutions in nations. The relevant theories can be categorized along economic, political and cultural dimensions. The first holds that institutions are created when it is efficient to do so, the second that they are shaped by self-interested politicians to transfer resources to themselves and the third that institutions reflect the beliefs and values of their society. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999) argue that the political and cultural theories offer the better prospects for finding ('reasonably') exogenous measures of country characteristics that affect institutional quality. One strategy they suggest is to use the legal system which can be viewed as an indicator of the relative power of the State versus property owners. For example, socialist and French civil law tend to be more interventionist.[19] In our regressions we follow La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999) by using legal origin as an instrument for the degree of liberties and political freedoms that characterize the institutions of nations.

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[18] Alesina and Perotti (1996) and Perotti (1996) study how political instability may affect investment and growth. Gupta, Clements, Bhattacharya and Chakravarti (2002) show that terrorism is associated with lower tax revenues, higher inflation and lower tax across 22 conflict episodes.

[19] Djankov, la Porta, Lopez-de-Silanes and Shleifer (2002) also present evidence that countries with socialist and French legal origins tend to regulate more (where regulations are proxied by number of procedures required to start-up a firm).

In addition to legal origin, we also use the identity of the colonizer as an instrument. Colonial origins as a potential determinant of development are discussed by Acemoglu, Johnson and Robinson (2002) who argue that early institutions varied from the oppressive and extractive (e.g., the Belgians in the Congo) to those that put emphasis on checks and balances against expropriation (e.g., the English in Australia and New Zealand). These authors use both legal and colonial origins to explain GDP per capita, as well as an index of protection against expropriation that they instrument with settler mortality rates. High settler mortality may have led to low quality institutions that subsequently slowed development. (Across the countries in the present study greater settler mortality is associated with lower political rights and democratic freedoms, although since this variable is only available for a subset of colonial nations over half of our sample is lost). A similar strategy to explaining where institutions come from is used by Rodrik, Subramanian and Trebbi (2002) who use legal origin and identity of colonizer to explain the determinants of development (in addition to measures of geography and openness). We also instrument GDP (in addition to freedom) with legal and colonial origins in our two stage regressions.

Other possible exogenous variables that could also be used to explain the shape of institutions include ethno-linguistic fractionalization, since in ethnically heterogeneous societies it has been common for groups who come to power to fashion government policies that restrict the freedoms of the opposition. For example, Mauro (1995) argues that this variable can be used as a determinant of corruption in growth regressions. However we do not use ethnic fractionalization as an instrument since it is unlikely to be excludable from revolutionary support regressions (these kinds of societies may be characterized by ethnic fighting, atrocities and expropriations that are unrelated to the shape of institutions). There also exist various explanations as to how the dominant religion of nations has affected the shape of their institutions (for example, Putman (1993) argues that the Catholic Church has fought the State to regulate the citizenry and Huntington (1991) has explained that since the 1960s it has been a powerful force toward democratization). However we also avoid using religion as an instrument due the possibility (originating from Marx (1844)) that it may have a direct impact on revolutionary tastes, unrelated to its effect on institutional quality.

IV. The Relationship between Freedom and Revolt: Results

IV. a. The Role of Freedom

In Table 4a, columns (1) to (5) present results from probit regressions. Marginal probabilities are reported and all standard errors have been adjusted to take account of clustering at the country level. The regressions control for both country and year fixed effects. Column (1) shows the relation between the level of freedom in nations (measured by a simple average of political rights and civil liberties) and the corresponding taste for revolt. The coefficient on *Freedom* is negative and significant at the 1 per cent level. An individual living in a country that loses one point of freedom on the 1 to 7 scale (equivalent to a shift from the United States to South Korea in 1995) experiences an increase in their probability of supporting a revolt by 2.1 percentage points. Across all countries and years a one standard deviation change in freedom (equal to 1.5 points on the 1-7 scale and equivalent to a shift from the United States to Argentina in 1995) explains 38% of the standard deviation in revolutionary support. (This calculation is based on the overall standard deviation in support levels across countries and years, equal to 0.082). The level of *GDP per capita* is insignificant in this specification indicating that the level of development may not be an important factor in explaining revolutionary pressures. We do, however, observe a monotonically declining chance of wanting a revolt as one's place *within* the income distribution of a particular country increases (measured in terms of the quintile to which each person belongs). Going from the bottom to the top income quintile implies a 2.1 percentage point lower probability of desiring revolt (significant at the 1 percent level).

Column (2) controls for the change (instead of level) of GDP per capita. Growth rates, rather than levels, of GDP are the dominant factor explaining civil war onset in, for example, Miguel, Satyanath and Sergenti (2003). We obtain a parallel result in the sense that Δ*GDP per capita* has negative and significant effects (at the 1 percent level) on revolutionary tastes. The coefficient on *Freedom* is now equal to -0.020 (i.e., of similar size to the previous specification) and retains its 1 per cent level of significance. In the next two columns we repeat this base specification but using separately each of the two component indices, *Civil Liberties* and *Political Rights* (both measured on a 1-7 scale). Denial of either of these dimensions of freedom significantly increases the support for a revolt. Focussing on within-country variation, a one standard deviation change in civil liberties (equal to 0.5 points) explains 41 of the standard deviation in revolutionary support (the latter variable's within-country

standard deviation is 0.023). The size of the estimated effect for political rights is practically the same.

Finally, column (5) uses the Polity measure of a nation's level of political democratization. The controls, Δ*GDP per capita* and *Personal Income Quintile*, retain similar effects to the previous estimates. The coefficient on *Democracy* is negative and significant at the 1 per cent level. A country that loses two points of 'polity' on the -10 to +10 scale (equivalent to a shift from the United States to Brazil in 1995) increases each citizen's probability of wanting to revolt by 1.8 percentage points. Focusing on within-country variation, a one standard deviation decline in *Democracy* (equal to 1.3 points) explains 50.9% of the standard deviation in revolutionary support. We can also calculate a marginal rate of substitution between democratization and GDP growth (i.e., keeping revolutionary support the same). A one standard deviation decline in *Democracy* would have to be compensated by an increase in the GDP growth rates of 14 percentage points. For example, the growth rate would have to rise from -4% to 10% per annum in order to keep the proportion of people wanting a revolt unchanged in the face of a loss of *Democracy* of this magnitude. In other words, unsustainable levels of economic growth may be required to fully offset a loss of democratic rights.

IV. b. The Effect of Religion

Table 4b investigates the role of religion on one's taste for revolt. Column (1) adds the dummy variable, *Religious*. It also includes the basic set of variables measuring freedom and income that were used in the previous table, as well as country and year fixed effects. Being religious has a sizeable negative effect on wanting to revolt, at the 1 percent level of significance. It lowers the probability by 2.8 percentage points. The coefficients on the aggregate level variables, *Freedom* and *ΔGDP per capita*, remain of similar in size and significance levels to their corresponding estimates in column (2) of table 4a.

