Coercive Capacity and the Prospects for Democratization

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Is democratic transition a random process, as Adam Przeworski and others have prominently claimed, or do countries have to satisfy certain prerequisites before they transition?[1] This question has a long pedigree that predates the famous debate between Seymour Martin Lipset, who argued that high levels of education, urbanization, and wealth had to first be reached for democratization to occur, and Dankwart Rustow, who claimed that a transition to democracy could arise spontaneously regardless of place or time.[2] A recent, influential contribution to this debate by Przeworski and others demonstrates that the positive association between income and democracy arises not through increasing the odds of transition, but rather by insulating extant democracies from breakdown.[3]

The notion that there are systematic prerequisites of democratic transition has been further eroded since this seminal work.[4] Daron Acemoglu and James Robinson have shown that higher levels of education are not causally related to democratic transition.[5] Stephen Haber and Victor Menaldo have rejected the notion that countries with higher levels of resource reliance are less likely to transition to democracy.[6] Finally, Christian Houle has challenged the recently revived and highly influential literature on the social foundations of democracy, finding that the level of income inequality is not systematically associated with democratic transition.[7] The present authors have corroborated this insight, finding that dictators in Latin America—the region of the world with the highest degree of inequality historically—have actually threatened the interests of the economic elite with greater frequency and intensity than their democratic counterparts.[8]

Is it really the case, then, that there are no systematic prerequisites to democratic transition? To claim this would be premature. While the modernization, resource curse, and inequality hypotheses have been challenged in the empirical literature on the determinants of democratization, the persistence of autocratic rule in some countries, and indeed in whole regions such as the Middle East at least until and perhaps through the recent Arab Spring, has left many scholars searching for some factor lacking in these countries that could explain why they appear to be endemically resistant to democratic transition. Indeed, there remain a number of important theoretical contributions that have yet to be empirically tested.

This article focuses on perhaps the most prominent remaining body of work that ties structural factors to democratization—the literature linking the institutionalization and robustness of a state's coercive apparatus to its prospects for democratic transition.

It builds upon a broad range of scholarship on democratization that implicates a state's coercive apparatus as an intervening variable sustaining autocracy. For example, Eva Bellin rules out the classical modernization theory prerequisites of democracy as an explanation for the Middle East's democratic deficit, arguing instead that these countries' large, powerful armed forces are responsible for the region's longstanding authoritarianism.[9] This explanation draws from Michael Ross, who argues that dictators in resource rich countries use the rents from oil and minerals to bankroll repression and thus prevent democratization.[10] The literature on the social foundations of democracy, which contends that the rich will turn to repression to prevent transitions under conditions of high inequality, similarly emphasizes the importance of a coercive apparatus.[11] And there is a large body of scholarship that posits that regime durability is related to state strength, of which repression is one proxy.[12] Countries with a large coercive apparatus may be less likely to democratize because a large security force is a function of a strong state, which has a better ability to generate resources, defend its borders, and maintain its monopoly on the use of violence. Yet few empirical studies of democratization have explicitly included measures of coercive capacity to account for the hypothesized link between repression and autocracy. Doing so is particularly important given that coercive capacity typically plays a direct role in democratization. The leaders of the security apparatus under autocracy are often key actors who influence the terms of democratic transition—if not help to spearhead it.

To empirically assess whether an increased coercive capacity is negatively associated with democracy, we generate a time-series, cross-sectional dataset with global scope from 1950–2002. We measure coercive capacity as military size, and argue that this is a valid and reliable metric of the institutionalized coercive force used by dictators to consolidate their authority. In line with the consensus in the literature, we find that increased repression under autocracy does indeed harm democracy. Coercive capacity is negatively correlated to the level of democracy when measured as a continuous variable, and also makes democratic transition less likely. These results are robust to the introduction of other determinants of democratization, alternative mechanisms linking military size to autocracy, country and year fixed effects, and the use of instrumental variables to address potential endogeneity.

Research Design and Data

Dependent Variable We measure democracy in two different ways. The first measure is the Polity Score, taken from the Polity IV dataset. It is a continuous variable that allows us to evaluate if a greater coercive capacity is negatively associated with the level of democracy. The Polity Score is an index of the competitiveness of political participation, the openness and competitiveness of executive recruitment, and the constraints on the chief executive that runs from −10 (most autocratic) to +10 (most democratic). We normalize it to range from 0 to 100 to simplify interpretation of the coefficients. The second measure of democracy is a dummy variable, Regime, taken from José Cheibub

and Jennifer Gandhi.[13] Using this binary measure allows us to (1) evaluate if a larger military makes a transition to democracy less likely, and (2) relax the assumption that the association between coercive capacity and democratization is linear.

Key Independent Variable: Measuring Coercive Capacity The typical way for dictators to consolidate their authority and prevent challenges is to terrorize would-be opponents and squash dissent.[14] The most common forms of repression include restrictions on speech and association, a ban on opposition parties, and the domestic projection of military and police power to intimidate, coerce, and suppress challengers.[15] Therefore, one of the most effective coercive devices that incumbent elites can access to prevent democratization is the armed forces, which typically house domestic intelligence agencies and police forces dedicated to internal security.[16] A dictator can use the military to suffocate pressure for political change emanating from the population or organized parties and movements. In analyzing the political consequences of military organization and control, Robert Dahl writes that "nondemocratic regimes employ the superior coercive resources of the military and police to maintain their rule."[17]

There is considerable support in the literature for the notion that, among autocracies, the military is a good proxy for internal repression. Besides its obvious role as a deterrent to political unrest, the military is also a tool for arresting demonstrations, riots, and even civil wars that threaten regime stability. The Tiananmen Square massacre in China and Assad's assiduous repression of protests attempting to bring the Arab Spring to Syria are two brutal demonstrations of the fact that a large army can be used for these purposes, with the protraction of authoritarianism as an important consequence.

In the Middle East, repressive dictators have consistently had some of the world's largest standing armies per capita, and have used them to suppress dissent. As Bellin argues, the resilience of autocratic rule in the region lies "less in absent prerequisites of democratization and more in present conditions that foster robust authoritarianism, specifically a coercive apparatus in these states."[18] The same argument has been made about Central America. Historically, the emergence and institutionalization of the armed forces was a reaction to "internal security threats."[19] Dictators used the military to squash dissent, terrorize political opponents, and forestall elections. Albertus and Menaldo document the fact that, across Latin America, militaries have allowed dictators to consolidate their authority by condoning massive expropriations of the domestic elites' land and capital, if not actually taking the lead in implementing these efforts.[20] And large militaries that can perpetuate autocratic rule and assert control despite civilian opposition are not limited to the Middle East or Latin America. Alan Siaroff indicates that autocratic regimes are on average significantly more militarized than their democratic counterparts.[21]

When the security apparatus that dictators rely upon to repress citizens and the opposition grows more powerful, it may pose an even bigger threat to the dictator than the opposition. Dictators may therefore seek to weaken the autonomy of the security

forces while nonetheless continuing to invest in them. One popular strategy is to impose multiple and overlapping organizations and agencies within the armed services and the police.[22] The proliferation of competing branches and agencies may spawn an inefficiently large security apparatus that exceeds the coercive power required to repress the population and opposition. This excess capacity in coercive power can then be used to arrest threats from powerful actors within the regime. In short, the size of the military reflects both the ability to mete out repression against citizens and the opposition as well as the result of organizational proliferation to undermine threats from within the regime.

