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DOES DEMOCRACY PROMOTE THE RULE OF LAW?

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Recent studies find that democracy increases economic growth but often do not address through what channels such an effect could travel. This study considers whether or not democracy strengthens the rule of law, an institutional measure purported to increase economic growth. Utilizing a panel dataset from 1984 to 2007 for 127 countries and both fixed effect and dynamic GMM methodologies, we examine whether democracy promotes the rule of law. We generally find a short run positive influence upon the rule of law although effects are greatest for low income countries.

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JEL classification: O40, O50, O55

1. INTRODUCTION

Many studies point to the importance of institutions for economic growth, including Acemoglu *et al*. (2001), Hall and Jones (1999), Engermann and Sokoloff (1997), and Dollar and Kraay (2003).[1] Acemoglu *et al*. (2005) and Acemoglu (2010) provide surveys of this literature. North (1990) defines institutions as "the humanly devised constraints that shape human interaction." He asserts that institutions that secure property rights promote economic development. One specific component of institutions that has received attention is adherence to the rule of law. By "rule of law" we mean a judicial regime in which no one is above the law and everyone is equal before the law (Dicey, 1889). People abide by judicial decisions and people's day-to-day actions are generally lawful in that they do not conflict with legal codes. One reason to focus on the rule of law is its importance in protecting property and promoting productive activities. Rodrik *et al*. (2004) state that in principle the rule of law captures more elements

[*] We would like to thank an anonymous referee for very useful comments and suggestions.

[1] However, others see human capital as deeper determinants for institutions and economic growth. See Glaeser *et al*. (2004) and Lipset (1960) for further details.

describing institutional quality than do other measures.

Given this presumed importance, a question then arises as to why the rule of law is more prevalent in some countries than in others. Some have examined the effects of long-run historical factors such as the degree of European influence or geographic factors. These factors determine the type of institutions which then affect long-run income levels. Hall and Jones (1999) and Acemoglu *et al*. (2001) provide examples. We examine a more contemporaneous factor. Specifically, we consider whether democracy promotes the rule of law and so whether democratization could then improve the rule of law.[2] Using panel data estimation methodologies, recent studies show that democracy raises economic growth.[3] Our study explores whether promoting the rule of law could be a channel that explains these findings.

Barro (1996) considered a similar issue. He found that although greater maintenance of the rule of law is favorable to economic growth, he found little evidence that democracy promotes the rule of law. Our study differs from Barro's in several dimensions. First, Barro utilizes cross-sectional variation to identify long-run patterns. A possible problem of this specification could arise from omitted variable bias and reverse causality (Giavazzi and Tabellini, 2005). Second, a cross-country sample does not utilize the within country variation in the degree of democracy or adherence to the rule of law. A panel can exploit such variation. This could be especially important given Barro's application. His democracy variable comes from 1975 whereas his rule of law variable is from 1980. Therefore, he does not incorporate the post-1980 events into his analysis, including the large number of countries that democratized when the Soviet Union fell. Our study considers a panel dataset, spanning 1984 to 2010, and so considers these changes. Use of a panel also allows us to examine timing issues which were not feasible given Barro's approach. We consider short and long-run effects of democracy upon the rule of law. Perhaps democracy initially supports the rule of law but then the effects of democracy turn negative as rent-seeking becomes more frequent. Or, perhaps effects become stronger as democracies strengthen and uncertainty diminishes. As a final

[2] Other studies such as Tavares (2007), Musila (2007), and Rock (2007) consider how democracy affects the prevalence of corruption. We focus on the rule of law for two reasons. As stated, Rodrik *et al*. (2004) claim that the rule of law captures more elements determining institutional quality than do other measures. Two, although different institutional measures are correlated, they need not move in lockstep as meaningful differences can still arise. Brunei, Egypt, Ireland, and Oman all present examples where differences in corruption and rule of law measures substantively differed over time. Therefore, we do not presume that findings measuring associations between democracy and corruption necessarily apply to the rule of law or vice versa.

[3] See Papaioannou and Siourounis (2008), Giavazzi and Tabellini (2005), Rodrik and Wacziarg (2005) for examples and surveys of this literature. Earlier studies using cross-country samples failed to reach any consensus as to whether democracy increased economic growth. See Przeworski and Limongi (1993) for a survey of this earlier literature.

distinction from Barro's work, we examine whether the effects of democracy upon the rule of law differ across income levels. Perhaps democracy's effect upon the rule of law differs between poor and rich countries and we later cite theoretical work suggesting why this could occur.

The remainder of the paper is organized as follows: Section 2 provides more formal discussion, citing different views as to what extent democracy promotes the rule of law and why effects could not only differ over time but across different stages of development. Section 3 provides a detailed description of our data. The methodology is outlined in Section 4. The results are presented in Section 5. Finally, Section 6 summarizes the core findings of this study and provides suggestions for future work.

