The Supporting Role of Democracy in Reducing Global Poverty

Joseph Connors

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Department of Economics
Wake Forest University
connorjs@wfu.edu

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Abstract

The Washington Consensus viewed democracy as a key element toward the promotion of economic growth and the reduction of poverty in the developing world. However, there is little empirical support for this view. After controlling for economic freedom, measures of democracy have almost no impact on economic growth and poverty rates. Related research indicates that economic freedom and democracy may influence each other. This raises the possibility that democracy may impact economic outcomes indirectly through changes in economic freedom. This paper seeks to determine if there is evidence in support of this view. The findings here are consistent with the view that movements toward democracy facilitate subsequent increases in economic freedom. The data also indicate that movements toward democracy indirectly influence reductions in the extreme poverty rate as a result of the increased economic freedom. However, there was no evidence that a similar relationship exists between democracy and the moderate poverty rate.

1. Introduction

The view that democracy is an important step on the path to development was widely held in many policy circles during the days of the Washington Consensus. Even though this view is currently less influential, the promotion of democracy appears to still be an important aspect of U.S. foreign policy. However, recent research indicates that democracy may have little to no impact on economic outcomes once economic institutions are accounted for. This result cast doubt on the usefulness of the promotion of democracy as a policy goal.

Additional research indicates that economic institutions and democracy are interrelated. Some studies conclude that economic institutions influence democracy, others find the opposite, and still others indicate that the relationship is bidirectional. If economic institutions and democracy influence each other then previous studies may under or overstate the impact of democracy by failing to account for its impact on economic institutions. This paper seeks to determine if there is evidence to support the view that democracy exerts both a direct impact on economic outcomes and an indirect one through economics institutions.

This paper augments the existing literature is two respects. First, the economic outcomes are the World Bank extreme and moderate poverty rates rather than the per capita income level or growth rate. These rates are defined as the percentage of a country's population that lives on $1.25 and $2 per day, respectively, in 2005 international dollars. Most research uses per capita income, a measure that includes the poor and wealthy alike. However, improving the income level and the living conditions of the poor in the developing world is the primary aim of development. Thus, the use of poverty rates as the outcome variable is arguably more appropriate.

Second, this paper examines the impact of democracy on economic institutions and then accounts for any indirect impact in order to quantify the total impact of democracy on poverty. If democracy impacts economic institutions and indirectly facilitates reductions in poverty then this may explain the insignificance of democracy in previous research. However, if an indirect impact is not found then the results would support rather then refute the findings of the previous literature.

The results indicate that movements toward democracy exert a significant impact on subsequent increases in economic freedom. This is largely consistent with Friedman's view that

political freedom is highly supportive of economic freedom (Friedman, 1962). In addition, after accounting for an indirect impact of democracy, movements toward democracy are associated with subsequent reductions in the extreme poverty rate. However, these results did not hold for the moderate poverty rate. These results appear to be consistent with the view that democracy does contribute to institutions more consistent with economic freedom, but the corresponding impact on poverty is small.

2. Why Do Political Institutions Matter?

Previous empirical research indicates that the relationship between political institutions and economic growth is weak (Tavares and Wacziarg 2001). However, there are compelling theoretical arguments that suggest a positive link between growth and democracy. In general, democracies have constitutional constraints on the exercise of government power, which limits the expropriation of private property. Such constraints strengthen property rights, reduce uncertainty, lead to increased rates of investment, and provide an environment more hospitable to entrepreneurship. This facilitates economic growth and prosperity. Weingast (1995) suggests that federalism, "market preserving federalism" specifically, is the important aspect of democracy that leads to economic growth. More autocratic regimes do not have these constitutional protections and are more likely to have less secure property rights and hence lower growth rates and income levels.

Moreover, democracies are more stable over long time horizons because the transfer of power between competing groups and leaders is handled through an orderly and predefined process. This reduces the uncertainty accompanying long-term investments. While non-democratic regimes can be stable during a leader's tenure, the transfer of power after their death or coup is often unstable. Protests, violence, and even civil wars are often the result. The uncertainty of future violence as well as the potential that future rulers will confiscate the property of those who opposed them can lead to decreased levels of investment, entrepreneurship, and lower growth rates.

However, there are also some adverse elements of democracy. Taxes that transfer income from taxpayers to non-taxpayers can reduce the incentive to work and invest. The democratic political process is susceptible to interest groups and rent seeking. Lastly, political decisions in

democratic countries tend to be shortsighted. Policy choices that lead to immediate benefits with costs that materialize later are generally preferred. Promising goodies in the short-run is a much easier way for politicians to win elections than pursuing long-term policy goals. These factors – transfers, interest group lobbying, and shortsightedness of the political process – lead to higher taxes or higher debt or sometimes both. This reduces the incentive to invest and discourages entrepreneurship. Autocratic regimes can, in theory, limit the effects of these factors. In practice, however, autocratic regimes may not be less susceptible to these factors.

These conflicting attributes of democracy may explain its weak statistical relationship with growth in the existing literature. Results from earlier empirical research, however, found a more robust relationship. For example Scully (1988) and Barro (1991) found that democracy had a significantly positive impact on growth. Using the Gastil index of political rights and civil liberties, which is now the Freedom House index, they found that more democratic countries had higher rates of economic growth. While this index is considered a measure of democracy, the authors used it primarily as a proxy for economic institutions as no such measure existed at the time. In later work, Barro (1997) found a non-linear relationship. Movements toward democracy were growth enhancing to a point, but growth reducing thereafter providing possible evidence for democracy's shortcomings.

More recent literature indicates that a weak relationship between democratic political institutions and growth is a result of accounting for the impact of economic freedom (Knack and Keefer 1995; Dawson 1998; Gwartney, Lawson, and Holcombe 1999; Wu and Davis 1999). Connors (2011) found changes in democratic political institutions were generally insignificant in poverty regressions, after controlling for changes in economic freedom and other factors. Combining these results suggests that economic freedom is a contributing factor to both growth and reductions in poverty, but that political institutions are, for the most part, unimportant. However, this ignores the possibility that political institutions may influence economic institutions and hence indirectly impact growth and poverty. Recent empirical studies have found a statistically significant relationship between political and economic institutions. Lawson and Clark (2010) found preliminary evidence that movements toward economic freedom were related to a country's level of political freedom. Others found a statistically significant relationship between political and economic institutions with Granger causality tests (de Haan and Sturm 2003; Dawson 2003; Pitlik and Wirth 2003; Vega-Godillo and Alvarez-Arce 2003; Aixala and

Fabro 2009). Farr, Lord, and Wolfenbarger (1998) did not find a direct link between political and economic institutions. However, they indicated that economic freedom leads to higher income levels, which corresponds to increased political freedom. This result is consistent with Lipset (1959) who suggested that higher income levels would lead to increases in political freedom. While Rigobon and Rodrik (2005) used a different measure – a rule of law measure was used as a proxy for economic freedom – and a different estimation technique, they found that democratic political institutions had a positive impact on the rule of law. Taken as a whole, this literature suggests that political and economic institutions are interrelated.

This may explain the insignificant impact of political institutions on growth and poverty in the literature. The overall impact may be understated if the impact of political institutions on economic freedom is not taken into account. The empirical analysis that follows accounts for this indirect impact in order to gain a more accurate understanding of the relationship between political institutions and poverty.

3. Empirical Framework

The empirical analysis uses regression equations similar to those found in the literature and examines the impact of changes in institutions on reductions in poverty. Changes in institutions, as opposed to levels, have been shown to be much more robust in regression equations regarding growth (Gwartney, Lawson, and Holcombe 1999). The purpose of this analysis is to ascertain the overall impact of political institutions on poverty both directly and indirectly. Therefore, the analysis first considers the impact of political institutions on economic freedom. Second, in order to obtain a "truer" measure, the analysis accounts for both the direct and indirect impact of political institutions on poverty.

To examine the impact of political institutions on economic freedom the following regression equation is used.

(1) $\quad \Delta\text{EFW}_{it} = \alpha + \beta\Delta\text{Pol}_{it-10} + \delta\text{X}_{it} + \gamma\text{d}_t + u_{it}$

The dependent variable, ΔEFW_{it}, is the change in the level of economic freedom over a ten-year period for country i. The polity term, ΔPol_{it-10}, is the change in the level of political institutions over the previous ten-year period for country i. X_{it} contains various control variables including

the level of economic freedom at the beginning of the ten-year period as well as the level of political institutions at the beginning of the previous ten-year period. The last two terms are the period dummy and the white noise error term, respectively. This analysis uses the data largely in panel form. The period of interest spans 1985-2005 and is broken into two, ten-year periods: 1985-1995 and 1995-2005. As the political institutions measures are lagged ten-years they correspond to earlier ten-year periods: 1975-1985 and 1985-1995. Because periods of ten years are the unit of analysis, the empirical work could focus on the period 1980-2000 or 1985-2005. The pattern of the results was identical. The findings for the more recent period are presented here.

Regression equation 1 investigates whether movements toward more democratic political institutions during a decade correspond to increases in economic freedom in the subsequent decade. This equation does not examine changes in economic freedom and political institutions during the same period because it will take time for institutional changes to exert their impact. However, to verify the robustness of the results, the contemporaneous impact of political institutions is also considered later in the analysis.

The second stage of the analysis examines the overall impact of political institutions on poverty by considering both the direct and indirect affects. The following equation captures the direct channel.