The next column tests for whether the taste for revolt amongst religious individuals differs according to the degree of freedom in their nation. The interaction term, *Religious*Freedom*, is negative but not significant at conventional levels. In columns (3) and (4) we check to see whether we can identify effects for either of the two separate (component) indices, *Civil Liberties* and *Political Rights*. Column (3) shows that there is evidence that being religious only diminishes revolutionary tendencies in countries that have relatively high levels of political rights (i.e., the interaction term is

now negative and significant at the 7 per cent level). For example, in countries with the highest political rights score, religious individuals have a 3.6 percentage point lower probability of wanting a revolt compared to non-religious people (=0.006-0.006*7). However in countries with the lowest levels of political rights there are no differences between the religious and non-religious (=0.006-0.006*1). By contrast, column (4) shows that there is no evidence of religious individuals becoming more inclined to revolt as their civil liberties are denied them (i.e., the interaction term is now insignificant).

Column (5) shows more evidence in favor of the effect identified in column (3) (i.e., that there is a differential effect between religious and non-religious people as their political rights change). Using the Polity index of democratization (on the -10 to +10 scale) being religious decreases revolutionary tendencies especially strongly in those countries that have high levels of *Democracy* (i.e., the interaction term is negative and significant at the 1 per cent level). For a nation with the highest possible level of *Democracy* a religious person is 3.6 percentage points less likely to want to revolt compared to a non-religious person (=-0.016-0.002*10). However for nations with the lowest possible Polity scores being religious implies a 0.4 percentage point higher chance of wanting to revolt (=-0.016+0.002*10). One explanation is that the religious are more offended and inclined to rebel than others when their democratic/political freedoms are denied since their ability to practice may be constrained. The result does not support the (theoretical) arguments that the religious are unaffected by fewer freedoms since by joining a religious 'club' they have willingly given these up anyway. It does support the view of Adam Smith (1776) who disagreed with his contemporaries that less freedom creates less room for intolerance and civil unrest by limiting diversity (e.g., see Iannaccone's (1998) observation that "there are, as yet, no direct tests of Smith's claim that religious competition benefits societies by providing better religion, less civil strife and more prosperity").

IV. c. Non-linearities, Trade and Social security

Table 4c performs a set of robustness checks. It uses as the base specification the regression in column (2) of Table 4a (i.e., with *Freedom*, Δ*GDP per capita* and *Personal Income Quintile* as explanatory variables). Column (1) tests for a non-linearity in freedom by including a squared term, which is not significant. The next column includes both the level and change in GDP together in the same regression and again supports the view that economic growth is a more important determinant of revolutionary tastes than the level of development. Column (3) tests for the importance of trade

openness. The prospect of more international trade reducing (between) country conflict by increasing mutual dependencies was first raised by Polachek (1980) who finds supportive evidence using a 10-year 30 nation cross-section. The present paper's focus is on whether trade can reduce revolutionary pressures *within* nations. To the extent that civil conflict arises from rent-seeking behavior, greater openness may be able to have a beneficial effect by increasing the level of competitiveness in the domestic economy.[20] In column (3) *Trade openness* has a negative effect (at the 10 percent level) and suggests that a one standard deviation change explains 39% of the standard deviation in revolutionary support.

Column (4) tests for whether more social security (as a proportion of GDP) can mitigate revolutionary pressures. The coefficient is negative and significant at the 1 percent level. A one standard deviation change in *Social security* explains 15% of the standard deviation in the support for revolt. This accords with historical evidence that the origins of social insurance lay primarily in increasing the security of property rights. A frequently cited example is the first mandatory, old-age pension system created in Germany in 1889 by Otto von Bismark who "was neither a reformer nor particularly liberal. The 'iron-chancellor' advocated social security in the hope of pacifying the proletariat and luring them away from socialism" (page 40, Carter and Shipman (1997)). We also controlled for income inequality (using Deininger and Squire's (1996) 'high quality' Gini coefficients). Due to limited availability our sample size falls to 69,963 people (across 32 countries). Controlling for country effects the coefficient on inequality is positive (at the 5 per cent level of significance) and *Freedom* retains a similar negative and significant effect to the previous estimates (available on request).

Column (5) expands the set of personal controls to include a set of variables capturing employment status. Compared to working, being unemployed or a student increases the probability of wanting to revolt by 2.0 and 1.9 percentage points, respectively. Being retired decreases it by 2.7 percentage points. These coefficients are all significant at the 1 percent level. The effects of our other variables remain almost unchanged. Column (6) adds more personal characteristics although doing so reduces the sample size by over 40%. The main effects are that married individuals are significantly less likely

[20] See also Ades and Di Tella (1999) who show how more competition (as proxied by openness) reduces corruption by limiting opportunities for rent-extraction. Krugman (1995, pg 28) argues that "trade politics is primarily about conflicts of interests within rather than between nations".

to want a revolution whereas the young and men are more likely.[21]

IV. d. Controlling for Endogeneity

Table 4d reports the results from our two stage regressions that control for the potential endogeneity of freedom and growth (see also section III.b). In column (1) *Freedom* and Δ*GDP per capita* are instrumented with the identity of the legal and colonial origin of nations. As noted earlier, regimes' attempts at self-preservation such as the extension of voting rights (Acemoglu and Robinson (2000)), land reform (Grossman (1994)), redesign of institutions to constrain the "arbitrary and confiscatory power by the Crown" (North and Weingast (1989)) and expansion of welfare roles (Fording (1997)) suggest that more revolutionary pressures may lead to more freedoms. If this is the dominant form of endogeneity then we would expect the coefficient on *Freedom* to become more negative after it is instrumented. This is what we find in column (1) in which freedom reduces revolutionary support by, if anything, a greater amount compared to the previous estimates. It also retains significance at the 1% level. GDP growth again has a negative effect, although it is less well defined than before. Since the number of instruments is greater than the number of endogenous regressors, our equation is over-identified which allows us to test for the exogeneity of the extra instruments using a Hansen test. The test statistic is distributed as $\chi^2(6)$ (where the degrees of freedom is equal to the number of over-identifying restrictions). Exogeneity of the over-identifying restrictions could not be rejected (the p-value equals 0.38).