2. THEORETICAL CONTEXT

Several papers have formally considered how democracy could influence the rule of law or property rights more generally. Rivera-Batiz (2002) shows that stronger democratic institutions influence governance by constraining the actions of corrupt bureaucrats. Since officials are less able to take such illegal actions, one can view this outcome as a strengthening of the rule of law. On the other hand, Acemoglu and Johnson (2006) create a model where property rights do not improve following democratization as the previous elite spend resources to retain the de facto status quo. They provide the example of the American South following the Civil War and the failure of Reconstruction. Suffrage was nominally extended to blacks. This expansion of the franchise could be considered an increase in the degree of democracy. Nevertheless, they enjoyed few legal protections and their property rights were insecure. White violence against them was tolerated even when not generally encouraged and so property rights remained similar to what they were before the Civil War. That is, the expansion of suffrage did not expand property rights or better promote the rule of law, at least for the former slaves.

Hoff and Stiglitz (2004) consider another case where democratization might not promote the rule of law. They create a model where agents choose whether or not to promote the rule of law. The rule of law fails to materialize when a sufficient mass of agents oppose it. They use their model to show why the rapid privatization that occurred in the countries arising out of the demise of the Soviet Union failed to establish strong property rights. With many agents having few initial resources or resources that could easily be hidden outside the country, many agents then had less incentive to promote strong property rights but instead wanted a system where it was easier to strip property away from others. In this setting, failure to promote a rule of law in a democracy becomes individually optimal even if it is detrimental for society.

Olson *et al*. (1996) claim that an autocrat with a long time horizon has incentives to protect property rights because this increases national income which in turn increases tax revenue. Although long-lasting democracies, they claim, better secure property rights

than do autocracies or new democracies, quickly instituting a *longstanding* democracy is not feasible for an existing autocratic country. If an autocrat believing he still had a long tenure promoted the rule of law, then the rule of law might not be that improved under a democracy should the autocrat be toppled (despite his previous confidence in his position).

In fact, property rights such as the rule of law could actually weaken. Zakaria (2004) is wary that property rights will improve under new democracies given that such fledgling democracies can create political instability and greater uncertainty. Democratic leaders of such regimes might not only have the political standing to institute salutary institutional reforms, but the resulting uncertainty could even weaken institutions that promote economic growth. He argues that the best way to improve institutions that promote long run growth is under a benevolent dictator as opposed to a potentially chaotic democracy.

Of course, democracy could also have more nuanced effects upon property rights. Acemoglu and Robinson (2000) create a model where the existing political elite enjoys economic rents. A potential economic rival has a better production technology that can increase aggregate income. The model shows that the current rulers will block the adoption of the new technology if its adoption threatens their political power but not if it merely diminishes their economic rents since maintaining political power allows them to tax the rents stemming from the new technology. Although the model explicitly examines the adoption of new technology, Acemoglu and Robinson (2000) also discuss how such considerations could prevent the adoption of economic policies and institutions that also raise income. The reason is that such policies threaten the political power of the current leaders. As with innovation, such leaders would allow better enforcement of property rights as long as they would retain political power and so be able to tax the increases in income that better enforced property rights would promote. Applying a similar reasoning to our application, democracy could strengthen the rule of law in those cases where a weakened rule of law had politically benefitted the previous rulers. With their removal, the rule of law could increase under new leaders. On the other hand, democracy would have little impact upon the rule of law in those countries where the former political elite had already promoted the rule of law, presumably because they did not feel their political power was threatened. Assuming that the rule of law promotes higher income, this suggests that democracy should have stronger effects on the rule of law in poorer countries.[4] This is a testable proposition and our paper will consider to what extent the benefits of democratization upon the rule of law are greater in poor countries.

Provided that democracy does influence the rule of law, another related issue

[4] Sunde *et al*. (2008) also considered reasons why the association between democracy and the rule of law is not identical across countries. They found that democracy is associated with greater adherence to the rule of law when inequality is lower.

concerns timing and sustainability. A priori, no clear outcome surfaces. If effects are immediate and sustained, then the rule of law should increase both in the short and long run. Another possibility is that democracy strengthens the rule of law in the long run but weakens under nascent democracies as they transition to greater political stability. An opposite outcome would see the rule of law increase in the short run but not in the long run. Perhaps democracy does initially increase the rule of law but strife among various political factions could then weaken it as they undercut one another to gain political power. Or if nascent democratic governments cannot meet the populace's expectations after a few years, public protests could also weaken the rule of law. A third possibility is that analysts could initially score new democracies higher across institutional categories in the anticipation that governance will improve. If such improvements do not occur then subsequent ratings could return to previous levels, thereby raising *measured* rule of law scores in the short run but not in the long run.

This paper considers these differing views by addressing three questions. First, does democracy raise or lower the rule of law? Second, does this effect differ between rich and poor countries? Finally, do effects upon the rule of law differ between the short run and long run?

3. DATA

We analyze annual data from 127 countries during the period 1984-2007. Data for the rule of law only begins in 1984. We use annual data to most precisely pinpoint changes in political regime. We could have also averaged data over decades in order to "remove" business cycle effects. However, by averaging, we would have then removed some of the within-country variation in the sample.[5] Attanasio *et al*. (2000) explain why one could prefer estimating annual data rather than first averaging the data.