(2) $\Delta\text{poverty}_{it} = \alpha + \beta\Delta\text{EFW}_{it} + \theta\Delta\text{Pol}_{it-10} + \delta X_{it} + \gamma d_t + u$

Here the dependent variable is the change in either the extreme or moderate poverty rate for country i during two, ten-year periods: 1985-1995 and 1995-2005. The other variables in the equation are the same as equation 1. Equation 2 captures the direct impact of changes in political institutions in one decade on reductions in poverty during the subsequent decade, after controlling for economic freedom and other factors. However, this equation does not account for the possible impact of political institutions through economic freedom. Hence, it may understate the impact of political institutions on poverty. Gwartney, Holcombe, and Lawson (2006) used a statistical technique to isolate both the direct impact of economic freedom on growth and the indirect impact through investment. Parallel analysis is used here to measure both the direct impact of political institutions on poverty and the indirect impact through economic freedom.

This involves taking the residuals from equation 1, $\Delta EFWRes_{it}$, and using them in place of the economic freedom variable in equation 3 below.

(3) $\Delta poverty_{it} = \alpha + \beta \Delta EFWRes_{it} + \theta \Delta Pol_{it-10} + \delta X_{it} + \gamma d_t + u$

The residuals of equation 1 represent the change in economic freedom that is unexplained by prior changes in political institutions. These residuals, when used in place of the change in economic freedom variable in equation 3, represent the impact of economic freedom on reductions in poverty, excluding that which is attributable to changes in political institutions. Therefore, the coefficient on the political institutions term of equation 3, θ, will represent both the direct and indirect impact of political institutions on reductions in poverty. If political institutions exert an impact on poverty through economic freedom, the magnitude and significance of θ will be larger in equation 3 than equation 2.

This analysis uses the augmented version of the World Bank extreme and moderate poverty rates from Connors (2011) as the dependent variable. This data spans the period 1980-2005 at five-year intervals and covers 128 developing countries. See appendix A for a complete listing.

The measure of economic institutions is the Economic Freedom of the World (EFW) index published annually by James Gwartney, Joshua Hall, and Robert Lawson. This is a composite index consisting of five categories that are themselves composed of 42 different components. The five categories are the size of government, legal institutions, monetary policy, openness to trade, and regulation of credit, labor, and business. Countries are rated on a scale of 0-10 with higher values representing increased economic freedom. The EFW dataset used in this analysis is from Gwartney and Lawson (2009).

There are three political institutions measures used from two different data sources. The polity IV index and the constraints on the executive measure are from the Polity IV dataset. The polity index measures the degree to which a country is considered democratic or autocratic. Countries are rated on a scale from -10 to 10 with -10 indicating full autocracy and 10 full democracy. The constraints on the executive measure captures the degree to which the actions of a country's chief executive are constitutionally constrained. A 1 indicates there are no constraints on the executive while a 7 indicates executive parity. The third measure of political institutions is the index of political rights from the Freedom House, *Freedom in the World*, 2009 report. This index captures the degree to which citizens of a country can participate in the electoral process as

voters, members of a political party, and candidates. Each county is evaluated over the range 1-7 with 1 indicating the most political freedom and 7 the least. The scale of this measure is opposite the other institutional measures. Therefore, for this analysis the scale is reversed so that larger values indicate more political freedom. The Freedom House report also includes a measure of civil liberties. However, the use of this additional measure would be redundant as it is highly correlated with the political rights index.

The analysis also controls for the impact of geographic and locational factors. Gallup and Sachs (1999) demonstrated that various geographic factors impact economic outcomes. Three variables from that study are widely used in he literature and are included here. The first is the percentage of a country's population that lives within 100 kilometers of the coast. This measure captures the ability of a particular country to access ports and sea routes and hence international markets. The second is the percentage of a country's land area in the tropics. This variable captures the harshness of the disease and agricultural environment. Temperate zones have a much lower incident of insect borne diseases and a more hospitable agricultural environment than do the tropics. The last variable is the closest air distance in kilometers from a country to one of three major markets: New York, Tokyo, or Rotterdam. This variable is designed to capture the ability of a country to access international markets. The cost of participating in these markets is higher when goods must be transported over a greater distance. Appendix B lists the summary statistics for the variables used in the analysis.

This analysis does not contain an explicit measure of corruption even though the impact of corruption on democratic political institutions and poverty has been considered in the literature (Rose-Ackerman 1996; Gupta, Davoodi, and Alonso-Terme 2002). The reasons for not including a measure of corruption are twofold. First, measures of corruption are fairly new and only cover the last few years of the time period used in the analysis, 1998-2005. The most widely used measure is the Corruption Perceptions Index compiled yearly by Transparency International. This index was created largely for media and governmental use and not for academic research. The methodology used to compile the index changes frequently from year to year limiting the ability to make comparisons across time. Second, the EFW index contains subcomponents that

may reflect the influence of corruption on the legal and regulatory environment.[1] Thus, inclusion of a corruption measure could introduce multicollinearity into the regression analysis.

4. Results

Examining the impact of political institutions on economic freedom is a first step toward determining whether political institutions affect poverty indirectly through economic freedom. Table 4.1 contains the results of regressing changes in economic freedom on prior changes in political measures. There are two ten-year time periods that span 1985-2005 in the pooled OLS regressions listed in the table. The first independent variable is the EFW index at the start of the ten-year period. This corresponds to 1985 for the first ten-year period and 1995 for the second. The change for each of the three political measures during the prior period is shown as well their initial value at the beginning of the earlier period. For example, the change in the Polity IV index from 1975-1985 and the value in 1975 correspond to a change in the dependent variable during 1985-1995. A period dummy is included in the regressions to account for any time-varying effects. This dummy is generally insignificant indicating that the statistical relationships were time invariant. Lastly, the standard errors in this and all subsequent tables are robust to heteroskedasticity and are clustered by country.

The first three columns of table 4.1 provide evidence that changes in political institutions affect subsequent changes in economic freedom. Both the initial level and the change of the Polity IV index, the constraints on the executive measure, and the political rights measure are positive and significant at the one percent level. In addition, the coefficients on the change in the political institutions measures are similar. A one unit increase in the constraints on the executive and the political rights measure corresponds to a 0.16 and 0.18 increase in economic freedom over the subsequent period, respectively. The marginal impact of the Polity IV measure is similar after adjusting for its scale of -10 to 10. (Note: the scale of the other two measures ranges from 1

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[1] These are the sub-components of the EFW index that include measures of corruption. Sub-component A of area 2, legal structure and security of property rights, is a question from the Global Competitiveness Report (GCR), "Is the judiciary in your country independent from political influence of members of government, citizens, or firms?" Sub-component B of area 2 is also from the GCR, "The legal framework in your country for private businesses to settle disputes and challenge the legality of government actions and/or regulations is inefficient and subject to manipulation, or is efficient and follows a clear, neutral process?" Sub-component v of part C of area 5 is also from the GCR, "In your industry, how commonly would you estimate that firms make undocumented extra payments or bribes connected with the following: A-import and export permits; B-Connection to pubic utilities (e.g., telephone or electricity); C-Annual tax payments; D-Awarding of public contracts (investment projects); E-Getting favorable judicial decisions."

to 7.) These small marginal values should be understood in context. Using the measure of political rights, a move from autocracy, a value of 1 as this index has been inverted, to democracy, a value of 7, corresponds to an increase in the EFW index of 1.08 over the subsequent decade. This is a large increase and one that would be associated with significant poverty reductions.

Table 4.1: The impact of political institutions on subsequent changes in economic freedom (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

| | Dependent variable: Change in economic freedom, 1985-1995 and 1995-2005 | | | | | |
| | All countries | | | Low and middle income countries | | |
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
EFW, beginning of period	-0.36 ***	-0.40 ***	-0.44 ***	-0.38 ***	-0.42 ***	-0.45 ***
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)
Polity IV, beginning of previous 10-year period	0.03 ***			0.03 ***		
	(0.01)			(0.01)		
Change in polity IV, previous 10-year period	0.06 ***			0.05 ***		
	(0.01)			(0.01)		
Executive constraints, beginning of previous 10-year period		0.11 ***			0.09 ***	
		(0.03)			(0.03)	
Change in executive constraints, previous 10-year period		0.16 ***			0.14 ***	
		(0.03)			(0.04)	
Political rights, beginning of previous 10-year period			0.14 ***			0.12 ***
			(0.03)			(0.04)
Change in political rights, previous 10-year period			0.18 ***			0.17 ***
			(0.03)			(0.03)
Period dummy, 1985-1995	0.11	0.04	-0.06	0.05	-0.04	-0.14
	(0.10)	(0.10)	(0.08)	(0.13)	(0.12)	(0.10)
Intercept	2.47 ***	2.34 ***	2.47 ***	2.57 ***	2.55 ***	2.61 ***
	(0.31)	(0.26)	(0.26)	(0.37)	(0.33)	(0.34)
R^2 (adjusted)	0.35	0.33	0.37	0.33	0.30	0.34
Number of observations	216	216	227	176	176	183

Notes:
*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

The last three columns of table 4.1 examine whether this relationship is present when the countries in the sample are low and middle-income countries. The results indicate that the

relationship is largely unchanged whether or not high-income countries are included.[2] The coefficients and significance levels are similar and there is little difference in the explanatory power of the regressions between columns one through three and four through six. The R-squared values indicate that the model explains approximately one-third of the variation in the dependent variable.