Several scholars have argued, however, that the military is a relatively autonomous entity with its own corporate prerogatives.[23] Yet despite relative autonomy, the military's prerogatives often overlap with the repression of unrest and the maintenance of order. Indeed, the literature on military dictatorship traces a link between the size of the armed forces and the regime's prospects for survival.[24] The fact that militaries typically prioritize their own corporate interests does not imply that they will not engage in more policing as their size grows under autocracy. To the contrary, the need for increased security is the typical reason cited by the military in requesting additional funding and size increases.[25] The manner in which military troops are deployed domestically attests to this. As Alfred Stepan notes in the Brazilian case, military troops were dispersed throughout the country strategically to prevent citizen unrest.[26]

Whether there is a civilian dictatorship backed explicitly or implicitly by the military, or a full-fledged military dictatorship led by a junta of generals, the prediction remains the same. A larger, more powerful military will be able to protract autocratic rule. We therefore operationalize coercive capacity as Military Size per 100 inhabitants, taken from the Correlates of War Project. Because this variable is considerably right-skewed, we take the natural log of Military Size, after adding .01 to each value in order to address the zero values in the dataset.[27]

Could it be the case that a large military is simply a fundamental characteristic of autocratic rule, so that any claim of a negative relationship between the size of the military and the likelihood of transition is true by definition and therefore tautological? A number of facts suggest that this is not the case. Most important, there is wide variation in the size and structure of the military both across autocracies and within autocracies over time. The unlogged measure of military size varies between 0 and 7.7 military personnel per 100 inhabitants, with a mean of .81. Across autocracies, the standard deviation is .78, and the standard deviation within autocracies is .46. The maximum change in military size under a single episode of autocratic rule is 6.38. Spain under Franco illustrates this variance. Between 1950 and 1975, the size of the military dropped by a factor of two before change in the political regime.

Control Variables and Alternative Explanations In estimating the effect of repression on democracy, we control for several additional variables that have been theorized to affect democracy.[28] Following modernization theory, we control for log Per Capita Income in 2000 international dollars, which we construct primarily using the Penn

World Tables, with missing data filled in from Maddison Historical Statistics and the World Bank Development Indicators (WBDI).[29] Because stable economic growth during autocracy may inhibit democracy, we control for the Economic Growth Rate (of Per Capita Income, in percent).[30] Conversely, high rates of Inflation may lead to autocratic breakdown.[31] To maximize coverage, we create a proxy for inflation with Central Bank Assets (as a percentage of GDP) from the Financial Structure Database. Following the resource curse literature, which predicts a negative relationship between natural resources and democracy, we control for the log of Total Oil Income Per Capita (Total Oil Income), after adding 1 to deal with zero values, from Haber and Menaldo.[32]

Finally, we seek to rule out alternative mechanisms that may account for the negative relationship between military size and democratic transition, since autocratic regimes may erect large militaries for reasons other than explicitly preventing democratic transition that nonetheless impact that process. In particular, war involvement and the provision of rents to landed interests may enlarge a military and negatively impact the likelihood of transition for reasons other than repressing the opposition and civil society. Further ahead we discuss the plausibility of these alternative channels linking military size to autocracy, and the measures used to capture these possibilities. We note, however, that even after accounting for each of these alternative explanations, as well as the other determinants of democratization outlined above, a robust negative association between military size and democratic transition remains.

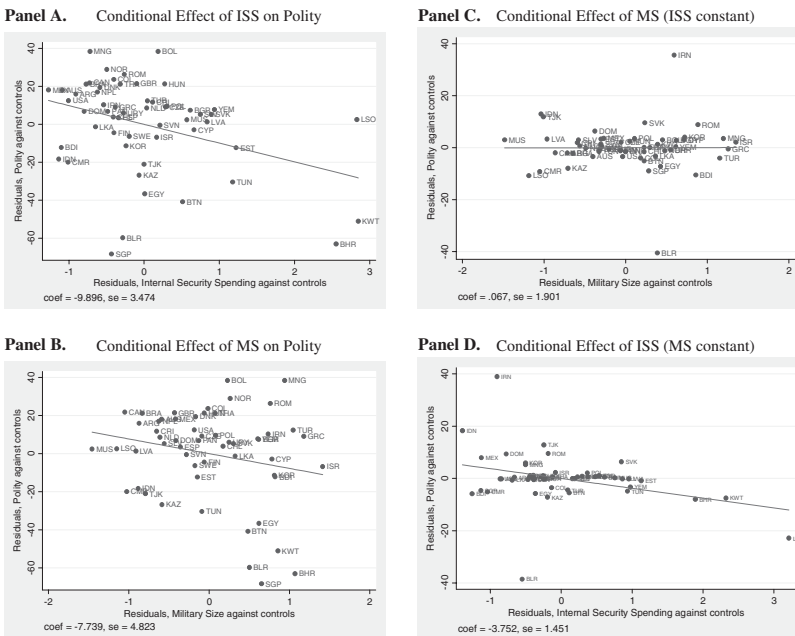
Is Military Spending a Valid Measure of Internal Repression?

As a check on the validity of military size as a metric of coercive capacity, the results of a series of cross-sectional multivariate regressions are used to evaluate whether military size is positively correlated with domestic security spending and whether the negative association between Military Size on the Polity Score works through domestic security spending.[33] Domestic Security Spending is measured as Expenditures on Public Order and Safety (% GDP) and is taken from the IMF Government Finance Statistics Yearbook.[34] We control for log(Per Capita Income), the Economic Growth Rate, and log(Total Oil Income). To maximize coverage and minimize measurement error, every variable included in these regressions is (unless otherwise noted) the average calculated between 1997 and 1999. However, the results are materially the same if the regressions are run on any one of these years individually.

Figure 1 displays a set of added variable plots that depict the marginal effect of the independent variables of interest, Military Size and Expenditures on Public Order and Safety, respectively, on the Polity Score.