The first stage regression results are reported in columns (2) and (3). They show the same basic patterns that are reported in La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999) (who regress legal origins on measures of government performance that include indices of political rights/ democracy). In particular, countries with Socialist legal origins have significantly lower levels of freedom (where the base category is British). The effect of Socialist legal origins is exactly as predicted by political theories that argue these kinds of policies serve to enhance the power of the state (i.e., compared to common law countries, regimes with socialist legal origins tend to be more interventionist/more intrusive/less democratic). There is also evidence that Scandinavian legal

[21] The World Values survey uses random sampling of about 1,500 respondents per country. By giving each respondent an equal weight in our regressions, we tend to underestimate the weight of large countries and overestimate the weight of small ones. To control for this issue we re-estimate all regressions using weighted least squares with sampling weights equal to the inverse of the probability that a person is included in her country's sample. The above results remain similar.

origins tend to increase freedoms and that French legal origins suppress them (but only at the 15% level). La Porta, Lopez-de-Silanes, Shleifer and Vishny observe that French legal origins tend to promote interventionism and find they have a significant negative effect on political rights/ democracy across their (larger) cross-section of 125 countries.

The bottom panel of the table shows that countries once ruled by the main colonial powers (i.e., Britain, Spain and Portugal) had lower levels of freedom between 1981-97 (compared to countries that were never colonized). There does not appear to be evidence of significant differences depending on the identity of the colonizer in column (2). However in the first stage regression explaining GDP growth in column (3), being a Portuguese colony stands out as delivering relatively worse performance (the major colony of Portugal in the sample was Brazil). There also appear to be no significant effects on the rate of economic development depending on whether the origin of the colonizer was either British or Spanish.

In column (4) we use the same instrument set but now also control for the complete set of personal characteristics that were included in column (6) of Table 4c. The number of observations falls by over 40% once this set of 18 additional controls is added. The coefficient on freedom retains its size and is still significant at the 1% level (although Δ*GDP per capita* now loses significance). A Hansen test of exogeneity of the over-identifying restrictions shows that this assumption could not be rejected (the $\chi^2(6)$ statistic is 9.5 and the corresponding p-value equals 0.14). In the first stage results reported in columns (5) and (6), Socialist legal origins and Spanish colonial origins again have a negative effect on the level of freedom.

V. Conclusions

This paper takes a new approach to help answer an old and unsettled question concerning whether the level of civil liberties and democratic freedoms are a root cause of revolutionary pressures in nations. It also studies the role of religious beliefs. To do so, we introduce micro-data based on surveys of revolutionary tastes of 106,000 people living in 61 nations from 1981-97. The approach differs from previous studies that have used aggregate level data on civil wars. We first provide several different types of evidence that show how the support for a revolution is correlated with observable measures of actions that both the people and their governments have undertaken. These

include whether the individual has demonstrated, joined strikes, occupied buildings or factories and also whether their government has increased spending on the military and imported more arms. Levels of revolutionary support are also found to be significantly (positively) correlated with there being a civil war in the country.

The paper then studies the determinants of revolutionary preferences. Controlling for the personal characteristics of respondents, country and year effects, less people want revolutionary change when their freedoms increase. Since governments may attempt to preserve themselves in the face of rising revolutionary threats, we also control for the potential endogeneity of freedom. The main result remains the same. Consequently the creation of institutions that promote civil liberties and democratic freedoms appear to be an important mechanism for the securing of property rights. Without such institutions revolutionary pressures increase, opening up the possibility of an explosive bandwagon that leads to a new regime and expropriation of the old incumbent group. Higher GDP growth rates may be able to "buy off" part of the increase in revolutionary support when freedoms are constrained. The paper also finds that being religious lowers an individual's chance of wanting to revolt in free countries although the effect disappears entirely in non-free ones (where there are no significant differences between religious and non-religious individuals). There is also evidence suggesting a beneficial role for more trade and social security.

Table 1a

Taste for Revolution: 61 nations, 1981-97.

Taste for Revolt?	All	Unemployed	Religious? *Yes*	Religious? *No*	If religious: *Christian*	If religious: *Muslim*	If religious: *Other*
Yes	9.8	14.1	9.2	10.3	7.8	18.3	12.9
No	90.2	85.9	90.8	89.7	92.2	81.7	87.1

Taste for Revolt?	Freedom Status: *Not Free* (1-2.5)	*Partly Free* (2.5-5.5)	*Free* (5.5-7)	Income Quintiles: 1st *(Lowest)*	2nd	3rd	4th	5th *(Highest)*
Yes	18.1	13.1	6.2	10.8	10.4	10.2	9.3	6.9
No	81.9	86.9	93.8	89.2	89.6	89.8	90.7	93.1

Note: All figures are based on the full sample of 106,170 people and are expressed as percentages. In the religion category, *"Other"* includes what was originally coded in the World Values Survey as *"Jew"*, *"Hindu"*, *"Buddhist"* or *"Other"*.

Table 1b

Average Revolutionary Taste of Muslims by Country Freedom Status

Countries where…	Freedom Status of Country: Not Free	Partly Free	Free
Muslims are the Majority	24.9	18.7	-
Muslims are a Minority	22.1	11.6	1.7

Note: All numbers are expressed as percentages of the number of Muslims living in the country.

Table 2a
Correlation Coefficients between Individual Preferences for Revolt and their Rebellious Actions: 61 Nations, 1981-95.

	Taste for Revolt?	*Joined boycotts?*	*Attended demonstrations?*	*Joined unofficial strikes?*	*Occupied buildings or factories?*
Joined boycotts?	0.068	1			
Attended demonstrations?	0.082	0.366	1		
Joined unofficial strikes?	0.068	0.278	0.297	1	
Occupied buildings or factories?	0.063	0.222	0.233	0.321	1
Signed petitions?	0.004	0.271	0.311	0.154	0.111

Note: Data are from the World Values Survey Series and are based on a random sample of 106,170 people.

Table 2b
Correlation Coefficients between Individual Preferences for Revolt and Five Dimensions of General Disaffection: 47 Nations, 1995.

	Taste for Revolt?	*Environment needs Protection*	*Country Run for the Few*	*Corruption is Prevalent*	*Don't Respect Authority*
Environment needs Protection	-0.001	1			
Country Run for the Few	0.050	0.015	1		
Corruption is Prevalent	0.088	-0.033	0.243	1	
Don't Respect Authority	0.006	0.048	0.035	-0.038	1
Bleak Future	-0.021	0.019	0.116	0.042	0.057

Note: Data are from the World Values Survey Series and are based on a sample of 42,856 people.

Table 2c
Correlation Coefficients between National Support for Revolt, Size of the Military and Civil War, 40 Nations, 1981-95.

	Proportion of Nation who Support Revolt	*Arms Imports (% of total Imports)*	*Expenditure on Military (% of GDP)*	*Spending on Military (% of Government)*
Arms Imports (% of Total Imports)	0.467	1		
Expenditure on Military (% of GDP)	0.203	0.484	1	
Spending on Military (% of Government Size)	0.399	0.496	0.784	1
Civil War	0.676	0.478	0.178	0.399

Note: Data are from World Values Survey and World Bank Development Indicators. Civil Wars are from Doyle and Sambanis (2000).