Table 4.2: The impact of political institutions (1975-1985) on subsequent changes in economic freedom (1985-1995)

Dependent variable: Change in economic freedom, 1985-1995

Independent variable	All countries			Low and middle-income countries		
	(1)	(2)	(3)	(4)	(5)	(6)
EFW, 1985	-0.39 ***	-0.41 ***	-0.49 ***	-0.39 ***	-0.43 ***	-0.51 ***
	(0.07)	(0.07)	(0.08)	(0.09)	(0.10)	(0.10)
Polity IV, 1975	0.05 ***			0.04 ***		
	(0.01)			(0.01)		
Change in Polity IV, 1975-1985	0.08 ***			0.08 ***		
	(0.02)			(0.02)		
Executive constraints, 1975		0.14 ***			0.12 ***	
		(0.04)			(0.04)	
Change in executive constraints, 1975-1985		0.22 ***			0.21 ***	
		(0.05)			(0.06)	
Political rights, 1975			0.22 ***			0.20 ***
			(0.04)			(0.05)
Change in political rights, 1975-1985			0.22 ***			0.21 ***
			(0.05)			(0.06)
Intercept	2.70 ***	2.28 ***	2.41 ***	2.72 ***	2.43 ***	2.51 ***
	(0.40)	(0.37)	(0.35)	(0.49)	(0.52)	(0.50)
R^2 (adjusted)	0.35	0.33	0.39	0.34	0.32	0.38
Number of observations	101	101	106	81	81	84

Notes:

*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

The period dummy included in the regressions of table 4.1 indicates that there was little impact of unobserved time-varying effects. Tables 4.2 and 4.3, which display the regression

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[2] Countries were considered high income for this study if their per capita GDP in U.S. dollars in 1980 was 5,670 or higher. This cut off is roughly the per capital income level of Greece in 1980. Several oil rich countries of the Middle East and small island nations, which had income levels above this threshold, were excluded from the high-income group. The 23 high income countries using this criteria are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and the United States.

results for each of the ten-year periods separately, confirm this finding. Table 4.2 examines the 1985-1995 period for all countries and low and middle-income countries. The pattern is virtually identical to that of table 4.1. Table 4.3, which covers the period 1995-2005, has lower significance levels, but the same overall results. The change in the Polity IV and the constraints on the executive measure in table 4.3 are significant at the five percent level or higher, while they are significant at the one percent level in table 4.2. The change in the political rights measure is significant at the one percent level in both tables 4.2 and 4.3, although the magnitude of the coefficient is slightly smaller in the latter table. In addition, the initial level of the political measures is largely insignificant in table 4.3. The lack of significance of the initial levels, however, is not important for this analysis as the focus is on changes. The initial levels were included to control for institutional quality at the beginning of the period. The two tables

Table 4.3: The impact of political institutions (1985-1995) on subsequent changes in economic freedom (1995-2005)

Dependent variable: Change in economic freedom, 1995-2005

Independent variable	All countries			Low and middle-income countries		
	(1)	(2)	(3)	(4)	(5)	(6)
EFW, 1995	-0.31 ***	-0.37 ***	-0.33 ***	-0.34 ***	-0.39 ***	-0.34 ***
	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)
Polity IV, 1985	0.01			0.00		
	(0.01)			(0.01)		
Change in Polity IV, 1985-1995	0.04 **			0.04 **		
	(0.02)			(0.02)		
Executive constraints, 1985		0.05 *			0.04	
		(0.03)			(0.03)	
Change in executive constraints, 1985-1995		0.10 **			0.10 **	
		(0.04)			(0.04)	
Political rights, 1985			0.03			0.01
			(0.03)			(0.04)
Change in political rights, 1985-1995			0.13 ***			0.12 ***
			(0.03)			(0.03)
Intercept	2.27 ***	2.47 ***	2.33 ***	2.37 ***	2.60 ***	2.42 ***
	(0.35)	(0.30)	(0.27)	(0.37)	(0.34)	(0.32)
R^2 (adjusted)	0.38	0.36	0.41	0.33	0.30	0.35
Number of observations	115	115	121	95	95	99

Notes:

*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

illustrate that the relationship between changes in political institutions and changes in economic freedom in subsequent periods, is consistent across decades.[3]

Table 4.4: The impact of prior and concurrent changes in political institutions on changes in economic freedom (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

| | Dependent variable: Change in economic freedom, 1985-1995 and 1995-2005 | | | | | |
| | All countries | | | Low and middle-income countries | | |
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
EFW, beginning of period	-0.36 ***	-0.40 ***	-0.45 ***	-0.38 ***	-0.42 ***	-0.46 ***
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)
Polity IV, beginning of previous 10-year period	0.04 ***			0.03 ***		
	(0.01)			(0.01)		
Change in polity IV, previous 10-year period	0.07 ***			0.07 ***		
	(0.01)			(0.01)		
Change in polity IV, current 10-year period	0.02 **			0.02 **		
	(0.01)			(0.01)		
Executive constraints, beginning of previous 10-year period		0.15 ***			0.13 ***	
		(0.03)			(0.03)	
Change in executive constraints, previous 10-year period		0.21 ***			0.20 ***	
		(0.04)			(0.04)	
Change in executive constraints, current 10-year period		0.11 ***			0.11 ***	
		(0.03)			(0.03)	
Political rights, beginning of previous 10-year period			0.18 ***			0.17 ***
			(0.04)			(0.04)
Change in political rights, previous 10-year period			0.22 ***			0.21 ***
			(0.03)			(0.03)
Change in political rights, current 10-year period			0.10 ***			0.10 ***
			(0.04)			(0.04)
Period dummy, 1985-1995	0.08	0.01	-0.07	0.02	-0.07	-0.14
	(0.10)	(0.09)	(0.08)	(0.13)	(0.12)	(0.10)
Intercept	2.38 ***	2.08 ***	2.38 ***	2.48 ***	2.26 ***	2.47 ***
	(0.32)	(0.27)	(0.27)	(0.38)	(0.35)	(0.35)
R^2 (adjusted)	0.37	0.37	0.40	0.34	0.34	0.37
Number of observations	216	216	227	176	176	183

Notes:
*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

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[3] Because the regressions of table 4.2 and 4.3 cover different time periods and hence different data, a Hausman specification test in order to determine if the results between the two periods are statistically different cannot be performed here.

The previous tables focused on how changes in political institutions impact subsequent changes in economic freedom. Contemporaneous changes of political institutions were excluded from these tables. The following two tables include the contemporaneous period in order to determine if the change in the prior period remains significant even after inclusion of the change during the current period. The first of these tables, table 4.4, contains pooled OLS regressions for both all countries and low and middle-income countries during the 1985-1995 and 1995-2005 periods. It is clear from the regressions that changes in political institutions during the current period are significantly related to changes in economic freedom. The changes in constraints on the executive and political rights during the current period are positive and significant at the one percent level for all countries and for low and middle-income countries. The change in the Polity IV index during the current period is also positive and significant, but at the five percent level or higher in the regressions. Even after inclusion of changes during the current period, however, changes in the prior ten-year period are still significant and are largely unchanged from the results of table 4.1. These results indicate that both prior and current changes in political institutions positively impact changes in economic freedom. But, the magnitude of the coefficients suggests that the prior period has a larger impact.

Table 4.5 is similar to table 4.4 except two of the Sachs geography variables are included. The distance to major markets variable was excluded from this analysis because it was insignificant in all regressions. Sachs has argued that geographic and locational factors can hinder growth. Moreover, Acemoglu, Robinson, and Johnson (2001) argue that geography directly impacted institutions through the institutional arrangements utilized by early settlers. These institutions could persist through time resulting in a geographic influence on institutional change. The results of table 4.5 indicate that geographic factors are associated with changes in economic freedom. The coastal population variable, which is the percentage of a country's population that lives within 100 kilometers of a coastline, is positive and significant at the one percent level throughout the regressions. The positive coefficient indicates that a larger share of the population close to the coast is conducive to increases in economic freedom after controlling for other factors. These areas are generally closer to trade routes and hence global markets. The tropical location variable is significant at the five percent level or higher in all the regressions indicating that tropical countries had smaller increases in economic freedom during 1985-2005. Nonetheless, the regressions indicate that the impact of changes in political institutions on

subsequent changes in economic freedom is largely unchanged after the inclusion of geographic

factors. In summary, tables 4.1 through 4.5 indicate that changes in political institutions exert a

Table 4.5: The impact of prior and concurrent changes in political institutions on changes in economic freedom, after controlling for geographic factors (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