The democracy and rule of law variables are described below. Part A of the Appendix provides definitions and sources of the data. Table 1 lists all the countries included in our sample and categorizes their political regime according to Papaioannou and Siourounis (2008).

Table 1. Regime Classification for the Years 1984 to 2007

No.	Country	Classification by PS	Democratization Event
1	Albania	Democratization: 1992	Partial
2	Algeria	Always an Autocracy	
3	Angola	Always an Autocracy	
4	Argentina	Always a Democracy	

[5] As a robustness check, robustness check, however, we will average over three-year windows.

5	Armenia	Democratization: 1998	Partial
6	Azerbaijan	Always an Autocracy	
7	Australia	Always a Democracy	
8	Austria	Always a Democracy	
9	Bahamas	Always a Democracy	
10	Bahrain	Always an Autocracy	
11	Bangladesh	Democratization:1991	Partial
12	Belarus	Always an Autocracy	
13	Belgium	Always a Democracy	
14	Bolivia	Always a Democracy	
15	Botswana	Always a Democracy	
16	Brazil	Democratization:1985	Full
17	Brunei	Always an Autocracy	
18	Bulgaria	Democratization:1991	Full
19	Burkina Faso	Always an Autocracy	
20	Cameroon	Always an Autocracy	
21	Canada	Always a Democracy	
22	Chile	Democratization:1990	Full
23	China	Always an Autocracy	
24	Colombia	Always a Democracy	
25	Congo, Dem. Rep.	Always an Autocracy	
26	Congo, Republic of	Always an Autocracy	
27	Costa Rica	Always a Democracy	
28	Cote d`Ivoire	Always an Autocracy	
29	Croatia	Democratization: 2000	Full
30	Cuba	Always an Autocracy	
31	Cyprus	Always a Democracy	
32	Czech Republic	Democratization: 1993	Full
33	Denmark	Always a Democracy	
34	Dominican Republic	Always a Democracy	
35	Ecuador	Always a Democracy	
36	Egypt	Always an Autocracy	
37	El Salvador	Democratization:1994	Full
38	Estonia	Democratization: 1992	Full
39	Ethiopia	Democratization:1995	Partial
40	Finland	Always a Democracy	
41	France	Always a Democracy	
42	Gabon	Always an Autocracy	
43	Gambia, The	Reverse Transition:1994	
44	Ghana	Democratization:1996	Full
45	Greece	Always a Democracy	
46	Guatemala	Democratization:1996	Partial

47	Guinea	Always an Autocracy	
48	Guinea-Bissau	Always an Autocracy	
49	Guyana	Democratization:1992	Full
50	Haiti	Always an Autocracy	
51	Honduras	Always a Democracy	
52	Hungary	Democratization:1990	
53	Iceland	Always a Democracy	
54	India	Always a Democracy	
55	Indonesia	Democratization:1999	Partial
56	Iraq	Always an Autocracy	
67	Ireland	Always a Democracy	
68	Israel	Always a Democracy	
69	Italy	Always a Democracy	
60	Jamaica	Always a Democracy	
61	Japan	Always a Democracy	
62	Jordan	Always an Autocracy	
63	Kazakhstan	Always an Autocracy	
64	Kenya	Always an Autocracy	
65	Korea, Republic of	Democratization:1988	Full
66	Latvia	Democratization: 1993	Full
67	Liberia	Always an Autocracy	
68	Libya	Always an Autocracy	
69	Lithuania	Democratization: 1993	Full
70	Luxembourg	Always a Democracy	
71	Madagascar	Democratization:1993	Partial
72	Malawi	Democratization:1994	Partial
73	Malaysia	Always Intermediate	
74	Mali	Democratization:1992	Full
75	Malta	Always a Democracy	
76	Mexico	Democratization:1997	Full
77	Moldova	Democratization: 1994	Partial
78	Mongolia	Democratization:1993	Full
79	Morocco	Always an Autocracy	
80	Mozambique	Democratization:1994	Partial
81	Namibia	Always a Democracy	
82	Netherlands	Always a Democracy	
83	New Zealand	Always a Democracy	
84	Nicaragua	Democratization:1990	Partial
85	Niger	Democratization:1999	Borderline
86	Nigeria	Democratization:1999	Partial
87	Norway	Always a Democracy	
88	Oman	Always an Autocracy	