Table 3a
Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Individual variables:					
Taste for Revolt?	Total=106,170	0.098	0.082	0	1
Religious?	Total=100,620	0.827	0.232	0	1
Macro variables:					
Freedom - overall	Total=102	5.62	1.52	1	7
- between	N=61		1.53	1	7
- within	$\bar{t}$=1.7		0.49	3.48	7.98
Political Rights - overall	Total=102	5.80	1.58	1	7
- between	N=61		1.61	1	7
- within	$\bar{t}$=1.7		0.54	3.83	8.50
Civil Liberties - overall	Total=102	5.44	1.54	1	7
- between	N=61		1.51	1	7
- within	$\bar{t}$=1.7		0.52	3.13	7.47
Democracy (Polity Score) - overall	Total=102	6.83	4.95	-7	10
- between	N=61		5.36	-7	10
- within	$\bar{t}$=1.7		1.27	-1.17	10.83
GDP per capita (raw level)	Total=97	10,967	10,190	236	38,612
Δ*GDP per capita (in logs)*	Total=97	0.03	0.14	-0.33	0.27
Trade openness	Total=79	0.39	0.28	0.04	1.19
Social security	Total=79	0.05	0.05	0	0.19

Note: These figures are based on World Values Survey data from the 61 countries. The three waves of the WVS used were taken in 1981-84, 1990-92 and 1995-97 (see Appendix 1).

Table 3b
Correlation Coefficients: 61 nations, 1981 to 1997.

	Taste for Revolt?	*Freedom*	*Political Rights*	*Civil Liberties*	*GDP per capita (logs)*	Δ*GDP per capita (logs)*
Freedom	-0.55	1				
Political Rights	-0.53	0.99	1			
Civil Liberties	-0.54	0.99	0.96	1		
GDP per capita (in logs)	-0.56	0.69	0.67	0.70	1	
Δ*GDP per capita (in logs)*	-0.06	0.07	0.07	0.06	0.07	1

Table 4a

The Taste for Revolt and Freedom: 61 nations, 1981-1997.

Dep. Variable: *Taste for Revolt?*	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Freedom	**-0.021****	**-0.020****			
	(0.004)	**(0.003)**			
Political Rights			**-0.017****		
			(0.003)		
Civil Liberties				**-0.019****	
				(0.003)	
Democracy (Polity Score)					**-0.009****
					(0.001)
GDP per capita	0.006				
	(0.013)				
ΔGDP per capita		**-0.051****	**-0.042****	**-0.062***	**-0.092****
		(0.017)	**(0.017)**	**(0.021)**	**(0.035)**
Personal Income Quintile: Second	-0.004	-0.004	-0.004	-0.003	-0.001
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Third	**-0.009***	**-0.009**	**-0.009***	**-0.008**	-0.006
	(0.004)	**(0.004)**	**(0.004)**	**(0.004)**	(0.004)
Fourth	**-0.013***	**-0.013***	**-0.014****	**-0.012***	**-0.009**
	(0.005)	**(0.005)**	**(0.005)**	**(0.005)**	**(0.005)**
Fifth (top)	**-0.021****	**-0.020****	**-0.021****	**-0.019****	**-0.017****
	(0.006)	**(0.006)**	**(0.006)**	**(0.005)**	**(0.005)**
Country and Year Dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.09	0.09	0.09	0.09	0.09
Observations	106,170	106,170	106,170	106,170	103,222

Notes: All the regressions are Probits. Marginal Probabilities are reported. Standard errors are in parentheses. Bold-face denotes significant at the 10 percent level; Single-starred bold-face at the 5 per cent level; Double-starred bold face at the 1 percent level. The baseline category for the relative income position of the individual is the bottom quintile. Columns (1) to (4) use freedom data from 'Freedom House'; column (5) from 'Polity IV'.

Table 4b

The Taste for Revolt and Religion: 61 nations, 1981-97.

Dep. Variable: *Taste for Revolt?*	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Freedom	**-0.018****	**-0.014****			
	(0.003)	**(0.004)**			
Political Rights			**-0.010****		
			(0.004)		
Civil Liberties				**-0.015****	
				(0.004)	
Democracy (Polity Score)					**-0.007****
					(0.001)
ΔGDP per capita	**-0.054****	**-0.057****	**-0.050****	**-0.067****	**-0.100****
	(0.017)	**(0.017)**	**(0.018)**	**(0.020)**	**(0.035)**
Personal Income Quintile: Second	-0.004	-0.004	-0.004	-0.003	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Third	**-0.010***	**-0.010***	**-0.010***	**-0.009***	**-0.008**
	(0.004)	**(0.004)**	**(0.004)**	**(0.004)**	**(0.004)**
Fourth	**-0.013****	**-0.013****	**-0.014****	**-0.012***	**-0.009***
	(0.005)	**(0.005)**	**(0.005)**	**(0.005)**	**(0.004)**
Fifth (top)	**-0.020****	**-0.020****	**-0.021****	**-0.019****	**-0.017****
	(0.005)	**(0.005)**	**(0.005)**	**(0.005)**	**(0.005)**
Religious	**-0.028****	-0.002	0.006	-0.013	**-0.016***
	(0.006)	(0.019)	(0.019)	(0.018)	**(0.008)**
Religious * Freedom		-0.004			
		(0.003)			
Religious * Political Rights			**-0.006**		
			(0.003)		
Religious * Civil Liberties				-0.003	
				(0.003)	
Religious * Democracy (Polity Score)					**-0.002****
					(0.001)
Country and Year Dummies	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.08	0.08	0.08	0.08	0.08
Observations	100,620	100,620	100,620	100,620	97,794

Notes: All the regressions are Probits. Marginal Probabilities are reported. Absolute values of t-statistics are in parentheses. Bold-face denotes significant at the 10% level; Single-starred bold-face at the 5% level; Double-starred bold face at the 1% level. The baseline category for the relative income position of the individual is the bottom quintile and for the religious variable is declaring one-self as belonging to no religious denomination.

Table 4c

Taste for Revolt: Further Tests including Nonlinearities, in Freedom: 61 Nations, 1981-97.