Dependent variable: Change in economic freedom, 1985-1995 and 1995-2005

Independent variable	All countries			Low and middle-income countries		
	(1)	(2)	(3)	(4)	(5)	(6)
EFW, beginning of period	-0.45 ***	-0.47 ***	-0.51 ***	-0.49 ***	-0.52 ***	-0.55 ***
	(0.05)	(0.05)	(0.06)	(0.07)	(0.07)	(0.07)
Polity IV, beginning of previous 10-year period	0.03 ***			0.03 ***		
	(0.01)			(0.01)		
Change in polity IV, previous 10-year period	0.06 ***			0.06 ***		
	(0.01)			(0.01)		
Change in polity IV, current 10-year period	0.02 **			0.02 **		
	(0.01)			(0.01)		
Executive constraints, beginning of previous 10-year period		0.11 ***			0.10 ***	
		(0.03)			(0.03)	
Change in executive constraints, previous 10-year period		0.19 ***			0.18 ***	
		(0.04)			(0.04)	
Change in executive constraints, current 10-year period		0.10 ***			0.10 ***	
		(0.03)			(0.03)	
Political rights, beginning of previous 10-year period			0.13 ***			0.12 ***
			(0.03)			(0.04)
Change in political rights, previous 10-year period			0.19 ***			0.19 ***
			(0.03)			(0.03)
Change in political rights, current 10-year period			0.09 ***			0.09 ***
			(0.03)			(0.03)
Coastal population (% within 100km)	0.54 ***	0.51 ***	0.50 ***	0.66 ***	0.65 ***	0.64 ***
	(0.13)	(0.13)	(0.12)	(0.15)	(0.15)	(0.16)
Tropical location (% area in tropics)	-0.34 ***	-0.29 ***	-0.25 ***	-0.32 ***	-0.28 ***	-0.24 **
	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)	(0.10)
Period dummy, 1985-1995	0.01	-0.06	-0.12	-0.07	-0.15	-0.21 **
	(0.09)	(0.09)	(0.08)	(0.12)	(0.11)	(0.09)
Intercept	2.88 ***	2.60 ***	2.78 ***	3.04 ***	2.85 ***	3.02 ***
	(0.32)	(0.27)	(0.27)	(0.38)	(0.35)	(0.34)
R^2 (adjusted)	0.43	0.42	0.45	0.41	0.40	0.43
Number of observations	216	216	227	176	176	183

Notes:

*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
Heteroskedastic robust standard errors are listed in parenthesis.

subsequent impact on changes in economic freedom. This suggests that political institutions may have an indirect impact on reductions in poverty. This is the topic to which I now turn.

The previous tables contained regressions with all countries and low and middle-income countries. But, the poverty rate data are unavailable for all of these countries. Table 4.6 shows the regressions of table 4.1 and table 4.5, but only for the countries for which the poverty rate data are available. Unsurprisingly, these results are similar to those of the previous tables. The

Table 4.6: The impact of political institutions on subsequent changes in economic freedom for countries with poverty data (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

| | Dependent variable: | | | | | |
| | Change in economic freedom, 1985-1995 and 1995-2005 | | | | | |
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
EFW, beginning of period	-0.42 ***	-0.44 ***	-0.46 ***	-0.52 ***	-0.53 ***	-0.56 ***
	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Polity IV, beginning of previous 10-year period	0.02 **			0.02 *		
	(0.01)			(0.01)		
Change in polity IV, previous 10-year period	0.04 ***			0.03 ***		
	(0.01)			(0.01)		
Executive constraints, beginning of previous 10-year period		0.08 **			0.06 *	
		(0.04)			(0.03)	
Change in executive constraints, previous 10-year period		0.10 ***			0.09 ***	
		(0.03)			(0.03)	
Political rights, beginning of previous 10-year period			0.12 ***			0.10 **
			(0.05)			(0.05)
Change in political rights, previous 10-year period			0.12 ***			0.11 ***
			(0.03)			(0.03)
Coastal population (% within 100km)				0.63 ***	0.63 ***	0.61 ***
				(0.19)	(0.19)	(0.18)
Tropical location (% area in tropics)				-0.29 **	-0.24 *	-0.25 **
				(0.12)	(0.13)	(0.12)
Period dummy, 1985-1995				-0.04	-0.08	-0.16 *
				(0.11)	(0.11)	(0.10)
Intercept	2.83 ***	2.66 ***	2.63 ***	3.32 ***	3.18 ***	3.27 ***
	(0.39)	(0.34)	(0.33)	(0.37)	(0.34)	(0.35)
R^2 (adjusted)	0.31	0.30	0.32	0.36	0.35	0.37
Number of observations	145	145	145	145	145	145

Notes:
*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
Heteroskedastic robust standard errors are listed in parenthesis.

changes in the political institutions variables are positive and significant at the one percent level in all regressions. The initial levels of the political institutions variables are less significant than before, but these were included only to control for the type of institutions present at the start of the period.

The results of regressing the reduction in the extreme poverty rate during 1985-1995 and 1995-2005 on changes in economic freedom, political institutions, and the Sachs geography variables are shown in table 4.7. These are pooled OLS regressions with changes over ten-year periods. The extreme poverty rate at the beginning of the period is positive and significant at the one percent level in all regressions. This indicates that poorer countries had larger reductions in poverty during 1985-2005, after controlling for other factors. Both the level and change in economic freedom over the period are positive and highly significant in all the regressions. A one unit increase in economic freedom corresponds to a 2.87 percentage point reduction or more in the extreme poverty rate, after controlling for other factors. The three political measures are largely insignificant in all six regressions of table 4.7. The Polity IV index at the beginning of the prior period is significant at the ten percent level in column four, while the initial political rights measure is significant at the ten percent and five percent level in columns three and six, respectively. The coefficients for the change in political institutions measures are insignificant in all regressions. The last three columns include the coastal population and tropical location variables. The introduction of the geographic and locational variables into the model does not affect either the sign or significance of the economic freedom and political institutions variables.

The results of table 4.7 are consistent with the previous literature. Economic freedom and geographic factors appear to matter for reductions in extreme poverty, while political institutions are largely insignificant. The next table investigates whether the coefficients on the changes in political institutions in table 4.7 are understated as a result of not accounting for the impact of political institutions on economic freedom. This is accomplished using the residuals from the regressions of columns one through three of table 4.6 in place of the change in economic freedom variable. The residuals from each of the first three columns of table 4.6 represent the change in economic freedom during 1985-1995 and 1995-2005 that is unexplained by the initial level and change of the political measure in the previous ten-year period. When these residuals are used in the equation, the political measures will reflect both the direct and indirect impact of political institutions on poverty. If prior changes in political institutions influence current

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changes in economic freedom, as tables 4.1-4.6 indicate, then one would expect a larger and more significant coefficient on the change in political institutions measures once this indirect impact is taken into account.

Table 4.7: The direct impact of political institutions on reductions of the extreme poverty rate, after controlling for economic freedom and geographic factors (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

Independent variable	Dependent variable: Reduction in extreme poverty rate, 1985-1995 and 1995-2005					
	(1)	(2)	(3)	(4)	(5)	(6)
Extreme poverty rate, beginning of period	0.16 ***	0.16 ***	0.16 ***	0.22 ***	0.22 ***	0.22 ***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
EFW, beginning of period	2.71 ***	2.67 ***	2.37 ***	2.27 ***	2.30 ***	2.01 **
	(0.84)	(0.84)	(0.87)	(0.84)	(0.87)	(0.88)
Change in EFW, current 10-year period	3.41 ***	3.33 ***	3.03 ***	3.19 ***	3.14 ***	2.87 ***
	(1.06)	(1.06)	(1.03)	(1.00)	(1.02)	(0.99)
Polity IV, beginning of previous 10-year period	0.10			0.18 *		
	(0.08)			(0.10)		
Change in polity IV, previous 10-year period	0.03			0.05		
	(0.14)			(0.13)		
Executive constraints, beginning of previous 10-year period		0.38			0.41	
		(0.31)			(0.33)	
Change in executive constraints, previous 10-year period		0.30			0.33	
		(0.38)			(0.39)	
Political rights, beginning of previous 10-year period			0.68 *			0.85 **
			(0.38)			(0.38)
Change in political rights, previous 10-year period			0.63			0.60
			(0.46)			(0.47)
Coastal population (% within 100km)				4.30 **	4.33 **	4.15 **
				(1.89)	(1.92)	(1.94)
Tropical location (% area in tropics)				-6.08 ***	-5.52 ***	-5.81 ***
				(2.05)	(1.94)	(2.00)
Period dummy, 1985-1995	-1.17	-1.01	-1.24	-1.37	-1.32	-1.51
	(1.18)	(1.13)	(1.22)	(1.22)	(1.18)	(1.26)
Intercept	-16.81 ***	-18.34 ***	-17.57 ***	-13.51 ***	-15.91 ***	-15.46 ***
	(5.72)	(6.03)	(6.31)	(5.39)	(5.59)	(5.79)
R^2 (adjusted)	0.19	0.19	0.21	0.26	0.25	0.27
Number of observations	145	145	145	145	145	145

Notes:

*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

Table 4.8: The direct and indirect impact of political institutions on reductions of the extreme poverty rate, after controlling for economic freedom and geographic factors (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

	Dependent variable: Reduction in extreme poverty rate, 1985-1995 and 1995-2005					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Extreme poverty rate, beginning of period	0.16 ***	0.16 ***	0.16 ***	0.22 ***	0.22 ***	0.22 ***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
EFW, beginning of period	1.28 **	1.20 **	0.98	0.93	0.92	0.68
	(0.59)	(0.59)	(0.63)	(0.60)	(0.61)	(0.63)
Change in EFW proxy, residuals from table 4.6	3.41 ***	3.33 ***	3.03 ***	3.19 ***	3.14 ***	2.87 ***
	(1.06)	(1.06)	(1.03)	(1.00)	(1.02)	(0.99)
Polity IV, beginning of previous 10-year period	0.18 **			0.25 ***		
	(0.09)			(0.10)		
Change in polity IV, previous 10-year period	0.15			0.17		
	(0.13)			(0.13)		
Executive constraints, beginning of previous 10-year period		0.64 **			0.66 *	
		(0.32)			(0.34)	
Change in executive constraints, previous 10-year period		0.64 *			0.66 *	
		(0.38)			(0.38)	
Political rights, beginning of previous 10-year period			1.06 ***			1.21 ***
			(0.42)			(0.42)
Change in political rights, previous 10-year period			0.98 **			0.94 **
			(0.45)			(0.45)
Coastal population (% within 100km)				4.30 **	4.33 **	4.15 **
				(1.89)	(1.92)	(1.94)
Tropical location (% area in tropics)				-6.08 ***	-5.52 ***	-5.81 ***
				(2.05)	(1.94)	(2.00)
Period dummy, 1985-1995	-1.17	-1.01	-1.24	-1.37	-1.32	-1.51
	(1.18)	(1.13)	(1.22)	(1.22)	(1.18)	(1.26)
Intercept	-7.15 *	-9.47 **	-9.59 **	-4.47	-7.56 *	-7.90 *
	(3.89)	(4.35)	(4.55)	(3.65)	(3.88)	(4.08)
R^2 (adjusted)	0.19	0.19	0.21	0.26	0.25	0.27
Number of observations	145	145	145	145	145	145