89	Panama	Democratization:1994	Full
90	Papua New Guinea	Always a Democracy	
91	Paraguay	Democratization:1993	Partial
92	Peru	Always a Democracy	
93	Philippines	Democratization:1987	Full
94	Poland	Democratization:1990	
95	Portugal	Always a Democracy	
96	Qatar	Always an Autocracy	
97	Romania	Democratization:1990	Full
98	Saudi Arabia	Always an Autocracy	
99	Senegal	Democratization:2000	Full
100	Sierra Leone	Always an Autocracy	
101	Singapore	Always an Autocracy	
102	Slovakia	Democratization: 1993	Full
103	Slovenia	Democratization: 1992	Full
104	Somalia	Always an Autocracy	
105	South Africa	Democratization:1994	Full
106	Spain	Always a Democracy	
107	Sri Lanka	Always a Democracy	
108	Sudan	Always an Autocracy	
109	Suriname	Democratization:1991	Partial
110	Sweden	Always a Democracy	
111	Switzerland	Always a Democracy	
112	Syria	Always an Autocracy	
113	Tanzania	Democratization:1995	Partial
114	Togo	Always an Autocracy	
115	Trinidad &Tobago	Always a Democracy	
116	Tunisia	Always an Autocracy	
117	Turkey	Always a Democracy	
118	Uganda	Always an Autocracy	
119	Ukraine	Democratization: 1994	Partial
120	United Arab Emirates	Always an Autocracy	
121	United Kingdom	Always a Democracy	
122	United States	Always a Democracy	
123	Uruguay	Democratization:1985	Full
124	Venezuela	Always a Democracy	
125	Yemen	Always an Autocracy	
126	Zambia	Democratization:1991	Partial
127	Zimbabwe	Reverse Transition 1987	

The rule of law [RULE] variable comes from the International Country Risk Guide (ICRG)[6] from Political Risk Services. This index reflects the degree to which the citizens of a country are willing to accept established institutions to make and implement laws and adjudicate disputes (Sunde *et al*., 2008). The ratings range from 0 to 6, where higher scores indicate "sound political institutions, a strong court system, and provisions for an orderly succession of power" (see, Knack and Keefer, 1995). According to the ICRG, the rule of law (law and order) is constructed as follows:

"*Law and Order are assessed separately, with each subcomponent comprising zero to three points. The Law subcomponent is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating - 3 - in terms of its judicial system, but a low rating -1- if it suffers from a very high crime rate or if the law is routinely ignored without effective sanction (for example, widespread illegal strikes).*"

Democracy [DEM] comes from the dataset compiled by Papaioannou and Siourounis (2008). They do not proffer any specific definition of democracy but they do list four criteria that a democracy must have: free, competitive, and fair elections; elections involving actual transfers of power (as opposed to the military, for example, setting aside the results of an election); broad suffrage in that no sizable part of the population is excluded as in South Africa during apartheid; and political stability. Using a variety of sources, PS then ascertain when a democratization episode occurred. They further divide democracies into "full" and "partial" ones. A full democracy occurs when Freedom House designates the country as fully free AND when the country has a Polity IV score above seven (on a -10 to +10 scale) on its composite democracy index.[7] See Marshall and Jaggers (2004) for a description of the Polity IV political data.[8] Therefore,

[6] While the ICRG variables and their counterparts from other sources such as the World Governance Indicators have been widely used in the literature, Glaeser *et al*. (2004) consider these variables as inappropriate to measure institutions such as adherence to the rule of law. They claim that these variables are outcome measures and do not measure institutions North (1990) defines as *constraints* on human interactions. More to the point, they claim that these measures do not code dictators, who choose to respect property rights, any differently than democratically elected leaders who have no choice but to respect them. However, we consider these variables as suitable proxies for institutions because they still provide constraints within society. For example, an impartial judicial system whose rulings are enforced still provides constraints for the majority of the populace regardless of whether it was established under an autocracy or a democracy.

[7] The Freedom House measure contains two indices: political rights (opportunities to vote in free and competitive elections) and civil liberties (freedom of speech, of the press, etc). Each is measured on a 1 to 7 integer scale with higher values denoting less political freedom. Freedom House then averages these measures to classify countries as free (2.5 or below), partially free (3.0 to 5.0), and not free (5.5 and above).

[8] The PS data only extends to 2003. Therefore, in order to complete the missing years in our sample period we follow their methodology. Most countries do not change status since few countries lost democratic freedoms after 2003. However, an exception is Thailand that suffered a coup in 2007. Therefore, we removed

DEM_{it} equals one for country *i* at time *t* if country *i* is either fully or partially democratic in time *t*. $DEM_{it} = 0$, if country is neither partially nor fully democratic in time *t*. We will later examine full and partial democracies individually. Finally, the democracy must be sustained to be classified as such according to PS. Zimbabwe, for example, is not considered to be a democracy pre-1987 because it suffered a reversal during that year.[9] This also means that for any country *i*, DEM_{it} is always equal to one for "always democratic" countries, always equal to zero for "never democratic" countries, and equal to zero for $t < d$ but equal to one for $t \geq d$ where *d* is the year that democratization occurred. Table 1 provides the sample of countries along with their political status.

We use the PS classification for several reasons. First, it can be used in a panel since *DEM* varies over time. Second, the incorporation of both the Freedom House and the Polity IV measures creates a stricter standard of democracy thereby diminishing the presence of ambiguous cases. On the other hand, this classification is still built upon these commonly used measures in the growth literature. Not only are they familiar within this literature but their widespread use makes comparisons with other studies more straightforward. Of course, a disadvantage of using dummy variables relative to a measure that can take on several values is that dummy variables are more coarse measures of political change. However, a benefit is that political classifications of countries are often given as "either/or" and so dummy variables get to the heart of this dichotomy. It is also not clear how one should interpret indices such as the Freedom House indices. Does the 1-7 Freedom House categorization of political rights merely represent ordinal groupings? Or, can its increments be taken literally in that, for example, the move from 3 to 2 represents the same degree of movement towards democracy as a move from 4 to 3? If the Freedom House categorization is merely ordinal, then the direct use of these indices to measure change becomes more problematic.