The left half of Figure 1 graphs the relationship first between Expenditures on Public Order and Safety and the level of democracy and then between Military Size and the level of democracy. Panel A employs Expenditures on Public Order and Safety, and indicates a strong negative correlation after holding other determinants of democracy constant. Panel B depicts a regression that excludes Expenditures on Public Order and Safety

Figure 1 Added Variable Plots: Internal Security Spending (ISS) & Military Size (MS) on Polity



and graphs the relationship between Military Size and the level of democracy. This regression is limited to the set of cases for which data on Expenditures on Public Order and Safety are available for comparability with Panel A. There are a total of 55 countries with available data. The most important point to note is that the marginal effect of Military Size is very similar to that of Expenditures on Public Order and Safety, suggesting that these measures are interchangeable.

The right half of Figure 1 (Panels C and D) depicts first the marginal effect of Military Size on the level of democracy while holding Expenditures on Public Order and Safety constant, and then the marginal effect of Expenditures on Public Order and Safety on the level of democracy while holding Military Size constant. In other words, both Expenditures on Public Order and Safety and Military Size are now entered on the right-hand side of a new regression. In addition to controlling for log(Per Capita Income), Economic Growth Rate, and log(Total Oil Income), as in Panels A and B, this regression also includes the average Polity Score for each country between 1994 and 1996 as an independent variable. Given that the sample used to generate these panels is a cross-section of states (averages between 1997 and 1999) and therefore country fixed effects cannot be included in the regressions, the average Polity Score between 1994 and 1996 acts similarly to a lagged dependent variable—it absorbs

considerable unobserved heterogeneity between countries that is time-invariant or sluggish. There are 55 countries in this regression, as with those behind Panels A and B.

Panel C displays the marginal effect of Military Size. The graph reveals that the negative effect of Military Size on Polity virtually disappears once spending on internal security is controlled for. This suggests that increased military size adversely affects Polity because it is capturing increased spending on internal security. Panel D depicts the marginal effect of Expenditures on Public Order and Safety. The graph shows that the effect of internal security on the Polity Score strengthens after controlling for Military Size—an effect that factors in the unobserved heterogeneity between countries mentioned above. Moreover, the regressions that underlie these graphs are robust to addressing the influence of possible outliers. Therefore, these graphs strengthen the claim that Military Size proxies for internal repression and that its effect on democracy works exclusively through its internal security role.

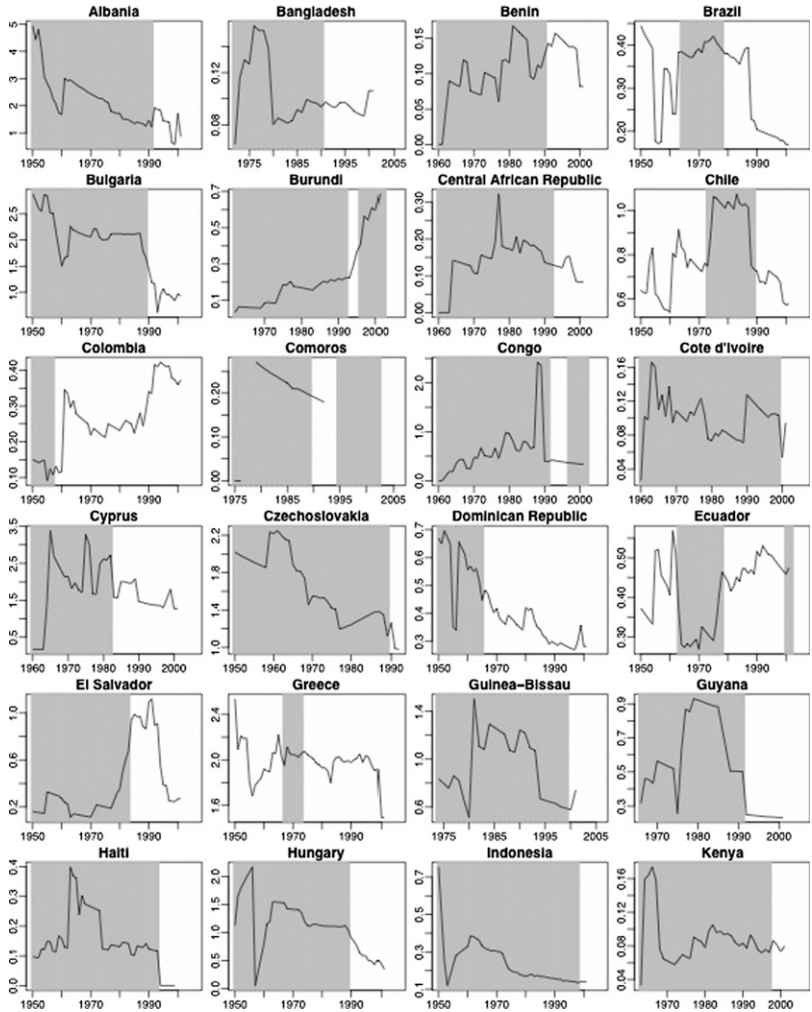
Although Figure 1 indicates that Military Size is a good proxy for internal security in a state, there are cases in which internal security forces with the capacity to repress democratization are either not housed within the armed forces or not formally funded by the state. One prominent example is the Basij militia in Iran, a nonstate actor that played an important role in stymieing pressure for democratic change after the fraudulent 2009 elections. Given the possibility that domestic actors outside of the military may repress democratization, using Military Size as a proxy for coercive capacity should bias against the hypothesis that a larger official security apparatus decreases the odds of democratization. Militias such as the Basij in Iran typically act, either implicitly or explicitly, at the behest of the state. If military size does not pick up cases in which dictators rely on informal militias to hold on to power and forestall democracy, then the estimated effect of military size on democracy should be biased downward.

Repression and Democratic Transition across Time

A cursory evaluation of the within-country variation displayed by the data provides tentative support for the hypothesis that coercive capacity captured by military size is negatively associated with democratic transition. In Figure 2 we graph the time-series relationship between military size and democratic transition (defined and coded by Cheibub and Gandhi) for the 48 states (of 165) that experienced at least one democratic transition between 1950 and 2002.[35] Although other highly repressive dictatorships such as those in the Middle East have some of the world's largest armies per capita and have also remained strongly autocratic, they are not included here because they have not democratized during the period.[36]

Most of the countries in Figure 2 display a clear bivariate relationship between military size and democracy. The Eastern European states that transitioned in the early 1990s (such as Albania, Bulgaria, and Hungary) all experienced drops in military size