Notes:

*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

Table 4.8 is identical to 4.7 except that the measure of economic freedom is the residuals from table 4.6. Put another way, the change in economic freedom variable in table 4.8 reflects that portion that is unrelated to prior changes in political institutions. The magnitude of the coefficient of the change in the Polity IV index in columns one and four of table 4.8 is larger

than the corresponding values in table 4.7, but remains insignificant. However, the coefficient of the change in executive constraints measure is significant at the ten percent level in column two and the magnitude of the coefficient is more than twice as large as the corresponding value in table 4.7. The coefficient on the change in political rights in column three is also much larger than before and is now significant at the five percent level. A movement from no political rights, a score of 1, to full political rights, a score of 7, corresponds to a reduction in the extreme poverty rate of 5.9 percentage points over the subsequent decade. This is a significant reduction in extreme poverty. Column two tells a similar story. A change from having an unconstrained executive to one that is constitutionally constrained, an increase from 1 to 7, results in a 3.8 percentage point reduction in the extreme poverty rate over the subsequent decade. Columns four through six add the Sachs geography variables and the results are unchanged. While the Polity IV variable remained insignificant (column four), increased political rights and constraints upon the chief executive (columns five and six) significantly reduced the extreme poverty rate, after controlling for geographic and other factors.

In table 4.8, the levels of each political measure at the beginning of the earlier period are positive and significant at the ten percent level or higher in all regressions. This indicates that countries with more democratic political institutions at the start of the period had larger reductions in the extreme poverty rate, after controlling for other factors.

The results of table 4.8 are consistent with the view that changes in political institutions facilitate reductions in the extreme poverty rate both directly and indirectly through changes in economic freedom. Two out of the three changes in political institutions measures were significant – with and without the geography variables – when residuals from table 4.6 were used in place of the change in economic freedom variable. Tables 4.9 and 4.10 examine whether a similar relationship exists between political institutions and the moderate poverty rate.

Table 4.9 is similar to table 4.7 except that the dependent variable is now the reduction in the moderate poverty rate during 1985-1995 and 1995-2005. Both the level and change of economic freedom exert a positive and significant impact on reductions in the moderate poverty rate. This indicates that countries with higher levels of economic freedom had larger reductions in moderate poverty. Correspondingly, countries with larger increases in economic freedom achieved larger reductions in moderate poverty during 1985-2005.

Table 4.9: The direct impact of political institutions on reductions of the moderate poverty rate, after controlling for economic freedom and geographic factors (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

Independent variable	(1)		(2)		(3)		(4)		(5)		(6)	
					Dependent variable: Reduction in moderate poverty rate, 1985-1995 and 1995-2005							
Moderate poverty rate, beginning of period	0.13 (0.03)	***	0.13 (0.03)	***	0.14 (0.03)	***	0.18 (0.03)	***	0.18 (0.03)	***	0.19 (0.04)	***
EFW, beginning of period	4.12 (1.07)	***	4.14 (1.08)	***	4.04 (1.10)	***	3.60 (1.10)	***	3.69 (1.14)	***	3.60 (1.14)	***
Change in EFW, current 10-year period	4.50 (1.34)	***	4.45 (1.33)	***	4.37 (1.30)	***	4.20 (1.28)	***	4.19 (1.31)	***	4.14 (1.28)	***
Polity IV, beginning of previous 10-year period	0.06 (0.10)						0.13 (0.11)					
Change in polity IV, previous 10-year period	-0.07 (0.16)						-0.04 (0.15)					
Executive constraints, beginning of previous 10-year period			0.11 (0.32)						0.13 (0.36)			
Change in executive constraints, previous 10-year period			-0.14 (0.43)						-0.08 (0.43)			
Political rights, beginning of previous 10-year period					0.46 (0.41)						0.61 (0.42)	
Change in political rights, previous 10-year period					-0.10 (0.42)						-0.07 (0.43)	
Coastal population (% within 100km)							4.51 (2.24)	**	4.58 (2.32)	**	4.17 (2.28)	*
Tropical location (% area in tropics)							-5.89 (2.05)	***	-5.45 (2.01)	***	-5.85 (2.03)	***
Period dummy, 1985-1995	-1.87 (1.61)		-1.77 (1.52)		-1.50 (1.43)		-2.07 (1.60)		-2.09 (1.54)		-1.79 (1.47)	
Intercept	-25.41 (7.56)	***	-26.13 (7.71)	***	-27.20 (8.04)	***	-22.15 (7.21)	***	-23.61 (7.35)	***	-24.84 (7.64)	***
R^2 (adjusted)	0.20		0.20		0.20		0.25		0.24		0.26	
Number of observations	145		145		145		145		145		145	

Notes:

*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

The structure of table 4.10 is similar to table 4.8 except that the dependent variable is now the reduction in the moderate poverty rate. Table 4.10 uses the residuals from table 4.6 as the measure of economic freedom. In this case, the coefficients on each of the change in the political institutions measures are insignificant in all regressions. The results for both the economic

freedom variables and the geographic and locational variables are unchanged. These results indicate that economic freedom and geographic factors play a much larger role regarding reductions in the moderate poverty rate.

Table 4.10: The direct and indirect impact of political institutions on reductions of the moderate poverty rate, after controlling for economic freedom and geographic factors (pooled OLS for ten-year periods, 1985-1995 and 1995-2005)

	Dependent variable: Reduction in moderate poverty rate, 1985-1995 and 1995-2005					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Moderate poverty rate, beginning of period	0.13 ***	0.13 ***	0.14 ***	0.18 ***	0.18 ***	0.19 ***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
EFW, beginning of period	2.23 ***	2.19 ***	2.02 ***	1.84 **	1.86 **	1.69 **
	(0.78)	(0.79)	(0.81)	(0.80)	(0.81)	(0.81)
Change in EFW proxy, residuals from table 4.6	4.50 ***	4.45 ***	4.37 ***	4.20 ***	4.19 ***	4.14 ***
	(1.34)	(1.33)	(1.30)	(1.28)	(1.31)	(1.28)
Polity IV, beginning of previous 10-year period	0.15			0.22 *		
	(0.10)			(0.11)		
Change in polity IV, previous 10-year period	0.09			0.11		
	(0.15)			(0.14)		
Executive constraints, beginning of previous 10-year period		0.46			0.46	
		(0.33)			(0.36)	
Change in executive constraints, previous 10-year period		0.33			0.35	
		(0.40)			(0.41)	
Political rights, beginning of previous 10-year period			1.01 **			1.13 **
			(0.45)			(0.46)
Change in political rights, previous 10-year period			0.41			0.41
			(0.40)			(0.40)
Coastal population (% within 100km)				4.51 **	4.58 **	4.17 *
				(2.24)	(2.32)	(2.28)
Tropical location (% area in tropics)				-5.89 ***	-5.45 ***	-5.85 ***
				(2.05)	(2.01)	(2.03)
Period dummy, 1985-1995	-1.87	-1.77	-1.50	-2.07	-2.09	-1.79
	(1.61)	(1.52)	(1.43)	(1.60)	(1.54)	(1.47)
Intercept	-12.66 **	-14.30 ***	-15.68 ***	-10.26 **	-12.48 **	-13.95 ***
	(5.43)	(5.70)	(5.93)	(5.09)	(5.26)	(5.48)
R² (adjusted)	0.20	0.20	0.20	0.25	0.24	0.26
Number of observations	145	145	145	145	145	145

Notes:
*, **, and *** indicate statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Heteroskedastic robust standard errors are listed in parenthesis.

This empirical analysis indicates that changes in political institutions exert an impact on subsequent changes in economic freedom. This in turn corresponded to reductions in the extreme poverty rate in table 4.8. But, this was not the case for the moderate poverty rate. Even after accounting for the indirect impact through economic freedom, changes in political institutions did not reduce the moderate poverty rate.

Robust standard errors were used in all the tables presented here. There are two potential reasons why this is important. First, given the heterogeneity across countries, the assumption of common variance is unlikely to be met. Second, pooled OLS regressions are susceptible to errors resulting from serial correlation in the error term. However, statistical tests indicated that serial correlation was not a problem in these regressions.[4] While serial correlation appears not to be a problem, the significant heterogeneity of the countries in the sample warranted the use of standard errors robust to heteroskedasticity.

5. Conclusion

This analysis examined whether changes in political institutions had an impact on reductions in poverty during 1985-2005. Prior research indicated that political institutions exert an impact on economic freedom. This analysis extended this result in order to determine if political institutions indirectly facilitate reductions in poverty. The first set of regression tables examined whether movements toward more democratic political institutions were associated with subsequent movements toward economic freedom. The findings presented here are highly supportive of this view. Changes in democratic political institutions during 1975-1985 and 1985-1995 were positive and significantly related to increases in economic freedom during 1985-1995 and 1995-2005. This relationship held after controlling for initial institutional levels and geographic and locational factors. Moreover, this was true both for all countries and for low and middle-income countries alone.