Therefore, due to these concerns we focus on the PS classification but will later consider other measures as robustness checks such as the Freedom House average of the civil liberties and political rights sub-indices, denoted as FH, and the Polity IV measure, denoted as POLITY. Use of these additional variables can also account for temporary democratic episodes that the PS measures miss (since a country must remain democratic to be classified as a democracy).

Table 2 contains descriptive statistics and correlations across the key variables. Another control variable included in many specifications is the natural log of real GDP per capita [GDP], taken from the Penn World Tables, version 6.3. This variable is used

Thailand from the set of democracies. We also removed Pakistan since the country underwent serious political challenges throughout our sample period.

[9] Nevertheless, we retain the PS classification through 2007 even though more recent events could cause a country to revert to autocracy. For example, Mali experienced a coup in 2012 and the outcome of this event is currently unclear.

as a proxy for the level of economic development. Other control variables included as robustness checks will be discussed below.

Table 2. Summary Statistics and Correlation Matrices

Panel A: Summary Statistics

Variable	Observations	Mean	Maximum	Minimum	Std. Dev.
Rule	2843	3.65	6	1	1.52
Dem	2946	0.57	1	0	0.49
GDP	2943	8.72	11.38	5.03	1.20
FH	2942	3.46	6	0	1.98
POLITY	2687	2.84	10	-10	3.34

Panel B: Correlation Matrices

Correlation	Rule	Dem	GDP	FH	POLITY
Rule	1.00				
Dem	0.30	1.00			
GDP	0.61	0.32	1.00		
FH	0.43	0.83	0.48	1.00	
POLITY	0.30	0.85	0.34	0.89	1.00

Before proceeding with the formal methodology, a cursory look at the data shows that only two cases arise where the rule of law index falls by over one unit in the first few years after democratization. RULE goes from 3 in 1998 (the year prior to becoming a democracy) in Nigeria to 1.5 in 2002. For Mexico, RULE goes from 3 in 1996 to 2 in 1999. In all other cases, RULE either increases or remains stable. Therefore, democracy does not appear to generally weaken the rule of law although to what extent it strengthens the rule of law remains less clear and will be examined below.

4. METHODOLOGY

We examine the within-country associations between democracy and the rule of law and so consider a cross-country panel of annual data. We exploit a difference-in-difference specification in which reforming countries are the "treated" group. Countries that did not go through this reform are the "control" group.[10] Part B of the Appendix describes the difference-in-differences methodology in greater detail and shows how our specification coincides with it. The equation we estimate is:

[10] Giavazzi and Tabellinig (2005) and Rodrik and Wacziarg (2005) also use similar econometric methodologies to identify the effects of political reforms on economic performance outcomes.

$$RULE_{it} = \beta_{0i} + \beta_{1t} + \beta_2 X_{it} + \beta_3 RULE_{it-1} + \beta_4 DEM_{it} + \varepsilon_{it}, \quad (1)$$

where i ($i = 1,\cdots,N$) and t ($t = 1,\cdots,T$) subscripts denote country and year, respectively. The intercepts β_{0i} and β_{1t} indicate country and year fixed effects in order to capture the time-invariant country-specific heterogeneity and the unobservable country-invariant time effects. RULE is the rule of law and DEM denotes democracy. Matrix X will initially be empty but we later control for other explanatory variables. The residual has zero mean but not necessarily identical variance across countries. We also estimate Equation (1) using cluster-robust standard errors.[11]

Of note in Equation (1) is that the right hand side contains the lagged dependent variable. We include the lag for two reasons. First, there is likely to be persistence in the rule of law even after controlling for time-invariant factors. Second, RULE is bounded between zero and six, making it impossible for countries at zero to move downward or for countries at six to move upwards. Therefore, future movements in RULE depend on its current value and so we control for $RULE_{it-1}$ when examining $RULE_{it}$. Unfortunately, the presence of a lagged dependent variable increases the potential for biased coefficient estimates.[12] Therefore, we also employ a dynamic GMM estimation model, the Arellano and Bond (1991) first-difference GMM estimator, to test the robustness of our findings where lagged RULE and DEM are considered endogenous variables. Additionally, we compute robust standard errors that allow for heteroskedasticity and serial correlation within countries.

A dynamic generalized method of moments (GMM) estimation offers advantages to OLS (Edison *et al*., 2002). First, by differencing the model, it eliminates any biases generated from country-specific and time-invariant factors (which is also advantage of the "fixed effects" specification found in Equation (1)). Second, using lagged values of the endogenous explanatory variables, it addresses the potential endogeneity of these variables. In our model we use the second lags of these variables in levels to serve as instruments for the first differences.[13] Third, it controls for any biases generated by including a lagged dependent variable on the right hand side. The consistency of the dynamic generalized method of moments depends on two critical assumptions: a) the

[11] Bertrand *et al*. (2004) find that use of such standard errors adequately accounts for serial correlation in the residuals.