Dep. Variable: *Taste for Revolt?*	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Freedom	**-0.029****	**-0.021****	**-0.021****	**-0.017****	**-0.020****	**-0.009***
	(0.011)	**(0.004)**	**(0.003)**	**(0.002)**	**(0.003)**	**(0.004)**
Freedom Squared	0.001					
	(0.001)					
GDP per capita		-0.015				
		(0.013)				
Δ GDP per capita	**-0.055****	**-0.066****	**-0.035**	**-0.064**	**-0.049****	-0.027
	(0.016)	**(0.025)**	**(0.018)**	**(0.019)**	**(0.017)**	(0.030)
Personal Income Quintile: Second	-0.004	-0.004	-0.004	-0.005	-0.005	-0.002
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
Third	**-0.009**	**-0.009***	**-0.009**	**-0.010***	**-0.011****	**-0.011****
	(0.004)	**(0.004)**	**(0.005)**	**(0.004)**	**(0.004)**	**(0.004)**
Fourth	**-0.013***	**-0.014****	**-0.013***	**-0.013****	**-0.016****	**-0.016****
	(0.005)	**(0.005)**	**(0.005)**	**(0.005)**	**(0.005)**	**(0.005)**
Fifth (top)	**-0.020****	**-0.021****	**-0.021****	**-0.019****	**-0.024****	**-0.019****
	(0.006)	**(0.005)**	**(0.006)**	**(0.006)**	**(0.005)**	**(0.006)**
Trade openness			**-0.112**			
			(0.062)			
Social security				**-0.252****		
				(0.120)		
Employment state: Unemployed					**0.020****	**0.014****
					(0.006)	**(0.006)**
Self-employed					-3.0e-4	0.002
					(0.004)	(0.004)
Retired					**-0.027****	0.001
					(0.004)	(0.006)
Student					**0.019****	0.003
					(0.004)	(0.010)
Housewife					**-0.022****	**0.007**
					(0.004)	**(0.004)**
Religious						**-0.018****
						(0.006)
Marital status: Married						**-0.015***
						(0.007)
Divorced						1.9e-4
						(0.008)
Separated						0.001
						(0.008)
Widowed						-0.012
						(0.007)
Age						**-8.0e-4****
						(1.5e-4)
Male						**0.018****
						(0.004)
Education (Age finished school)						6.0e-5
						(2.0e-4)
Number of children						0.001
						(0.001)
Country and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.09	0.09	0.08	0.07	0.09	0.09
Observations	106,170	106,170	102,059	88,486	105,484	61,466

Note: All the regressions are Probits. Marginal Probabilities are reported. Absolute values of t-statistics are in parentheses. Bold-face denotes significant at the 10% level; Single-starred bold-face at the 5% level; Double-starred bold face at the 1% level. The baseline category for the relative income position of the individual is the bottom quintile and for the religious variable is declaring one-self as belonging to no religious denomination.

Table 4d

Taste for Revolt and Freedom: Exogeneity Tests: 61 nations, 1981-97.

Dependent Variable:	**(1)** *Taste for Revolt?* 2SLS	**(2)** *Freedom (1st Stage)* OLS	**(3)** *ΔGDP/head (1st Stage)* OLS	**(4)** *Taste for Revolt?* 2SLS	**(5)** *Freedom (1st Stage)* OLS	**(6)** *ΔGDP/head (1st Stage)* OLS
Freedom	**-0.039****			**-0.034****		
	(0.010)			**(0.011)**		
Δ GDP per capita	**-0.455****			-0.020		
	(0.160)			(0.152)		
External Instruments:						
Legal Origins						
Scandinavian		**0.364**	-0.029		0.192	-0.056
		(0.190)	(0.027)		(0.157)	(0.034)
French		-0.600	0.020		-0.523	-0.012
		(0.416)	(0.029)		(0.397)	(0.032)
Socialist		**-2.489****	0.021		**-2.385****	-0.002
		(0.353)	(0.055)		**(0.356)**	(0.056)
German		-0.292	-0.017		-0.101	-0.038
		(0.190)	(0.037)		(0.208)	(0.040)
Colonial Origins						
British		**-1.539***	-0.015		-1.090	-0.009
		(0.698)	(0.029)		(0.674)	(0.033)
Spanish		**-1.392***	0.003		**-1.063**	-0.018
		(0.533)	(0.028)		**(0.564)**	(0.028)
Portuguese		**-1.129****	**-0.146****		-0.512	**-0.230****
		(0.402)	**(0.020)**		(0.422)	**(0.019)**
Other		**-1.193***	0.028		0.015	**0.051****
		(0.465)	(0.023)		(0.034)	**(0.017)**
Personal Controls	No	No	No	Yes	Yes	Yes
R^2	0.08	0.32	0.04	0.11	0.41	0.07
Observations	100,282	100,282	100,282	60,447	60,447	60,447

Notes: The Hansen test for exogeneity of the over-identifying restrictions for column (1) is $\chi^2(6)=6.4$ (p-value=0.38). The corresponding test for column (4) is $\chi^2(6)=9.5$ (p-value=0.14). The personal characteristic controls used in columns (4)-(6) are the same as in Table 2.3 (see column (6)). All standard errors are corrected to take account of clustering on the aggregate level variables. Base legal origin is British.

Appendix 1

Survey Descriptions

World Values and European Values Surveys (1981-84, 1990-92, 1995-97)

The Combined World Values Survey is produced by the Institute for Social Research, Ann Arbor, MI, USA. The series is designed to enable a cross-national comparison of values and norms on a wide variety of norms and to monitor changes in values and attitudes across the globe. Both national random and quota sampling were used. All of the surveys were carried out through face-to-face interviews, with a sampling universe consisting of all adult citizens, aged 18 and older, across over 60 nations around the world. The 1981-83 survey covered 22 independent countries; the 1990-93 survey covered 42 independent countries; the 1995-97 survey covered 53 independent countries. In total, 64 independent countries have been surveyed in at least one wave of this investigation. The full set of countries covered is: Argentina, Armenia, Australia, Austria, Azerbaijan, Belgium, Bangladesh, Bulgaria, Bosnia-Herzegovina, Belarus, Brazil, Canada, Switzerland, Chile, China, Colombia, Czech Republic, East and Unified Germany, Denmark, Dominican Republic, Spain, Estonia, Finland, France, United Kingdom, Georgia, Ghana, Croatia, Hungary, India, Ireland, Northern Ireland, Iceland, Italy, Japan, South Korea, Lithuania, Latvia, Madagascar, Mexico, Macedonia, Mongolia, The Netherlands, Norway, Pakistan, Peru, Philippines, Poland, Puerto Rico, Portugal, Russia, Slovak Republic, Slovenia, Sweden, Turkey, Taiwan, Ukraine, Uruguay, United States of America, Venezuela, South Africa, Moscow, Tambov oblast, Montenegro, Nigeria, Romania, Moldova and Serbia.