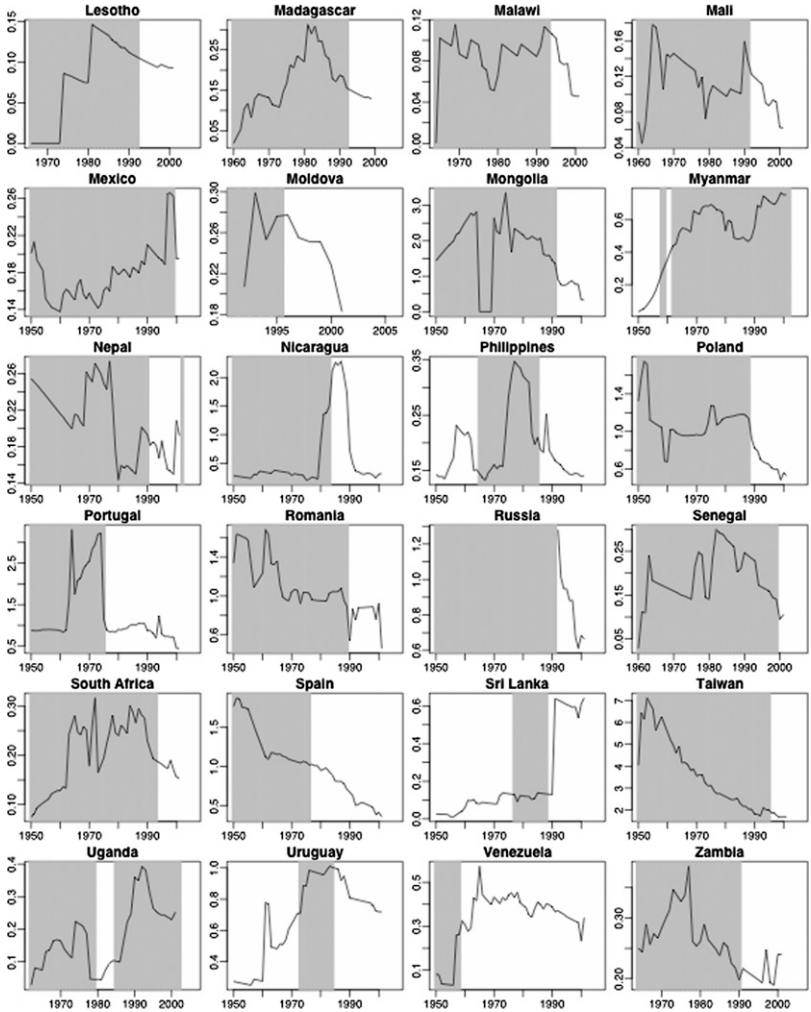
Figure 2 Military Size and Democratic Transition, 1950–2002



Notes: The y-axes display military personnel per 100 inhabitants, and the x-axes display years. This figure only includes states that experienced at least one transition to democracy between 1950 and 2002. Shaded regions are periods of autocratic rule as coded by Cheibub and Gandhi (2004).

prior to and through the democratization process. Spain and Portugal also reflect this trend, as do several African states (Senegal, Madagascar, South Africa, and Uganda) and Latin American states (Chile, Guyana, and the Dominican Republic). The few states that do not conform to this pattern speak to other factors that impact military size. Increased militarization in Colombia and El Salvador *after* democratization is tied to

Figure 2 (continued)



civil wars in both countries. Larger military size in Venezuela *after* transition corresponds to a boom in state revenues associated with increased oil revenues.

Empirical Results for Repression and the Level of Democracy

Table 1 presents a more rigorous analysis of the link between repression and democracy. This table displays the results of a series of multivariate OLS models on the full panel.

In most of the specifications, we control for country and year fixed effects. Robust standard errors are clustered by country to address heteroskedasticity and serial correlation, and year dummies are included to mitigate contemporaneous correlation. These regressions evaluate whether there is a relationship between coercive capacity, measured as military size, and a country's Polity Score.

Table 1 Determinants of Democracy, 1960–2002

Dependent variable is Continuous Democracy Measured as Normalized Polity (0 to 100)						
Robust t statistics clustered by country in brackets						
Variables Measured in Type of specification	(1) Levels *Static*	(2) Levels *Static*	(3) Levels *Static*	(4) Levels *Static*	(5) Levels *Dynamic: ADL*	(6) Levels *Differences* *Static: IV (GMM)*
Polity t-1					0.86 [56.20]***	
log(Military Size)		−9.544 [5.27]***	−9.312 [5.00]***	−8.49 [4.44]***	−2.347 [1.93]*	−4.918 [2.33]**
log(Military Size) t-1					1.438 [1.39]	
Military Size, Long-run Multiplier (LRM)					−6.471 [2.37]**	
log(Per Capita Income)	18.995 [11.73]***	24.778 [15.05]***	24.542 [14.91]***	1.802 [0.31]	−0.343 [0.28]	−0.571 [0.12]
Growth Rate of GDP Per Cap	−0.058 [0.59]	−0.047 [0.61]	−0.03 [0.37]	−0.032 [0.73]	0.018 [0.66]	0.036 [1.35]
log(Total Oil Income)	−3.134 [3.04]***	−2.947 [2.85]***	−2.984 [2.82]***	−1.279 [1.56]	−0.099 [0.67]	−0.061 [0.14]
Inflation	−13.099 [0.86]	2.88 [0.22]	0.996 [0.08]	4.262 [0.36]	4.066 [1.13]	−4.351 [1.15]
Year Dummies	NO	NO	YES	YES	YES	YES
Country Dummies	NO	NO	NO	YES	YES	YES
Observations	4257	3591	3591	3591	3580	3380
r-squared	0.3	0.37	0.4	0.8	0.95	0.04
GMM C statistic chi2						2.101
(Difference in Sargan test of endogeneity)						0.147
Hansen's J chi2 for instrument validity						4.453
(Overriding restrictions test)						0.348
F-test on instruments						8.43
						0

* significant at 10%; ** significant at 5%; *** significant at 1%.
Year dummies estimated but not shown; country dummies estimated but not shown; ADL = Autoregressive Distributed Lag. IV (GMM) = Instrumental Variables's Generalized Method of Moments; for Columns 2 and 3, the LRM is (β(Military Size)+β(Military Size t-1))/(1−β(Polity t-1)); standard errors calculated by Delta Method; for Column 3, an instrumental variables GMM approach is taken (only second stage output shown) with D.Military Size as potentially endogenous and lags of Military Size in levels (t-1 through t-5) included as instruments in the first stage.