[12] However, Judson and Owen (1999) report that biases from the inclusion of lagged dependent variables on the right hand side are less than 3% when using more than 20 periods. We have over 20 years of data for many of the countries included in our sample. Nickell (1981) shows that biases from the inclusion of lagged dependent variables on the right hand side are small when the time dimension goes to infinity.

[13] We also consider the second and third lags in a subsequent specification. We do not consider further lags to keep the approach parsimonious and because Hansen test statistics approach one, raising concerns about the appropriateness of so many instruments in the model.

validity of the instruments and b) the error term is not serially correlated. In order to test the above assumptions we perform the Sargan and the serial correlation tests, respectively. The Sargan test for over-identifying restrictions is under the null hypothesis that instruments are valid and suitable, while the serial correlation test takes as the null that the error term is not serially correlated. Where relevant, we present the p-values from these tests in our tables. We fail to reject the respective null hypotheses in all of them.

An important assumption when using a difference-in-difference specification is that the treatment - democratization in our case - is random in the sense that the occurrence of the treatment is not driven by omitted factors that also influence the outcome - in our case, the rule of law. In more controlled settings, one randomly assigns subjects into treatment and control groups to ensure that the assumption holds. Obviously, such direct randomization is not possible for countries' political reforms. The issue then becomes to what extent can one control for factors that could affect both democracy and the rule of law so that any remaining influences upon the rule of law do not matter for whether democratization occurs. If no such influences matter for democratization then the democracy variable is uncorrelated with the residual and so the coefficient estimate is unbiased.

With the inclusion of fixed effects, all time invariant factors are implicitly captured, nullifying the potential for such factors as history, geography, or culture to skew results. Nevertheless, it could be possible for some time-varying factor to not only affect the rule of law but the occurrence of a democratization episode. For example, a terms of trade shock could bring political discontent with the current autocratic regime sparking political reform. Fearing overthrow, the regime could decide to launch various institutional reforms, including reforms affecting the rule of law. If such measures do not prevent the regime's overthrow in favor of a democracy then the rule of law could improve as a democratization occurs even if the latter does not cause the former.

Controlling for the lag of the rule of law mitigates this problem somewhat because this lag implicitly captures the *t*-1 and previous shocks that could affect the rule of law at time *t*. Of course, it is still possible that a time *t* shock affects democracy at time *t* and the rule of law at time *t*. The difference GMM estimator can again help to address this problem. As stated above, this methodology first differences Equation (1) and then estimates the difference equation. The residual from this specification μ_{it} equals the difference of the residuals in the baseline equation: $\mu_{it} = \varepsilon_{it} - \varepsilon_{it-1}$. When estimating the difference equation, the *t*-2 lags (and perhaps prior lags as well) of the levels are used to instrument for the endogenous variables. The presumption in our case is that $RULE_{i,t-2}$ and $DEM_{i,t-2}$ are valid instruments for $\Delta RULE_{i,t}$ and $\Delta DEM_{i,t}$ where $\Delta X_{i,t} = X_{i,t} - X_{i,t-1}$ because the ε_{it}'s are assumed to be *i.i.d.* and so they as well as their diffrences (that is, the μ_{it}'s) are orthogonal to all variables determined before *t*-1 such as $RULE_{i,t-2}$ and $DEM_{i,t-2}$. Therefore, a time *t* shock that affects both

democracy and the rule of law should not bias coefficient estimates from the difference-GMM estimation.

The appropriateness of using a difference-in-differnces methodology also requires that the treatment and control groups do not behave differently aside from the effect of the imposition of the treatment in one group and its absence in the other. Such an approach would not be applicable if, for example, the rule of law evolved differently across the two groups. However, Figure 1 shows that the evolution of the rule of law was similar between the control group (comprising both the autocracies and the democracies) and the treatment group (comprising the transition countries that underwent democratization within the sample period). Although the level of the rule of law differs, its evolution over time within the two groups appears very similar, providing further support that the application of a difference-in-differences methodology is appropriate.

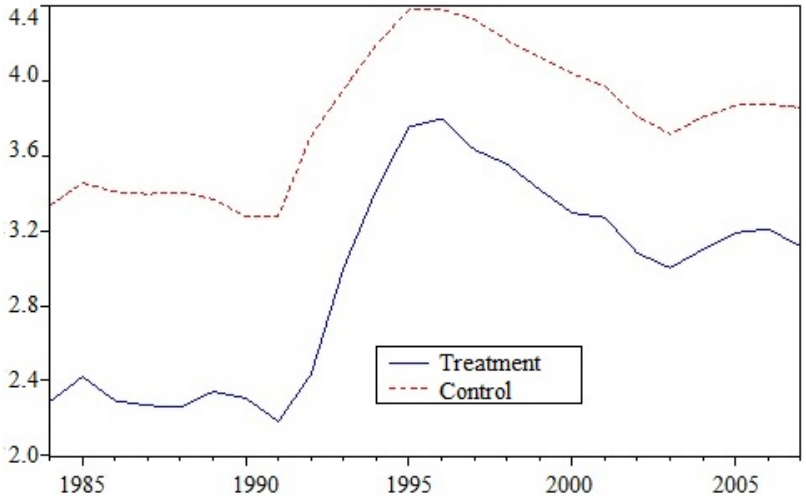

Figure 1. Average Rule of Law for Treatment and Control Group

Obviously, the success of the above steps in measuring the causal impact of democracy upon the rule of law depends upon the appropriateness of applying the assumptions behind these methodologies to our issue. We acknowledge that such concerns temper the strength of our findings.