Freedom House Survey

Freedom in the World is an institutional effort by the *Freedom House* organization to monitor the progress and decline of political rights and civil liberties in 192 nations and 60 related and disputed territories. The annual survey is a year-long effort produced by regional experts, consultants, and human rights specialists. Throughout the year, *Freedom House* personnel regularly conduct fact-finding missions to gain more in-depth knowledge of the political transformations affecting the countries studied, meeting a cross-section of political parties and associations, human rights monitors, religious figures, representatives of both the private sector and trade union movement, academics and journalists. Since 1972, *Freedom House* has published an annual assessment of state of freedom by assigning each country and territory the status of "Free", "Partly Free", or "Not Free" by averaging their political rights and civil liberties ratings. First, political rights and civil liberties are rated separately on a seven-category scale, 1 representing the most free and 7 the least free. A country is assigned to a particular numerical category based on responses to the checklist and the judgments of the Survey team. To answer the political rights questions, *Freedom House* considers the extent to which the system offers the voter the chance to make a free choice among candidates, and to what extent the candidates are chosen independently of the state. In particular, it follows a "checklist" of Political Rights and Civil Liberties, although it recognizes that formal electoral procedures are not the only factors that determine the real distribution of power. The more that people suffer under domination by unelected forces such as the military or the king, the less chance the country has of receiving credit for self-determination in the Survey.

The Political Rights Checklist includes:

1. Is the head of state/head of government or other chief authority elected through free and fair elections?
2. Are the legislative representatives elected through free and fair elections?
3. Are there fair electoral laws, equal campaigning opportunities, fair polling and honest tabulation of ballots?
4. Are the voters able to endow their freely elected representatives with real power?
5. Do people have the right to organize in different political parties or competitive political groupings of their choice and is the system open to the rise and fall of these competing parties or groupings?
6. Is there a significant opposition vote, de facto opposition power, and a realistic possibility for the opposition to increase its support or gain power through elections?
7. Are the people free from domination by the military, foreign powers, totalitarian parties, religious hierarchies, economic oligarchies, or any other powerful group?

8. Do cultural, ethnic, religious, and other minority groups have reasonable self-determination, self-government, autonomy, or participation through informal consensus in the decision-making process?
9. For traditional monarchies that have no parties or electoral process, does the system provide for consultation with the people, encourage discussion of policy, and allow the right to petition the ruler?
10. Is the government or occupying power deliberately changing the ethnic composition of a country or territory so as to destroy a culture or tip the political balance in favor of another group?

The Civil Liberties Checklist includes:

A. Freedom of Expression and Belief

1. Are there free and independent media and other forms of cultural expression? (Note: in cases where the media are state-controlled but offer pluralistic points of view, the Survey gives the system credit.)
2. Are there free religious institutions and is there free private and public religious expression?

B. Association and Organizational Rights

1. Is there freedom of assembly, demonstration, and open public discussion?
2. Is there freedom of political or quasi-political organization? (Note: this includes political parties, civic organizations, ad hoc issue groups, etc.)
3. Are there free trade unions and peasant organizations or equivalents, and is there effective collective bargaining? Are there free professional and other private organizations?

C. Rule of Law and Human Rights

1. Is there an independent judiciary?
2. Does the rule of law prevail in civil and criminal matters? Is the population treated equally under the law? Are police under direct civilian control?
3. Is there protection from political terror, unjustified imprisonment, exile, or torture, whether by groups that support or oppose the system? Is there freedom from war and insurgencies? (Note: freedom from war and insurgencies enhances the liberties in a free society, but the absence of wars and insurgencies does not in and of itself make a not free society free.)
4. Is there freedom from extreme government indifference and corruption?

D. Personal Autonomy and Economic Rights

1. Is there open and free private discussion?
2. Is there personal autonomy? Does the state control travel, choice of residence, or choice of employment? Is there freedom from indoctrination and excessive dependency on the state?
3. Are property rights secure? Do citizens have the right to establish private businesses? Is private business activity unduly influenced by government officials, the security forces, or organized crime?
4. Are there personal social freedoms (e.g., gender equality, choice of marriage partners and size of family)?
5. Is there equality of opportunity, including freedom from exploitation by or dependency on landlords, employers, union leaders, bureaucrats, or other types of obstacles to a share of legitimate economic gains?

When analyzing the civil liberties checklist, *Freedom House* does not mistake constitutional guarantees of human rights for those rights in practice. Countries and territories which receive a rating of 1 come closest to the ideals expressed in the civil liberties checklist, including freedom of expression, assembly, association, and religion. They are distinguished by an established and generally equitable system of rule of law and are comparatively free of extreme government indifference and corruption. Countries and territories with this rating enjoy free economic activity and tend to strive for equality of opportunity. States and territories with a rating of 2 have deficiencies in three or four aspects of civil liberties, but are still relatively free. Countries and territories which have received a rating of 3, 4, or 5 range from those that are in at least partial compliance with virtually all checklist standards to those with a combination of high or medium scores for some questions and low or very low scores on other questions. The level of oppression increases at each successive rating level, particularly in the areas of censorship, political terror, and the prevention of free association. There are also many cases in which groups opposed to the state engage in political terror that undermines other freedoms. Therefore, a poor rating for a country is not necessarily a comment on the intentions of the government, but may reflect real restrictions on liberty caused by nongovernmental terror. Countries and territories rated 6 are characterized by a few partial rights, such as some religious and social freedoms, some

highly restricted private business activity, and relatively free private discussion. In general, people in these states and territories experience severely restricted expression and association, and there are almost always political prisoners and other manifestations of political terror. States and territories with a rating of 7 have virtually no freedom. An overwhelming and justified fear of repression characterizes these societies.

Polity IV Project: Political Regime Characteristics and Transitions

The Polity Project includes constructed annual measures for both institutionalized democracy (DEMOC) and autocracy (AUTOC) as many polities exhibit mixed qualities of both of these distinct authority patterns. The measures are composite indices derived from coded values of authority characteristic component variables, each scaled to lie on an eleven point (0 to 10) scale. A third indicator, POLITY, is derived by subtracting the AUTOC value from the DEMOC value; this procedure provides a single regime score that ranges from +10 (full democracy) to -10 (full autocracy). For further information, see the *Polity IV Dataset Users Manual* (2002).