Column 1 of Table 1 is a pooled OLS regression where we control for log(Per Capita Income), the Economic Growth Rate, log(Total Oil Income), and Inflation. Per Capita Income is positive and highly statistically significant, and Total Oil Income is negative and statistically significant. In Column 2 we add Military Size, which is strongly statistically significant and negatively associated with democracy. Other controls are largely unchanged. Ceteris paribus, a 1 percent increase in the size of the military is associated with a decrease in the Polity Score of 9.5 points (on the 0–100 scale). Overall model fit also improves significantly after adding Military Size, with the R-squared increasing from .30 in Column 1 to .37 in Column 2, or a 19 percent increase. Column 3 is specified as Column 2 but adds year fixed effects to control for common shocks and trends. The results are largely similar, and Military Size maintains its negative sign and statistical significance. Military Size remains negative and strongly statistically significant when country fixed effects are added in Column 4 to rule out the possibility that unobserved, country-specific idiosyncrasies are jointly determining Military Size and lower levels of democracy. Omitting these factors may generate a spurious, negative correlation between Military Size and democracy. Indeed, this is the only variable that maintains its significance in this model. Consistent with much of the recent literature, Per Capita Income and Total Oil Income no longer have a measureable effect on the level of democracy. The inclusion of country fixed effects in the Column 4 model also increases the R-squared to .80. This model explains more than twice of the variation in Polity than the Column 1 and Column 2 models.

The Column 1–4 results employ static models that do not account for the possibility that the effect of an increase in the size of the military may be distributed over several periods. Column 5 turns to a dynamic approach that can address this possibility, and presents the results of an autoregressive distributed lag model (ADL) that adds a lag of the dependent variable and a lag of Military Size to the regression.[37] This estimation strategy allows us to calculate the total, long-run effect of a permanent 1 percent change in Military Size. The long-run multiplier coefficient is −6.5 ($p<.05$), while the short-run effect is −2.4 and statistically significant at the 6 percent level. The R-squared for the dynamic model in Column 5 is now .95, a 23 percent increase over the R-squared of the static model in Column 4. In other words, once we estimate the total effect made by a change in the size of the military spread over all periods, we explain 95 percent of the variance in Polity.

Robustness to Nonstationarity and Endogeneity

There are two potential problems with the models estimated so far. First, the coefficient on the lagged dependent variable in Column 5 is close to unity (.86). This suggests that the data in levels may be nonstationary, increasing the odds that the negative association between Military Size and Polity is spurious. Second, it could be the case that there is reverse causation. The causal arrow could be running from less democracy to a bigger military, rather than a bigger military preventing democracy. Column 6

addresses these potential biases simultaneously. We estimate a static Generalized Method of Moments (GMM) approach in first-differences, which renders the data stationary. We also instrument ΔMilitary Size with the first through fifth lag of Military Size measured in levels in order to address possible endogeneity.[38] The instruments are exogenous (valid) according to a Hansen J-test of the over-identifying restrictions, and the difference in Sargan test of endogeneity rejects the hypothesis that ΔMilitary Size is endogeneous. The coefficient on ΔMilitary Size remains negative and statistically significant.

To summarize, our results are robust to unobserved, country-specific heterogeneity, a dynamic specification of the relationship between Military Size and the Polity Score, possible unit roots in the data in levels, and potential endogeneity running from regime type to the size of the military. However, because the analyses conducted above employ a continuous measure of democracy that cannot adequately discriminate between transitions to and transitions from democracy, we have not yet evaluated whether increased repression measured as military size actually lowers the odds of democratic transition. Therefore, we have not ruled out the possibility that the results discussed above might be driven by the fact that democracies with larger militaries are more likely to break down than democracies with smaller militaries.

Empirical Results for Repression and Democratic Transition

The binary measure of democracy, Regime, is used to estimate static Markov Chain transition models in which variation in the covariates of interest measured in t-1 can be mapped onto the probability of a change from an autocratic equilibrium in t-1 to a democratic equilibrium in t. We control for previous experience with democratic rule by controlling for the Sum of Past Transitions to Autocracy (STRA), from Cheibub and Ghandi,[39] which has been found to positively influence the odds of democratization.[40] Standard errors are clustered by country to address heteroskedasticity and serial correlation.

Table 2 depicts the results of a series of pooled logit models that estimate the probability of a transition to democracy as a function of a host of covariates. Column 1 is a baseline regression where the independent variables are log(Per Capita Income), the Economic Growth Rate, log(Total Oil Income), STRA, and Inflation. The signs of all of the coefficients are in the expected direction. Per Capita Income has a positive sign but is not statistically significant, consistent with Przeworski et al.[41] Higher economic growth under autocracy makes democratization less likely, as does increased reliance on oil. Previous transitions to autocracy and higher inflation are both positively linked to transitions away from autocratic rule, as expected. Column 2 adds region and year dummies. Only STRA and Inflation retain statistical significance at conventional levels.

We now test the effect of coercive capacity on the transition to democracy. Column 3 adds log(Military Size) to the regression. As expected, the coefficient is highly statistically significant.[42] Column 4 of Table 2 removes Inflation because we only have coverage for that variable starting in 1961 and the results so far could be biased by the exclusion of the 1950s. The results, however, strengthen if Inflation is removed.

Table 2 Determinants of Democratic Transition, 1950–2002 (Markov Transition Model)

Dependent variable is Binary Democracy (REGIME)								
Robust z statistics clustered by country in brackets								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(Military Size)			−0.543	−0.422	−0.423	−0.423	−0.404	−0.652
			[2.67]***	[3.73]***	[3.71]***	[3.77]***	[3.10]***	[2.69]***
log(Per Capita	0.176	−0.068	0.141	0.175	0.178	0.17	0.175	0.331
Income)	[1.05]	[0.33]	[0.54]	[0.95]	[0.96]	[0.89]	[0.94]	[1.20]
Economic	−0.039	−0.031	−0.033	−0.021	−0.02	−0.021	−0.024	−0.046
Growth Rate	[1.66]*	[1.23]	[0.88]	[1.18]	[1.16]	[1.17]	[1.15]	[1.12]
log(Total Oil	−0.191	−0.128	−0.155	−0.08	−0.081	−0.077	−0.091	−0.177
Income)	[2.61]***	[1.31]	[1.60]	[1.17]	[1.18]	[1.11]	[1.44]	[2.43]**
STRA	0.623	0.339	0.377	0.53	0.52	0.537	0.373	0.26
	[5.11]***	[2.19]**	[2.55]**	[3.82]***	[3.82]***	[3.66]***	[3.35]***	[1.97]**
Inflation	2.816	3.124	4.185					3.847
	[2.80]***	[2.43]**	[3.11]***					[2.57]**
Militarized					0.065	−0.002		
Interstate					[0.34]	[0.18]		
Disputes (MID)								
Military							1.606	1.79
Dictatorship							[5.48]***	[5.70]***
Region Dummies	NO	YES	YES	YES	YES	YES	YES	YES
Year Dummies	NO	YES	YES	YES	YES	YES	YES	YES
Observations	1840	1840	1741	3797	3797	3797	3518	1675

* significant at 10%; ** significant at 5%; *** significant at 1%.
Independent variables lagged by 1 period except for MID count (Column 5) and running MID count (Column 6); results robust to lagging these variables.
Year dummies estimated but not shown; region dummies estimated but not shown.
MID in Column 5 is a count variable of the MIDs that occur in year t. MID in Column 6 is a running count of MIDs since 1950.