Equation (1) represents our baseline specification. However, to address other issues we also consider the following extensions.

Full Versus Partial Democratizations

Our democratization variable DEM does not distinguish full democracies from partial ones. However, do further democratic reforms improve the rule of law relative to initial steps toward democracy? Barro (1996) shows that partial democracies have higher growth rates than do full democracies. To address this issue, we construct two new (dummy) variables. *DEM_P* equals one for partial democracies only and *DEM_F* equals one for full democracies only. Of course, $DEM\_P + DEM\_F = DEM$ for all observations. The baseline specification becomes:

$$RULE_{it} = \beta_{0i} + \beta_{1t} + \beta_2 X_{it} + \beta_3 RULE_{it-1} + \beta_4 DEM\_P_{it} + \beta_5 DEM\_F_{it} + \varepsilon_{it}. \qquad (2)$$

If β_4 and β_5 differ, then the association between democracy and RULE depends upon the degree of democracy.

Differences Across Income Levels

It is also possible that the effects of democracy upon the rule of law differ across income levels. Rodrik and Wacziarg (2005) find that democracy is more beneficial upon growth in low income countries. The discussion of section 2 referenced Acemoglu and Robinson (2000) and considered why democracy could raise the rule of law more in poorer countries, namely because the reason these countries are poor is that the political elite had blocked such reforms in the first place. Therefore, democratizations in poor countries should have a greater influence upon the rule of law than democratizations in richer countries where, presumably, the previous leaders had already (at least somewhat) promoted the rule of law.

Table 3 presents the change in the rule of law score for democratized countries in each region of the world between 1984 and 2007. It also reports the average rule of law score for the 5 years before and after democratization (or for fewer years for the countries where data is not available). For some countries the rule of law score went up and for others down. However, it appears that the effects of democracy have greater improvements on the rule of law score for the poorer, Sub-Saharan African countries. We will consider this more formally below when we interact *DEM* with the natural logarithm of income per capita. A negative coefficient upon this interaction term would imply that democracy is more able to promote the rule of law in poorer as opposed to richer countries. Moreover, we will also interact *DEM* with SSA to ensure that the income variable is not merely a proxy for the many poor countries of this region.

Table 3. Average Rule of Law Score and Change in Rule of Law for Democratized Countries between the Period 1984-2007

East Asia and Pacific				Europe and Central Asia				Latin America and Caribbean				Sub-Saharan Africa			
Country	A	B	C	Country	A	B	C	Country	A	B	C	Country	A	B	C
Indonesia	2	3.2	1.5	Albania	3.7	2.9	-2.1	Brazil	3.5	4	-1.58	Ethiopia	1.7	4.9	1.7
Korea, R	2.8	2	2	Bulgaria	5	5	-2.5	Chile	4	4.1	1	Ghana	3	2.7	1.5
Mongolia	2.1	3.9	3	Hungary	5	5	-1	El Salvador	1.4	3	0.5	Madagascar	3.2	2.8	-1.5
Philippines	1	1	1.5	Poland	4	5.1	0.5	Guatemala	2.2	2.3	0.5	Malawi	2	3.7	1
Thailand	3.7	4.8	-0.5	Romania	2	3.8	2	Guyana	1	2.8	1	Mali	2	2.8	1
				Armenia*	-	3	-0.1	Mexico	3	2.2	-1	Mozambique	1.7	2.7	0
				Croatia	5	5	0	Nicaragua	2	2.4	3	Niger	2	2	-2
				Czech Rep.*	-	5.7	0	Paraguay	2.4	4	0	Nigeria	3	2.31	1
				Estonia*	-	-	0	Suriname	1	1.7	2	Senegal	5	5	1
				Latvia*	-	-	0.7	Uruguay	3	3	-0.5	South Africa	1.7	3.4	-0.5
				Lithuania*	-	-	0					Tanzania	4	4.9	2
				Moldova*	-	-	0					Zambia	1.9	2.7	2
				Slovakia*	-	5.6	-1.6								
				Slovenia*	0	-	-0.5								
				Ukraine	5	4.6	0								

Notes: Columns A and B denote the average Rule of Law score for the 5 years before and after democratization; or fewer if data is not available. Columns C denote the Change in rule of Law (of each country) between the first year and last year in our sample. * Denotes transition countries were data was not available prior democratization. To save space, the values for Iran (MENA) and Bangladesh (SA) are not reported on panel A. However, the corresponding values for each column (A,B,C) are 4.86, 4.66, 2.34 and 1, 2.01, 1.625, respectively.

Short Run Versus Long Run Effects.