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[4] The test for the existence of serial correlation in the error term comes from Wooldridge (2002, 176). It is implemented by including the lagged residuals in the regression and then testing the null hypothesis of no serial correlation in the error term. This is done with a simple t-test on the coefficient of the lagged residuals. Under the assumption of no serial correlation, the coefficient should not be statistically different from zero. The null hypothesis could not be rejected for all the pooled OLS regressions.

The second half of the analysis measured both the direct impact of changes in political institutions on poverty and the indirect impact through changes in economic freedom. The results indicated that movements toward democracy were associated with subsequent reductions in the extreme poverty rate, after including the indirect impact of political institutions. But, this was not true for reductions in the moderate poverty rate. Thus, while the results indicate that democratic political institutions facilitate movements toward economic freedom, their impact on poverty rate reductions is more tenuous.

APPENDIX A

Table A.1: Extreme ($1.25 per day) and moderate ($2 per day) poverty rate by country

Note: Non-bold values were estimated using per capita GDP, under-five mortality data, and other parameters. See Connors (2011) for details.

	Percentage of Population Living on $1.25 per Day or Less						Percentage of Population Living on $2 per Day or Less					
	1980	1985	1990	1995	2000	2005	1980	1985	1990	1995	2000	2005
Albania				**2.0**	**2.0**	**2.0**				**6.5**	**8.7**	**7.8**
Algeria	25.2	18.1	**6.6**	**6.8**	10.9	8.5	31.7	25.1	**23.8**	**23.6**	20.4	16.8
Angola	64.0	63.5	61.9	61.2	**54.3**	44.2	70.4	69.5	67.9	71.3	**70.2**	52.0
Argentina	5.6	**2.0**	**2.0**	**2.0**	**6.0**	**4.5**	10.9	**2.0**	**3.2**	**7.0**	**14.3**	**11.3**
Armenia				**17.5**	**16.5**	**10.6**				**38.9**	**47.7**	**43.4**
Azerbaijan				**15.6**	**6.3**	**2.0**				**39.3**	**27.1**	**2.0**
Bangladesh	77.5	72.2	**66.8**	**59.4**	**57.8**	**49.6**	99.0	99.0	**92.5**	**87.4**	**85.4**	**81.3**
Belarus			**2.0**	**2.3**	**2.0**	**2.0**			**2.0**	**11.1**	**2.0**	**2.0**
Benin	65.2	62.6	61.3	57.3	53.4	**47.3**	81.6	79.0	79.1	75.6	71.3	**75.3**
Bhutan	56.1	48.7	39.9	33.7	28.5	**26.2**	76.8	68.5	56.7	49.0	42.6	**49.5**
Bolivia	37.0	34.5	**4.0**	**18.9**	**23.8**	**19.6**	46.7	46.7	**17.2**	**29.9**	**34.9**	**30.3**
Bosnia and Herzegovina				14.6	**2.0**	**2.0**				25.0	**2.0**	**2.0**
Botswana	42.0	**35.6**	**31.9**	**31.2**	32.3	23.1	65.1	**54.7**	**50.2**	**49.4**	46.0	36.3
Brazil	**17.1**	**17.5**	**15.5**	**10.5**	**11.1**	**7.8**	**31.1**	**31.5**	**27.8**	**21.9**	**22.6**	**18.3**
Bulgaria			**2.0**	**2.0**	**2.6**	**2.0**			**2.0**	**2.2**	**7.8**	**2.4**
Burkina Faso	74.7	71.0	68.3	**71.2**	**70.0**	**56.5**	94.8	90.9	88.7	**85.8**	**87.6**	**81.2**
Burundi	72.3	70.4	**84.2**	**85.7**	**86.4**	**81.3**	97.1	94.7	**95.2**	**95.3**	**95.4**	**93.4**
Cambodia				**48.6**	**45.8**	**40.2**				**77.8**	**74.6**	**68.2**
Cameroon	52.8	45.6	46.9	**51.5**	32.8	49.1	65.3	56.3	60.2	**74.4**	**57.7**	62.6
Cape Verde	43.0	38.3	36.0	33.1	**20.6**	27.9	62.9	55.9	53.4	49.7	**40.2**	42.6
Central African Republic	62.9	61.2	61.6	**82.8**	64.9	**62.4**	81.5	80.5	82.0	**90.7**	85.6	**81.9**
Chad	71.3	65.9	64.6	65.3	66.3	**61.9**	90.3	82.8	82.5	83.6	84.9	**83.3**
Chile	12.3	**10.5**	**4.4**	**2.3**	**2.0**	**2.0**	22.9	**23.4**	**13.6**	**9.1**	**6.0**	**3.9**
China	**84.0**	**61.7**	**60.2**	**45.0**	**32.0**	**15.9**	**97.8**	**88.3**	**84.6**	**71.8**	**56.3**	**36.3**
Colombia	13.7	12.3	9.5	**11.2**	**16.8**	**15.7**	24.4	23.1	19.4	**23.3**	**29.1**	**27.1**
Comoros	56.7	51.9	49.1	46.7	44.3	**46.1**	74.0	69.2	67.5	66.3	64.6	**65.0**
Congo, Dem. Rep.	69.0	68.4	69.1	73.2	74.1	**59.2**	88.8	88.8	91.0	99.0	99.0	**79.5**
Congo, Rep.	37.9	33.6	36.1	38.3	39.5	**54.1**	49.3	42.4	46.1	49.1	50.2	**74.4**
Costa Rica	**21.4**	**10.4**	**9.2**	**7.5**	**4.4**	**2.4**	**35.7**	**21.5**	**18.7**	**16.4**	**11.5**	**8.6**
Cote d'Ivoire	16.9	**9.5**	**13.8**	**21.1**	**23.7**	15.5	34.9	**23.9**	**35.1**	**47.9**	**47.9**	38.9

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Table A.1 – continued

	Percentage of Population Living on $1.25 per Day or Less						Percentage of Population Living on $2 per Day or Less					
	1980	1985	1990	1995	2000	2005	1980	1985	1990	1995	2000	2005
Croatia			**2.0**	**2.0**	**2.0**	**2.0**			**2.0**	**2.0**	**2.0**	**2.0**
Czech Republic			**2.0**	**2.0**	2.0	2.0			**2.0**	**2.0**	2.0	2.0
Djibouti			11.7	**4.8**	**18.8**	8.8			24.4	**15.1**	**41.2**	26.1
Dominican Republic	24.4	**16.4**	**8.4**	**5.9**	**4.4**	**5.0**	37.9	**30.4**	**20.8**	**15.7**	**12.4**	**15.1**
Ecuador	20.2	**12.2**	14.0	**15.9**	**14.9**	9.8	28.6	**22.3**	24.0	**28.2**	**27.7**	**20.4**
Egypt, Arab Rep.	25.5	14.8	**4.5**	**2.5**	**2.0**	**2.0**	46.2	35.3	**27.6**	**26.3**	**19.3**	**18.4**
El Salvador	26.1	22.2	**15.9**	**12.7**	**12.8**	**11.0**	36.1	34.7	**24.7**	**25.2**	**22.2**	**20.5**
Eritrea				54.2	51.1	48.7				76.6	75.1	74.0
Estonia			**2.0**	**2.0**	**2.0**	**2.0**			**2.0**	**2.0**	2.6	**2.0**
Ethiopia	**66.2**	71.9	70.7	**60.5**	**55.6**	**39.0**	**89.9**	95.2	93.4	**84.6**	**86.4**	**77.5**
Gabon						4.8						19.6
Gambia, The	65.7	59.3	55.8	56.0	**66.7**	**34.3**	82.4	77.2	74.3	75.3	**82.0**	**56.7**
Georgia				**4.5**	**11.9**	**13.4**				**13.1**	**28.7**	**30.4**
Ghana	56.4	56.9	**50.3**	**45.7**	**39.1**	**30.0**	75.9	78.4	**78.1**	**72.0**	**63.3**	**53.6**
Guatemala	39.1	**52.5**	**39.3**	**25.6**	**13.1**	**11.7**	51.6	**70.4**	**55.8**	**40.6**	**26.8**	**24.3**
Guinea	77.8	74.5	**92.6**	**36.8**	61.6	**70.1**	94.1	91.7	**98.4**	**63.8**	79.6	**87.2**
Guinea-Bissau			**41.3**	**52.1**	**48.8**	45.7			**58.5**	**75.7**	**77.9**	72.1
Guyana	12.8	13.3	12.9	**5.8**	**7.7**	3.9	21.9	24.5	25.1	**15.0**	**16.8**	12.6
Haiti	48.2	44.2	41.5	43.2	**54.9**	34.7	61.7	60.1	58.9	63.9	**72.1**	57.8
Honduras	27.9	24.4	**43.5**	**21.9**	**14.4**	**22.2**	42.3	40.1	**61.6**	**37.3**	**26.8**	**34.8**
Hungary		**2.0**	**2.0**	**2.0**	**2.0**	**2.0**		**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
India	**65.9**	**55.5**	**53.6**	**49.4**	**46.5**	**41.6**	**89.0**	**84.8**	**83.8**	**81.7**	**79.4**	**75.6**
Indonesia	39.1	34.7	29.2	22.2	19.5	16.0	59.0	53.6	46.5	37.6	35.8	31.2
Iran, Islamic Rep.	14.6	**4.2**	**3.9**	**2.0**	**2.0**	**2.0**	20.3	**13.8**	**13.1**	**8.2**	**8.3**	**8.0**
Jamaica	6.9	6.4	**2.0**	**2.9**	**2.0**	**2.0**	14.8	15.0	**8.3**	**11.5**	**7.5**	**5.8**
Jordan	6.4	**2.0**	**2.8**	**2.0**	**2.0**	**2.0**	12.3	**2.0**	**14.9**	**11.5**	**11.0**	**7.2**
Kazakhstan			**2.0**	**4.6**	**3.6**	**3.1**			**2.0**	**18.1**	**15.0**	**17.2**
Kenya	28.2	26.4	**38.4**	**24.1**	29.2	**19.7**	49.7	48.9	**59.3**	**48.2**	51.2	**39.9**
Korea, Rep.	8.3		**2.0**	**2.0**	**2.0**	**2.0**	20.0		5.5	**2.0**	**2.0**	**2.0**
Kuwait	2.0	2.0		**2.0**	**2.0**	**2.0**	2.0	2.0		**2.0**	**2.0**	**2.0**
Kyrgyz Republic			**2.0**	**18.6**	**27.1**	**21.8**			**2.0**	**30.1**	**56.4**	**51.9**
Lao PDR		53.3	**55.7**	**49.3**	**44.0**	28.6		74.1	**84.8**	**79.9**	**76.8**	47.4
Latvia			**2.0**	**2.0**	**2.0**	**2.0**			**2.0**	**2.9**	**3.0**	**2.0**
Lebanon			11.2	6.6	5.8	4.2			22.2	14.1	13.0	10.3
Lesotho	55.9	**44.4**	49.0	**47.6**	47.1	**43.4**	78.2	**62.2**	70.3	**61.1**	66.0	**62.2**