Holding all other covariates at their means, the marginal effect of increasing the size of the military by 1 percent at its average value (−.81) is a 4 percent reduction in the probability of a democratic transition.[43] To contextualize this effect, the estimated predicted probability of a democratic transition with log(Military Size) set at its lowest value (−4.6) is 35 percent if log(Military Size) is set at its highest value (2.04), it is only 3 percent. In Column 5 we control for the count of Militarized Interstate Disputes a state is engaged in to ensure that the size of the military is not merely proxying for external security threats that may themselves influence regime type. Data on MIDs come from the Correlates of War Project. The coefficient for MIDs is statistically insignificant, and Military Size retains its magnitude and statistical significance. Column 6 measures external security threats as the running count of MIDs since 1950, since a state may build up its military not in reaction to current disputes but rather due to long-time rivalries. The results are materially identical.[44] In Column 7 we control for whether the autocracy is a Military Dictatorship since, following Geddes (2003), we should expect military regimes to break down more frequently than other autocracies.

Military Size remains highly statistically significant in this specification. Military Dictatorship is also highly statistically significant and has the expected positive sign. Finally, Column 8 again reintroduces Inflation. The results on Military Size are materially similar.[45]

Controlling for Income Inequality

Table 2 results corroborate a prominent view of how autocrats hold on to power and keep democracy at bay—by repressing challenges to their rule through fear and intimidation. However, Acemoglu and Robinson and Carles Boix argue that only highly unequal dictatorships turn to repression.[46] According to these theories, the elite in unequal societies fear democracy because they fear the prospect of redistribution under democracy.[47] And since the Table 2 models do not control for income inequality, we cannot be certain that Military Size has not been proxying for income inequality. Indeed, if Acemoglu and Robinson and Boix are correct, then controlling for the distribution of income may attenuate the coefficient on Military Size.

In Table 3 we control for the distribution of income in three ways. Our first measure of inequality is from Boix, who constructs a Gini coefficient (ranging from 0 to 100, with higher values denoting higher inequality) from "high-quality" observations in Deininger and Squire, and averages them over five years to increase coverage and reduce measurement error.[48] Our second measure of inequality is from the Standardized Income Distribution Database (SIDD).[49] This Gini coefficient reflects an adjustment to the raw UN WIID data that standardizes differences in scope of coverage, income definition, and reference unit across countries. Our third measure is the Capital Share of Value Added (of GDP) of the non-natural resource sector constructed using the 2006 UNIDO Database.[50] The capital share is calculated as 1 minus the labor share, the ratio of Wages and Salaries excluding the natural resource sector to the total Value Added for all non-natural resource sectors. A higher capital share indicates higher inequality.

Column 1 of Table 3 controls for inequality using the Boix Gini coefficient. Although the Boix Gini is negative as predicted, it is far from statistically significant. Meanwhile, the substantive significance of Military Size increases and remains highly statistically significant. In Column 2 we test the Acemoglu and Robinson hypothesis.[51] An inverted U-shape relationship between inequality and democracy is predicted: the odds of democratization are increasing from low to medium levels, as elites hand political power to the masses to avoid revolution, and then decreasing at higher levels, as they favor repression to stop democracy. We test this hypothesis by including both a linear and quadratic term of the Boix Gini coefficient. Although the Acemoglu and Robinson hypothesis is confirmed in this specification (the linear term for the Gini coefficient is positive and the quadratic term is negative; both are statistically significant), Military Size retains its substantive significance and its statistical significance strengthens.

Column 3 tests the Boix hypothesis using the SIDD Gini coefficient. Because coverage is much better, we more than double the number of observations to 1,342. Contradicting Boix, the coefficient for inequality is positive, although it is not statistically

Table 3 Determinants of Democratic Transition after controlling for Income Inequality, 1950–2002

Dependent variable is Binary Democracy measured as REGIME (Markov Transition Model)							
Robust z statistics clustered by country in brackets							
Measure of Income Inequality	*Boix Gini* (1)	*Boix Gini* (2)	*SIDD Gini* (3)	*SIDD Gini* (4)	*Capital Shares* (5)	*Capital Shares* (6)	*Capital Shares* (7)
log(Military Size)	−1.098	−1.257	−0.616	−0.602	−0.667	−0.583	−0.468
	[2.69]***	[3.17]***	[2.42]**	[2.44]**	[2.03]**	[1.57]	[1.95]**
log(Per Capita Income)	0.287	0.358	−0.041	−0.029	0.09	−0.016	−0.28
	[0.52]	[0.58]	[0.14]	[0.10]	[0.23]	[0.04]	[0.96]
Growth Rate	−0.09	−0.091	−0.045	−0.045	−0.051	−0.046	−0.045
	[1.79]*	[1.87]*	[0.92]	[0.92]	[0.68]	[0.58]	[0.94]
log(Total Oil Income)	−0.361	−0.436	−0.206	−0.208	−0.235	−0.273	−0.194
	[3.03]***	[3.43]***	[2.74]***	[2.74]***	[2.65]***	[2.62]***	[2.07]**
Number of Previous Transitions	0.194	0.1	0.325	0.324	0.046	−0.044	
	[0.80]	[0.41]	[2.24]**	[2.26]**	[0.27]	[0.28]	
Inflation	2.093	2.026	4.926	5.063	2.096	2.112	
	[1.32]	[1.20]	[3.10]***	[2.92]***	[1.09]	[1.14]	
Military Regime in power	1.829	1.966	2.038	2.037	1.977	1.859	1.772
	[2.57]**	[2.43]**	[5.72]***	[5.69]***	[4.41]***	[4.19]***	[4.53]***
Income Inequality	−0.021	0.848	0.009	0.074	−0.019	−0.223	−0.238
	[0.54]	[2.02]**	[0.48]	[0.40]	[1.10]	[2.10]**	[2.63]***
Income Inequality Quadratic		−0.008		−0.001		0.159	0.169
		[2.00]**		[0.35]		[1.91]*	[2.37]**
Turning Point for Income Inequality		50.64 GINI		55.34 GINI		69.99% C.S.	70.48% C.S.
95% Confidence Intervals		[45.13, 56.16]		[6.59, 104.08]		[59.70, 80.27]	[61.39, 79.57]
Region Dummies	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES
Observations	594	594	1342	1342	1115	1115	1626

* significant at 10%; ** significant at 5%; ***significant at 1%.
All independent variables lagged by 1 period. Year dummies estimated but not shown; region dummies estimated but not shown.

significant. Meanwhile, Military Size remains negative and statistically significant. Column 4 again tests the Acemoglu and Robinson nonlinear hypothesis using the SIDD Gini. Although the signs are in the predicted direction, the inequality terms are not statistically significant either individually or jointly.