Autocracy

For the purposes of the Polity Project, Autocracy is defined operationally in terms of the presence of a distinctive set of political characteristics. In mature form, autocracies sharply restrict or suppress competitive political participation. Their chief executives are chosen in a regularized process of selection within the political elite, and once in office they exercise power with few institutional constraints. Most modern autocracies also exercise a high degree of directiveness over social and economic activity, but we regard this as a function of political ideology and choice, not a defining property of autocracy. Social democracies also exercise relatively high degrees of directiveness. We prefer to leave open for empirical investigation the question of how Autocracy, Democracy, and Directiveness (performance) have covaried over time. An eleven-point Autocracy scale is constructed additively. The operational indicator of autocracy is derived from (weighted) codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive:

Authority Coding	**Scale Weight**
Competitiveness of Executive Recruitment:	
(1) Selection	+2
Openness of Executive Recruitment:	
(1) Closed	+1
(2) Dual/designation	+1
Constraints on Chief Executive:	
(1) Unlimited authority	+3
(2) Intermediate category	+2
(3) Slight to moderate limitations	+1
Regulation of participation:	
(3) Sectarian	+1
(4) Restricted	+2
Competitiveness of Participation:	
(1) Repressed	+2
(2) Suppressed	+1

The logic of this "institutionalized autocracy" scale is similar to that of the institutionalized democracy scale, below. Note that the two scales do not share any categories in common. Nonetheless many polities have mixed authority traits, and thus can have middling scores on both Autocracy and Democracy scales.

Democracy

Institutionalized Democracy is conceived as three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. Other aspects of plural democracy, such as the rule of law, systems of checks and balances, freedom of the

press and so on are means to, or specific manifestations of, these general principles. We do not include coded data on civil liberties. The Democracy indicator is an additive eleven-point scale (0-10). The operational indicator of democracy is derived from (weighted) codings of the competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive.

Authority Coding	**Scale Weight**
Competitiveness of Executive Recruitment:	
(2) Transitional	+1
(3) Election	+2
Openness of Executive Recruitment:	
(3) Dual/election	+1
(4) Election	+1
Constraint on Chief Executive:	
(4) Intermediate category	+1
(5) Substantial limitations	+2
(6) Intermediate category	+3
(7) Executive parity or subordination	+4
Competitiveness of Political Participation:	
(3) Factional	+1
(4) Transitional	+2
(5) Competitive	+3

For this "institutional democracy" indicator there is no "necessary condition" for characterizing a political system as democratic, rather democracy is treated as a variable. For example, the scale discriminates among Western parliamentary and presidential systems based on the extent of constraints on the chief executive. Charles de Gaulle as president of the French Fifth Republic operated within slight to moderate political limitations. Thus the early years of the Fifth Republic have lower Democracy scores than the United States or the Federal Republic of Germany, where constraints on the executive approach parity. Similarly, the onset of "cohabitation" in France during the second phase of the first Mitterrand presidency is marked by a shift toward parity on the Executive Constraints scale and a concomitant increase in France's Democracy score.

Polity Rating

The Combined Polity Score (used in the present study) is computed by subtracting the AUTOC score from the DEMOC score; the resulting unified polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic).

Appendix 2

Data Definitions

Taste for Revolt?: A dummy variable that equals 1 when the survey respondent answers that *"The entire way our society is organised must be radically changed by revolutionary action"*, and equals 0 when the respondent answers that either *"Our society must be gradually improved by reforms"* or *"Our present society must be valiantly defended against all subversive forces"*.

Freedom: An index measured on a one-to-seven scale with the lowest value, 1, being assigned to the least free countries and the highest value, 7, being assigned to the most free countries. This index is a composite measure obtained by averaging the two separate indices, *Political Rights* and *Civil Liberties* (see below).

Democracy (polity score): An index obtained from the Polity IV project whose focus is on the authority patterns that characterize states. The polity index is on a 21 point scale (-10 to +10) and ranges from the most autocratic and least democratic regimes (-10) to the least autocratic and most democratic ones (10). See appendix 1 for more details about how the scales are created.

Political Rights: As index whose lowest value, 1, is assigned to countries with the least political rights and the highest value, 7, is assigned to the countries with the most. See appendix 1.

Civil Liberties: As index whose lowest value, 1, is assigned to countries with the least civil liberties and the highest value, 7, is assigned to the countries with the most. See appendix 1.

GDP per capita: The level of GDP per capita in constant 1992 US$, measured in logs, from World Development Indicators of the World Bank.

Δ*GDP per capita*: The first difference of *GDP per capita*.

Personal Income Quintile: This heading refers to a set of 4 dummy variables which take the value 1 depending on which income quintile the respondent's family income belongs to. The base category is the lowest income quintile.

Religious: A dummy variable that equals 1 when the survey respondent answers yes to the question *"Do you belong to a religious denomination? If yes, which one?"*. The specific categories of religion listed in the remainder of the question were *"*1. *Roman Catholic* 2. *Protestant* 3. *Orthodox* 4. *Jews* 5. *Muslim* 6. *Hindu* 7. *Buddhist* 8. *Other"*. The base category is people who answer *"*0. *Not a member"* or *"No religious denomination"* (from World Values Survey).

Christian: A dummy variable that equals 1 when the survey respondent declares herself as belonging to one the following three religious groups: *"*1. *Roman Catholic* 2. *Protestant* 3. *Orthodox"*.

Muslim: A dummy variable that equals 1 when the respondent declares herself as being *"*5. *Muslim"*.

Other Religion: A dummy variable that equals 1 when the respondent declares herself as belonging one of the following religions: *"*4. *Jews* 6. *Hindu* 7. *Buddhist* 8. *Other"*.

Trade openness: Imports plus exports divided by GDP (World Development Indicators, World Bank.)

Social security: Social security divided by GDP (World Development Indicators, World Bank).

Inequality: The Gini coefficient from the World Bank Deininger and Squire (1996) 'high quality' data set.

Employment status: A set of dummy variables taking the value 1 depending on the respondent's employment status: "Unemployed", "Self-employed", "Retired", "Student", "Housewife" or "Other". The base category is "Employed" (from World Values Survey).

Marital status: A set of dummy variables taking the value 1 depending on the respondent's marital status: *"Married"*, *"Divorced"*, *"Separated"* or *"Widowed"*. The base category is *"Never Married"*.

Age: The respondent's age in years.

Male: A dummy variable taking the value 1 if the respondent is male and 0 otherwise.

Education (Age finished school): The age that the respondent finished full-time education.

Number of children: The number of children living in the household.

Country Run for the Few: A dummy variable equal to 1 when respondent agrees with the 1st answer to the question: *"Generally speaking, would you say that this country is run by a few big interests looking out for themselves, or that it is run for the benefit of all the people?* 1. *Run by a few big interests* 2. *Run for all the people"* (World Values survey).

Environment Needs Protection: A dummy variable equal to 1 if the respondent agrees with the 1st answer to the question: *"Here are 2 statements people sometimes make when discussing the environment and economic growth. Which of them comes closer to your own view?* 1. *Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs.* 2. *Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent"* (World Values survey).

Corruption is Prevalent: A discrete variable ranging from 1 to 4 depending on the reply to the following question: *"How widespread do you think bribe taking and corruption is in this country?* 1. *Almost no public officials are engaged in it* 2. *A few public officials are engaged in it* 3. *Most public officials are engaged in it* 4. *Almost all public officials are engaged in it"* (World Values survey).