Table A.1 – continued

	Percentage of Population Living on $1.25 per Day or Less						Percentage of Population Living on $2 per Day or Less					
	1980	1985	1990	1995	2000	2005	1980	1985	1990	1995	2000	2005
Liberia	64.9	64.3	72.0	81.5	66.3	**83.7**	76.3	78.4	95.5	99.0	92.0	**94.8**
Lithuania			**2.0**	**2.7**	**2.0**	**2.0**			**2.0**	**8.6**	**2.0**	**2.0**
Macedonia, FYR				7.5	**2.9**	**2.0**				17.1	**10.2**	**3.2**
Madagascar	**85.9**	80.1	79.3	72.5	79.3	67.8	**94.3**	93.2	92.7	**88.4**	**90.9**	**89.6**
Malawi	94.8	93.0	89.4	87.3	**83.1**	73.9	99.0	99.0	99.0	99.0	**93.5**	**90.4**
Malaysia	12.7	**2.8**	**2.0**	**2.1**	**2.0**	**2.0**	24.2	**12.1**	**11.1**	**11.0**	9.6	7.8
Mali	81.5	79.2	75.0	**86.1**	**61.2**	**51.4**	97.1	97.7	93.6	**93.9**	**82.0**	77.1
Mauritania	35.7	**41.3**	32.4	**33.1**	**21.2**	30.2	58.0	**64.6**	56.2	**58.4**	44.1	53.8
Mauritius	25.3	22.0	18.1	15.8	13.4	11.2	37.0	32.6	26.2	22.3	18.2	14.8
Mexico	11.1	**12.8**	**6.1**	**5.2**	**4.8**	**2.4**	15.1	**28.5**	**16.0**	**16.1**	**13.7**	**5.9**
Moldova			**16.1**	**15.1**	**30.6**	**8.1**			**44.6**	**36.8**	**56.8**	**28.9**
Mongolia		32.4	29.3	**18.8**	**24.8**	**22.4**		48.8	45.3	**43.5**	**53.6**	**49.0**
Morocco	18.5	**8.4**	**2.5**	5.2	**6.5**	**2.5**	34.0	28.6	**15.9**	21.9	**24.4**	**14.0**
Mozambique	77.9	78.3	73.2	**81.3**	**78.8**	**74.7**	99.0	99.0	98.7	**92.9**	**91.8**	**90.0**
Myanmar	53.4	50.1	53.3	49.1	44.9	40.3	84.1	80.0	84.7	79.0	72.4	64.7
Namibia	33.0	33.2	33.3	**49.1**	34.2	29.1	41.2	42.8	43.9	**62.2**	43.2	37.4
Nepal	83.0	**78.1**	**74.0**	**68.4**	**59.9**	**55.1**	99.0	**93.4**	**91.1**	**88.1**	**81.4**	**77.6**
Nicaragua	30.1	26.5	26.5	**32.5**	**20.6**	**15.8**	44.4	42.5	45.3	**49.2**	**38.0**	**31.8**
Niger	82.8	85.0	**72.8**	**78.2**	74.5	**65.9**	97.9	99.0	**91.1**	**91.5**	96.1	**85.6**
Nigeria	63.2	**53.9**	65.2	**58.9**	61.5	**64.4**	75.2	**76.9**	78.8	**78.1**	75.8	**83.9**
Oman	15.1	3.8	2.0	2.0	2.0	2.0	19.6	5.6	3.4	2.0	2.0	2.0
Pakistan	54.9	**66.5**	**64.7**	**36.0**	**32.5**	**22.6**	89.1	**89.1**	**88.2**	**73.5**	**70.2**	**60.3**
Panama	**7.0**	8.8	**16.9**	**11.5**	**11.5**	**9.3**	**17.8**	17.3	**26.8**	**19.7**	**20.0**	**17.9**
Papua New Guinea	33.7	32.5	31.6	**35.8**	27.3	26.4	50.8	50.4	50.5	**57.4**	45.5	45.2
Paraguay	17.1	16.1	**5.9**	**12.7**	**17.1**	**9.3**	29.5	29.3	**19.4**	**21.8**	**27.3**	**18.4**
Peru	14.8	**2.0**	**2.0**	7.2	**12.6**	**8.2**	20.3	**5.2**	**5.2**	18.4	**24.4**	**19.4**
Philippines	31.7	**34.9**	**30.6**	**24.9**	**22.5**	**22.3**	54.5	**61.9**	**56.1**	**48.2**	**44.8**	**44.4**
Poland		**2.0**	**2.0**	**3.1**	**2.0**	**2.0**		**2.0**	**2.0**	**9.9**	**2.0**	**2.0**
Romania			**2.0**	**5.0**	**3.7**	**2.0**			**2.0**	**23.2**	**17.2**	**3.4**
Russian Federation			**2.0**	**3.2**	**2.1**	**2.0**			**3.9**	**7.9**	**7.1**	**2.0**
Rwanda	67.8	**63.3**	67.0	68.4	**76.6**	63.9	87.2	**88.4**	87.9	91.1	**90.3**	84.2
Saudi Arabia	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Senegal	62.7	56.0	**65.8**	**54.1**	**44.2**	**33.5**	77.1	71.7	**81.5**	**79.4**	**71.3**	**60.3**
Sierra Leone	62.5	59.6	**62.8**	61.2	62.5	**53.4**	76.9	75.2	**75.0**	80.4	84.2	**76.1**
Singapore	2.0		**2.0**		**2.0**	**2.0**	2.0		**2.0**		**2.0**	**2.0**

Table A.1 – continued

	Percentage of Population Living on $1.25 per Day or Less						Percentage of Population Living on $2 per Day or Less					
	1980	1985	1990	1995	2000	2005	1980	1985	1990	1995	2000	2005
Slovak Republic			**2.0**	**2.0**	2.0	2.0			**2.0**	**2.0**	2.3	2.0
Slovenia		**2.0**	**2.0**	**2.0**	**2.0**	**2.0**		**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
South Africa	25.8	23.9	22.4	**21.4**	**26.2**	21.7	41.5	40.6	39.7	**39.9**	**42.9**	38.3
Sri Lanka	25.2	**20.0**	**15.0**	**16.3**	**14.0**	12.5	46.3	**51.6**	**49.5**	**46.7**	**39.7**	27.3
St. Lucia	13.4	11.5	5.8	**20.9**	3.5	2.9	26.6	24.7	14.8	**40.6**	11.4	9.9
Sudan	53.2	53.5	51.7	49.7	47.0	44.3	72.3	73.9	71.4	68.5	64.4	60.3
Suriname	12.6	13.6	13.4	13.1	**15.5**	7.8	20.9	23.5	23.9	24.1	**27.2**	16.9
Swaziland	78.4	73.5	66.9	**78.6**	**62.9**	66.3	96.6	91.5	82.2	**89.3**	**81.0**	80.7
Syrian Arab Republic	21.7	19.2	16.9	13.1	12.2	10.9	35.3	33.8	32.8	27.2	26.6	24.7
Taiwan	6.6	3.0	2.0	2.0	2.0	2.0	18.3	12.0	4.0	2.0	2.0	2.0
Tajikistan				39.5	**44.5**	21.5				61.7	**78.5**	**50.8**
Tanzania	83.5	82.3	**72.6**	81.9	**88.5**	74.4	95.8	95.5	**91.3**	95.7	**96.6**	86.8
Thailand	**21.9**	**19.4**	**11.3**	**2.0**	**2.0**	**2.0**	**44.0**	**41.4**	**33.2**	**17.4**	**17.5**	**11.5**
Timor-Leste					**52.9**	41.9					**77.5**	67.7
Togo	59.4	58.7	57.6	57.2	53.9	**38.7**	77.1	78.6	78.2	79.1	76.1	**69.3**
Trinidad and Tobago	2.0	2.9	**3.1**	3.9	2.0	2.0	4.2	7.1	**11.1**	9.1	5.1	2.0
Tunisia	25.2	**8.7**	**5.9**	6.5	**2.6**	7.1	37.5	**25.1**	**19.0**	**20.4**	**12.8**	16.7
Turkey	16.9	**2.0**	**2.1**	**2.1**	**2.0**	**2.7**	25.7	**7.7**	13.8	**9.8**	**9.6**	**9.0**
Turkmenistan			**14.4**	**63.5**	**24.8**	15.4			**50.2**	**85.7**	**49.6**	26.8
Uganda	64.7	65.9	**69.3**	**64.4**	**58.9**	**51.5**	87.5	89.9	**87.3**	**85.9**	**81.2**	**75.6**
Ukraine			**2.0**	**2.0**	**2.0**	**2.0**			**8.4**	**8.4**	**8.4**	**2.0**
United Arab Emirates	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Uruguay	9.1	8.7	**2.0**	**2.0**	**2.0**	**2.0**	16.9	18.8	**2.0**	**3.0**	2.3	4.5
Uzbekistan			**2.0**	28.9	**37.2**	46.3			**2.0**	49.9	64.6	76.7
Venezuela, RB	**6.2**	**6.5**	**2.9**	8.7	**14.0**	10.0	**16.4**	**17.9**	**9.2**	19.5	23.9	19.8
Vietnam	58.1	54.7	53.5	**63.7**	44.9	**22.8**	90.9	85.9	83.8	**85.7**	73.5	50.5
Yemen, Rep.			**4.5**	15.5	**12.9**	**17.5**			**15.4**	36.7	**36.3**	**46.6**
Zambia	52.6	53.3	**62.8**	**63.7**	55.4	**64.3**	68.0	70.0	**76.2**	**80.8**	74.8	**81.5**