In Column 5 we control for income inequality using the Capital Share of Value Added, following Houle.[52] The sign on its coefficient is negative, as predicted by Boix. However, it is far from statistically significant. Military Size is negative and remains statistically significant. Column 6 tests the Acemoglu and Robinson hypothesis using the Capital Share of Value Added. Although the linear and quadratic terms are both statistically significant, their signs have flipped. The former is now negative and the latter is positive, contradicting the inverted-U shape hypothesis. Military Size remains negative but dips below the 10 percent level of statistical significance. This is due to the high degree of multicollinearity introduced by the Capital Shares quadratic term,

however.[53] Thus, in Column 7 we remove two of the statistically insignificant Model 6 covariates (STRA and Inflation). Military Size again becomes statistically significant.

In short, an increased coercive capacity under autocracy lowers the odds of democratic transition even after controlling for the degree of income inequality, regardless of how it is measured. This finding casts doubt on the contention that only in highly unequal countries do autocrats turn to repression to prevent democratization. Finally, there is no evidence for a monotonic, negative relationship between income inequality and democracy (as maintained by Boix), and the evidence for an inverted U-shape relationship between inequality and democracy (as maintained by Acemoglu and Robinson) is ambiguous given sensitivity to the measure used.[54] Consistent with Houle, there is little robust relationship between inequality and democratic transition.[55]

Conclusion

How does the strength of a coercive apparatus under autocracy influence the odds of democratization? While a broad range of literature posits a negative link between repression and democracy, empirical models of the determinants of democratization rarely include measures that capture this relationship. We generate a panel dataset with global scope from 1950–2002 to explicitly empirically assess whether coercive capacity is negatively associated with democracy. We find that an increased coercive capacity under autocracy has a strong negative impact on both a country's level of democracy as well as the likelihood of democratization if the country is autocratic. These results are robust to specification, endogeneity, and alternative explanations.

The analysis has important implications for research on the determinants of democratization. Whereas the recent tide of empirical research rejects the notion that there are fundamental prerequisites of democratic transition, our findings suggest that researchers should take pause before drawing this conclusion. Although the modernization, resource curse, and inequality hypotheses have been challenged in the recent empirical literature on the determinants of democratization, there remain a number of important theoretical contributions that have yet to be empirically tested. We focus on perhaps the most prominent remaining body of work that ties structural factors to democratization: the literature linking the institutionalization and robustness of a state's coercive apparatus to its prospects for transition. Our contribution to the literature is therefore twofold. First, empirical studies of democratic transition would do well to include measures of the coercive apparatus under autocracy in order to explicitly account for the link between repression and democratization. Second, researchers should go beyond the notion that democratic transition is random. The research agenda linking structural factors to democratic transition should be revived beyond the modernization hypothesis, the resource curse, and the link between high inequality and autocratic persistence.

The findings also have important policy implications. If the promotion of democratic transition and deepening are to have success, it is critical that researchers generate more conclusive evidence as to whether democratic transition is unpredictable or is instead

the culmination of a gradual process in which a country eventually develops the prerequisites of democratization. Our finding suggests that one crucial step in the transition process is the scaling down of the coercive apparatus. Researchers have argued that one way to go about doing this is to assert civilian control over the military and police force in preparation for a democratic transition.[56] The question, however, is why a powerful coercive apparatus would willingly relinquish power. Future studies that tackle this crucial question may take as their point of departure the literature on pacted transitions. Although there is frequently pressure from below for political reform, concrete steps toward democracy, such as scheduling elections and relinquishing control over the security apparatus, are often initiated by elites.[57] Moreover, a democratic transition is more likely if the elite manage to negotiate constitutional frameworks that continue to protect their interests after they exit or if they can increase the odds that they continue to hold power under democracy by being elected to office.[58] The military's outsized role in overseeing the political transition currently underway in Egypt clearly attests to this fact.

NOTES

1. Adam Przeworski, Michael Alvarez, José Antonio Cheibub, and Fernando Limongi, *Democracy and Development* (Cambridge: Cambridge University Press, 2000).

2. Seymour Martin Lipset, "Some Social Requisites of Democracy: Economic Development and Political Legitimacy," *American Political Science Review*, 53 (March 1959): 69–105; Dankwart Rustow, "Transitions to Democracy," *Comparative Politics*, 2 (April 1970): 337–64.

3. This contrasts to the literature on democratic consolidation, in which a number of structural factors beyond income have been tied to democratic survival. For example, Houle finds a link between lower inequality and democratic consolidation. See Christian Houle, "Inequality and Democracy: Why Inequality Harms Consolidation but Does Not Affect Democratization," *World Politics*, 61 (October 2009): 589–622.

4. One notable exception to the idea that democratization is random is Epstein et al., who find a strong link between income and democratization in contrast to Przeworski et al. See David Epstein, Robert Bates, Jack Goldstone, Ida Kristensen, and Sharyn O'Halloran, "Democratic Transitions," *American Journal of Political Science*, 50 (June 2006): 551–69.

5. Daron Acemoglu, Simon Johnson, James Robinson, Pierre Yared, "From Education to Democracy?" *American Economic Review*, 95 (May 2005): 44–49.

6. Stephen Haber and Victor Menaldo, "Does Oil Fuel Authoritarianism?" *American Political Science Review*, 105 (February 2011): 1–26.

7. Houle.

8. Michael Albertus and Victor Menaldo, "Gaming Democracy: The Role of Elite Welfare in Democratic Transitions," Unpublished manuscript, 2010. Further evidence for this finding in the context of land redistribution can be found in Michael Albertus, "Democracy and the Threat of Redistribution in Latin America," Unpublished manuscript, 2011.

9. Eva Bellin, "The Robustness of Authoritarianism in the Middle East," *Comparative Politics*, 36 (January 2004): 139–57.

10. Michael Ross, "Does Oil Hinder Democracy?" *World Politics*, 53 (April 2001): 325–61.

11. Daron Acemoglu and James Robinson, *Economic Origins of Dictatorship and Democracy* (Cambridge: Cambridge University Press, 2006); Carles Boix, *Democracy and Redistribution* (Cambridge: Cambridge University Press, 2003).

12. See, for example, Samuel Huntington, *Political Order in Changing Societies* (New Haven: Yale University Press, 1969); Charles Tilly, *Coercion, Capital, and European States* (Cambridge: Blackwell Press, 2001).

13. José Cheibub and Jennifer Gandhi, "Classifying Political Regimes," Unpublished manuscript, 2004. This variable is coded as a "1" if (1) the chief executive is elected, (2) the legislature is elected, (3) there is more than one political party, and (4) an incumbent has lost power and transferred it peacefully to a new leader.