Don't Respect Authority: A dummy reflecting the individual response to the question *"I'm going to read out a list of various changes in our way of life that might take place in the near future. Please tell me for each one, if it were to happen, whether you think it would be* 1. *A good thing or* 2. *A bad thing? - Greater respect for authority."* The dummy equals 1 when the answer is *"a bad thing"* (World Values survey).

Bleak Future: A dummy variable equal to 1 if the respondent agrees with the second answer to the question *"For each of the following pairs of statements, please tell me which one comes closest to your own views:* 1. *Humanity has a bright future;* 2. *Humanity has a bleak future."* (World Values survey).

Appendix 3

In this appendix we show how lower freedom and incomes may lead a greater proportion of the population who want a revolution. Let y_i be individual i's income and F be the level of freedom they enjoy. Let $U_i(c_i)$ be their utility function ($U_c'>0$ and $U_c''<0$). Assume that people face a standard utility maximization problem but that in addition to their budget constraint they also face a constraint on their attainable levels of consumption due to government laws (for example, outlawing alcohol or restrictions on type of clothing). The problem each individual solves is:

$$\begin{array}{lll} \text{maximize} & U_i(\underline{c_i}) & \\ \text{such that} & \underline{p}.\underline{c_i} \leq Y_i & \text{Budget Constraint} \\ \text{and} & \underline{c_i} \leq \underline{c}^{\max}(F) & \text{Freedom Constraint} \end{array} \qquad (1)$$

where $\underline{c_i}$ is a vector of consumption goods and $\underline{p}$ is a vector of prices. The vector, $\underline{c}^{max}(F)$, specifies the maximum consumption levels allowed for each good due to a potential restriction of freedoms. From problem (1) we can define an indirect utility function, $V_i(Y_i, F, \underline{p})$. Let an individual have a rational preference for revolt if she would experience an expected utility gain from one:

$$\Delta_i = \mathrm{E}\{U_i(c_i^{\mathrm{Revolt}})\} - U_i(c_i^{No\,\mathrm{Revolt}}) > 0 \qquad (2)$$

$$\Rightarrow \quad \Delta_i = \mathrm{E}\{V_i(Y_i^{\mathrm{Revolt}}, F^{\mathrm{Revolt}}, \underline{p}^{\mathrm{Revolt}})\} - V_i(Y_i^0, F^0, \underline{p}^0) > 0 \qquad (3)$$

where Y^{Revolt}, F^{Revolt} and $\underline{p}^{Revolt}$ are the levels of income, freedom and prices in the event of revolt and Y^0, F^0 and $\underline{p}^0$ are their initial levels (in the absence of one). Equation (3) compares the expected utility deriving from a revolt with the utility from the status quo. If $\Delta_i>0$ then an individual has a rational preference for revolt. Post-revolt income, Y^{Revolt}, may depend on each person's pre-revolt income (i.e. whether they are rich or poor) as well as on the moments of the income distribution. Post-revolt freedom, F^{Revolt}, depends on the policies of the new regime.

Assume that individuals have indirect utility function, $V_i(y_i, F_i)=\alpha_i \log y_i+\beta_i \log F$, where $\alpha_i, \beta_i>0$ are individual-specific parameters reflecting personal characteristics (such as sex, age, education level or religion). This functional form implicitly assumes that the freedom constraint is binding. Let $\bar{Y}^0$ be the initial (mean) level of income and $r_i^0= y_i^0/ \bar{Y}^0$ be each person's relative income. In the event that a revolt occurs assume either that wealth is equally shared with no output loss (i.e., $y_i^{Revolt}= \bar{Y}^{\mathrm{Revolt}} = \bar{Y}^0>1$ for $\forall i$) or that some output is destroyed leaving all incomes equal to unity. Assume without loss of generality that both outcomes occur with equal probability. Hence a rational individual has a preference for revolt if her expected utility gain is positive:

$$\Delta_i = -\alpha_i \log (r_i^0 \sqrt{\bar{Y}^0}) + \beta_i \log \left(\frac{F^{\mathrm{Revolt}}}{F^0}\right) > 0 \qquad (4)$$

Comparative static conditions derived from equation (4) are:

1. $\partial\Delta_i/\partial \mathrm{F}^0 < 0$
2. $\partial\Delta_i/\partial r_i^0 < 0$
3. $\partial\Delta_i/\partial \bar{Y}^0 < 0$.

These conditions state that revolutionary preferences depend negatively on the (initial) levels of freedom, each person's relative income and on average income. Since more initial freedom implies greater utility relative to what one expects to receive in the event of a revolt, the effect is to decrease the expected utility gain from one. Each person's expected utility gain decreases with relative income due to the assumption that people end up with the same level of income after a revolt (so the more income one has initially, the less potential there is to gain). The reason for the negative effect of average income is that when people become absolutely better off, even relatively poor ones have more to lose if the revolt does not succeed. (The size of all these effects depends on the individual parameters, α_i and β_i).

Preferences versus Actions

Having a rational preference for revolt should be distinguished from actual participation in one. An individual may only be willing to exert effort to achieve radical social change to the extent that the free-rider problem is overcome. To illustrate, assume that it costs an individual $c(e_i,F)$ to exert effort e_i on revolt (where $c'_e>0$ and $c'_F\leq 0$). The latter inequality may be due to a higher cost of acting against a more repressive government. Let average revolutionary efforts across the whole population be equal to $\bar{e}$ and the probability of a revolt actually occurring equal p, where p is a function of e_i and $\bar{e}$. Each person chooses effort to maximize her expected utility, $EW_i=V_i(y_i^0,F^0)+p(e_i,\bar{e})\Delta_i-c(e_i,F^0)$. The complementary slackness conditions are:

$$p'_{e_i}(e_i,\bar{e}).\Delta_i - c'_{e_i}(e_i,F^0) \leq 0 \qquad \text{and} \qquad e_i \geq 0. \tag{5}$$

If the probability of a revolt occurring is independent of any individual's efforts then $p_{e_i}'(e_i,\bar{e})=0$ and so $e_i=0$. In such a case each person hopes to free-ride on the efforts of others but in equilibrium there is zero average effort and no actual revolt, despite the existence of people who may have a preference for one (i.e., for whom $\Delta_i>0$). Only when $p_{e_i}'(e_i,\bar{e})>0$ can there exist an interior solution. Also note that although a reduction in freedoms may increase the expected utility gain from a revolt (i.e., Δ_i increases) people may be less willing to exert effort to achieve one due to the potentially higher costs of doing so (i.e., $c_{e_i}'(e_i,F^0)$ may also increase).

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