APPENDIX B: Summary Statistics

Table B.1: Economic Freedom of the World (EFW) summary statistics

	1980	1985	1990	1995	2000	2005
	All countries					
mean	5.5	5.5	5.8	6.0	6.5	6.6
std. dev.	1.2	1.3	1.3	1.2	1.0	1.0
max	9.2	8.8	8.8	9.1	8.8	8.9
min	2.8	2.1	3.0	3.2	3.9	3.2
No. of countries	102	109	113	123	123	130
	High income countries					
mean	6.9	7.0	7.5	7.6	7.7	7.7
std. dev.	0.9	0.9	0.7	0.7	0.6	0.5
max	9.2	8.8	8.8	9.1	8.8	8.9
min	5.4	5.4	6.0	6.2	6.6	6.9
No. of countries	24	24	24	24	24	24
	Low and middle income countries					
mean	5.1	5.1	5.3	5.7	6.1	6.3
std. dev.	1.0	1.1	1.1	1.1	0.9	0.9
max	7.9	8.1	8.7	8.8	8.5	8.7
min	2.9	2.1	3.0	3.2	3.9	3.2
No. of countries	78	85	89	99	99	106
	Countries with continuous poverty data, 1980-2005					
mean	5.0	5.1	5.3	5.8	6.2	6.3
std. dev.	0.9	1.1	1.1	1.1	0.9	0.9
max	7.9	8.1	8.7	8.8	8.5	8.7
min	2.9	2.1	3.0	3.2	3.9	4.0
No. of countries	67	71	73	73	73	75

Table B.2: Polity IV summary statistics

	1970	1975	1980	1985	1990	1995	2000	2005
	All countries							
mean	-2.4	-2.9	-2.5	-2.1	0.3	2.3	2.9	3.6
std. dev.	7.0	7.1	7.2	7.3	7.2	6.8	6.6	6.5
max	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
min	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
No. of countries	147	156	157	157	159	159	159	159
	High income countries							
mean	7.3	8.8	9.7	9.8	10.0	10.0	10.0	10.0
std. dev.	6.5	3.2	0.7	0.6	0.2	0.2	0.2	0.2
max	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
min	-9.0	-3.0	8.0	8.0	9.0	9.0	9.0	9.0
No. of countries	20	20	20	20	21	21	21	21
	Low and middle income countries							
mean	-4.0	-4.6	-4.3	-3.8	-1.1	1.1	1.9	2.7
std. dev.	5.8	5.7	5.8	6.1	6.6	6.6	6.4	6.4
max	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
min	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
No. of countries	127	136	137	137	138	138	138	138
	Countries with continuous poverty data, 1980-2005							
mean	-3.1	-4.2	-3.5	-2.7	-0.8	1.7	2.2	2.7
std. dev.	6.3	6.1	6.3	6.6	7.0	6.3	6.0	6.0
max	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
min	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
No. of countries	80	85	86	86	85	86	86	86

Table B.3: Executive constraints summary statistics

	1970	1975	1980	1985	1990	1995	2000	2005
				All countries				
mean	3.3	3.2	3.3	3.5	4.0	4.4	4.6	4.9
std. dev.	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.1
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No. of countries	147	156	157	157	159	159	159	159
				High income countries				
mean	6.0	6.4	6.8	6.8	7.0	7.0	7.0	7.0
std. dev.	2.2	1.2	0.6	0.6	0.2	0.2	0.2	0.2
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	2.5	5.0	5.0	6.0	6.0	6.0	6.0
No. of countries	20	20	20	20	21	21	21	21
				Low and middle income countries				
mean	2.8	2.7	2.8	3.0	3.6	4.0	4.2	4.6
std. dev.	1.8	1.9	1.9	1.9	2.1	2.2	2.1	2.1
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No. of countries	127	136	137	137	138	138	138	138
			Countries with continuous poverty data, 1980-2005					
mean	2.8	2.7	2.8	3.1	3.6	4.2	4.3	4.6
std. dev.	2.0	2.0	2.0	2.1	2.2	2.1	1.9	1.9
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
No. of countries	80	85	86	86	85	86	86	86

Table B.4: Freedom House Political Rights Index summary statistics

	1975	1980	1985	1990	1995	2000	2005
				All countries			
mean	3.1	3.4	3.5	4.0	4.4	4.5	4.6
std. dev.	2.1	2.1	2.3	2.1	2.2	2.2	2.1
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No. of countries	173	178	181	183	190	191	191
				High income countries			
mean	6.4	6.9	6.9	7.0	7.0	7.0	7.0
std. dev.	1.2	0.4	0.3	0.0	0.0	0.0	0.0
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	3.0	6.0	6.0	7.0	7.0	7.0	7.0
No. of countries	22	22	22	23	23	23	23
				Low and middle income countries			
mean	2.6	3.0	3.0	3.5	4.1	4.2	4.3
std. dev.	1.8	1.8	2.0	2.0	2.1	2.2	2.1
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No. of countries	151	156	159	160	167	168	168
			Countries with continuous poverty data, 1980-2005				
mean	2.8	3.1	3.3	3.5	3.7	4.0	4.1
std. dev.	1.8	1.8	1.9	2.0	1.9	2.0	1.9
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No. of countries	85	86	86	86	86	86	86

Table B.5: Freedom House Civil Liberties Index summary statistics

	1975	1980	1985	1990	1995	2000	2005
				All countries			
mean	3.5	3.4	3.4	4.2	4.2	4.5	4.9
std. dev.	1.9	1.9	2.0	1.8	1.9	1.8	1.8
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No. of countries	173	178	181	183	190	191	191
				High income countries			
mean	6.5	6.7	6.8	6.8	6.7	6.6	6.9
std. dev.	1.0	0.6	0.4	0.4	0.6	0.6	0.3
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	3.0	5.0	6.0	6.0	5.0	5.0	6.0
No. of countries	22	22	22	23	23	23	23
				Low and middle income countries			
mean	3.1	3.0	2.9	3.8	3.9	4.2	4.6
std. dev.	1.6	1.6	1.7	1.6	1.8	1.7	1.8
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No. of countries	151	156	159	160	167	168	168
			Countries with continuous poverty data, 1980-2005				
mean	3.2	3.1	3.1	3.6	3.5	3.9	4.3
std. dev.	1.4	1.4	1.5	1.6	1.5	1.4	1.5
max	7.0	7.0	7.0	7.0	7.0	7.0	7.0
min	1.0	1.0	1.0	1.0	1.0	1.0	1.0
No. of countries	85	86	86	86	86	86	86

Table B.6: Sachs geographic variables summary statistics

	All countries	High income countries	Low and middle income countries	continuous poverty data, 1980-2005
		Coastal population (% within 100km)		
mean	0.5	0.6	0.5	0.4
std. dev.	0.4	0.4	0.4	0.4
max	1.0	1.0	1.0	1.0
min	0.0	0.0	0.0	0.0
No. of countries	210	24	186	86
		Tropical location (% land area in tropics)		
mean	0.5	0.1	0.6	0.7
std. dev.	0.5	0.2	0.5	0.4
max	1.0	1.0	1.0	1.0
min	0.0	0.0	0.0	0.0
No. of countries	210	24	186	86
		Distance to major markets[a]		
mean	4.0	1.6	4.4	5.2
std. dev.	2.4	2.3	2.2	2.0
max	9.6	9.3	9.6	9.6
min	0.1	0.1	0.6	1.2
No. of countries	210	24	186	86

[a] The minimum air distance in thousands of kilometers from a country to any one of the following major markets: New York, Tokyo, or Amsterdam.

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