14. See Jason Brownlee, *Authoritarianism in an Age of Democratization* (New York: Cambridge University Press, 2007); Stephen Haber, "Authoritarian Government," in Barry Weingast and Donald Witman, eds., *The Oxford Handbook of Political Economy* (Oxford University Press, 2006); Daniel Slater, "Iron Cage in an Iron Fist: Authoritarian Institutions and the Personalization of Power in Malaysia," *Comparative Politics*, 36 (October 2003): 81–101.

15. Ronald Wintrobe, *The Political Economy of Dictatorship* (New York: Cambridge University Press, 1998), pp. 33–34.

16. Bellin; Terence Lee, "The Armed Forces and Transitions from Authoritarian Rule," *Comparative Political Studies*, 42 (May 2009): 640–69; Philippe Schmitter, "Speculations about the Prospective Demise of Authoritarian Regimes," *Revista de Ciéncia Polîtica* (1985): 83–102.

17. Robert Dahl, *Democracy and Its Critics* (New Haven: Yale University Press, 1989), p. 250.

18. Bellin, p. 143.

19. Howard Lentner, *State Formation in Central America* (Connecticut: Greenwood Press, 1993), pp. 107–26.

20. Michael Albertus and Victor Menaldo, "If You're With Them You're Against Us: The Effect of Expropriation on Autocratic Survival," (forthcoming, *Comparative Political Studies*).

21. Alan Siaroff, *Comparing Political Regimes* (Toronto: University of Toronto Press, 2009), pp. 116–19.

22. See Haber; Gordon Tullock, *Autocracy* (Boston: Kluwer Academic Publishers, 1987).

23. Barbara Geddes, *Paradigms and Sand Castles* (Ann Arbor: University of Michigan Press, 2003); Eric Nordlinger, *Soldiers in Politics* (Englewood Cliffs, NJ: Prentice Hall, 1977).

24. For the literature on militaries on this subject, see, for example, Henry Bienen, *Armies and Parties in Africa* (New York: Africana Publishing, 1978). For case studies, see Bellin; H. E. Chehabi and Juan Linz, *Sultanistic Regimes* (Baltimore: Johns Hopkins University Press, 1998).

25. Bellin.

26. Alfred Stepan, *The Military in Politics: Changing Patterns in Brazil* (Princeton: Princeton University Press, 1971).

27. The results that follow are neither sensitive to omitting all of the zero values and logging (instead of logging after adding .01), or to using the unlogged version of this variable.

28. All of the results are robust to controlling for trade openness, urbanization, and the duration of the autocracy, which are never statistically significant.

29. See, for example, Epstein et al.; Lipset.

30. Mark Gasiorowski, "Economic Crisis and Political Regime Change: An Event History Analysis," *American Political Science Review*, 89 (December 1995): 882–97.

31. Gasiorowski.

32. Haber and Menaldo; on the resource curse, see, for example, Ross.

33. The coefficients are extracted from a cross-sectional regression estimated on country averages of the data between 1997 and 1999, the years that have the most coverage for Expenditures on Public Order and Safety. The results are robust to using different years, although previous years have significantly poorer cross-sectional coverage.

34. IMF Statistics, *IMF Government Finance Statistics Yearbook* (CD ROM, 2005). Expenditures on Public Order and Safety are not used directly in the main analysis because of poor time-series coverage. However, results from a pooled regression specified as in Column 3 of Table 1 using Expenditures on Public Order and Safety as the key independent variable instead of Military Size demonstrate that this measure is negatively and statistically significantly related to democracy ($p<.05$).

35. Cheibub and Gandhi.

36. The persistent autocracies in this region and beyond also display little variation in their Polity Scores; it thus makes little sense to graph the relationship between repression and regime type for these countries. See Bellin for a discussion of these cases.

37. The average T in these dynamic panel models is 27 and, thus, we do not worry about the potential bias introduced by lagging the dependent variable since Monte Carlo evidence from Judson and Owen show that, as T approaches 30, a fixed effect estimator performs as well or better than alternative approaches that use instrumental variables. See Ruth Judson and Ann Owen, "Estimating Dynamic Panel Data Models," *Economic Letters*, 65 (October 1999): 9–15.

38. Due to heteroskedasticity, we use a GMM approach with weighting matrix estimated by an Eicker-Huber-White robust covariance estimator. Estimating a dynamic model in this case would complicate

estimation because of endogeneity running from the predetermined lagged dependent variable and the dependent variable. However, a host of dynamic models in first differences without taking an instrumental variables approach returns materially similar results.

39. Cheibub and Gandhi.

40. Epstein et al.; Przeworski et al.

41. Przeworski et al. The coefficient for Per Capita Income gains statistical significance ($p<.10$) when Inflation is excluded, nearly doubling the number of observations, although it loses significance in subsequent models even with the exclusion of Inflation.

42. We note that if we control for country fixed-effects by utilizing a conditional logit model, log(Military Size) is still negative and highly statistically significant, despite the fact that only 30 percent of the countries in the dataset have experienced a switch to democracy. These results are available upon request.

43. We set the region as Latin America and the year equal to 1979.

44. We also tried controlling for international war participation with both a concurrent measure and with a running count of wars since 1950. Military Size was again unaffected.

45. We also tried controlling for the size of agriculture in the economy. Military size may be an indication of a strong welfare policy to children of landholders (for example, through officer appointments) rather than a force for repression, and this could hold back democratization because an elected regime would cut these benefits. Agricultural Size was statistically insignificant, and the main results were unchanged.

46. Acemoglu and Robinson; Boix.

47. Recent work indicates that elites may also face strong redistributive threats under autocracy. See Albertus and Menaldo, "If You're With Them You're Against Us," forthcoming.

48. See Boix, p. 76. For the Deininger and Squire data, see Klaus Deininger and Lynn Squire, "A New Data Set Measuring Income Inequality," *World Bank Economic Review*, 10 (August 1996): 565–91.

49. Salvatore Babones and Maria Jose Alvarez-Rivadulla, "Standardized Income Inequality Data for Use in Cross-National Research," *Sociological Inquiry*, 77 (January 2007): 3–22.

50. We exclude the Capital Share in the mining and petroleum sector because these sectors tend to be nationalized in most developing countries. Results are robust to including these sectors.

51. Acemoglu and Robinson.

52. Houle.

53. The Variance Inflation Factor for the linear term is 1129.50; for the quadratic term it is 406.84.

54. Acemoglu and Robinson; Boix.

55. Houle.

56. Charles Call, "War Transitions and the New Civilian Security in Latin America," *Comparative Politics*, 35 (October 2002): 1–20.

57. Guillermo O'Donnell and Philippe Schmitter, *Transitions from Authoritarian Rule* (Baltimore: Johns Hopkins University Press, 1986).

58. Albertus and Menaldo, 2010; Gabriel Negretto, "Choosing How to Choose Presidents," *Journal of Politics*, 68 (May 2008): 421–33.