It is also possible that the effects of democratization upon the rule of law are not instantaneous but appear gradually over time. Therefore, we construct two dummy variables based on the variable *DEM*: *DEM_SHORT* and *DEM_LONG*. If a democratization event occurs in country *i* at time *t*, then $DEM\_SHORT_{is} = 1$ for $t \leq s \leq t+5$ and $DEM\_SHORT_{is} = 0$ otherwise. $DEM\_LONG_{is} = 1$ for $t+5 < s$ and $DEM\_LONG_{is} = 0$ otherwise. *DEM_SHORT* is presumed to capture transitional effects from democratization upon the rule of law whereas *DEM_LONG* is presumed to capture longer run effects.

5. RESULTS

Table 4 presents results from our initial specifications. Column 1 provides the simplest specification and contains the full sample. The coefficient upon RULE is 0.10, statistically significant at the 5% level. Column 2 changes the control group by omitting all the countries that were democratic throughout the sample period from 1984 to 2007. The effect of democratization upon the rule of law is now compared to only those countries that remained nondemocratic (as opposed to those that remained nondemocratic or were democratic throughout the sample period as in column 1). Nevertheless, the coefficient upon DEM barely changes. Column 3 shows that the results in column 1 are also robust to the removal of the formerly socialist countries. Giavazzi and Tabellini (2005) remove these countries due to the very special circumstance, namely the fall of the Soviet Union, accompanying democratization. As before, the coefficient upon RULE does not greatly change. Columns 4-6 repeat the specifications in the first three columns but include the natural log of GDP per capita (GDP) as a proxy for the level of development. Coefficient estimates upon DEM remain robust and change little.[14]

To put the coefficient estimates into context, consider a country that democratizes. A coefficient estimate of 0.10 predicts that RULE increases by 0.10 points. This change is not large since RULE ranges from zero to six with a standard deviation of 1.5. However, this standard deviation partly stems from cross-country variation. Taking the standard deviation of RULE for each country and then averaging across countries produces a value of 0.7. That is, 0.7 is the average standard deviation of RULE for each country. Therefore, a change in RULE of 0.10 represents a change of roughly 15% of

[14] We also added the adult (over 15) literacy rate, government consumption as a percentage of GDP, and the population growth rate as additional controls to account for human capital and other factors commonly considered in growth regressions. When including these controls, the coefficient on DEM remained robust despite losing observations due to missing variables.

the average within country standard deviation. This magnitude suggests that democratization can positively affect the rule of law but that one should not expect "miraculous" improvements in the rule of law either. Democratization helps but is not a panacea.

Table 4. Panel Data Regressions (Annual), 1984-2007
Dependent Variable is the Rule of Law, RULE

	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect
Sample of Countries	ALL	No always democratic	No socialist countries	ALL	No always democratic	No socialist countries
Lagged RULE	0.84 (0.009)***	0.83 (0.01)***	0.84 (0.01)***	0.84 (0.09)***	0.83 (0.01)***	0.84 (0.01)***
DEM	0.10 (0.04)**	0.10 (0.04)**	0.12 (0.04)**	0.10 (0.04)**	0.10 (0.04)**	0.12 (0.05)**
GDP				0.01 (0.04)	0.006 (0.05)	0.01 (0.05)
Observations	2710	1733	2386	2707	1730	2386
Number of countries	127	84	114	127	84	114
R-squared (within)	0.82	0.83	0.82	0.82	0.83	0.82

Notes: White period standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All Columns include year fixed effects, country fixed effects, and regional trends to account for dynamic heterogeneity across regions.

As explained above, we use annual data to best pinpoint democratization events. But problems could also arise with annual data. Short run fluctuations could weaken associations or could be mistaken for more permanent effects of democratization. Panel A of Table 5 repeats the specifications of Table 4 but considers three-year averages.[15] Instead of 24 annual periods, we now have eight 3-year windows. Such a specification could also mitigate problems of serial correlation that are more prevalent when using annual data. Nevertheless, the coefficients upon *DEM* remain positive and statistically significant. Panel B presents the coefficient estimates upon *DEM* when the sample is divided into five, five-year windows.[16] Again, the coefficient upon *DEM* is

[15] When averaging over the three year window, DEM no longer takes values of only zero or one. DEM can also take on values of 2/3 and 1/3 if the country democratizes in the second or third year, respectively, of the three year window.

[16] The periods are: 1984-88, 1989-93, 1994-98, 1999-2003, and 2004-07 and so the last window has four

positive and statistically significant. Unreported coefficients in panel B are similar to those of panel A.

Table 5. Panel Data Regressions Using Longer Windows
Dependent Variable is the Rule of Law, RULE

Panel A: Coefficient Estimates using Three Year Averages						
	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect
Sample of Countries	ALL	No always democratic	No socialist countries	ALL	No always democratic	No socialist countries
Lagged RULE	0.44	0.46	0.44	0.45	0.47	0.44
	(0.03)***	(0.03)***	(0.03)***	(0.03)***	(0.03)***	(0.03)***
DEM	0.39	0.24	0.42	0.39	0.25	0.43
	(0.17)**	(0.11)**	(0.11)***	(0.10)**	(0.11)**	(0.12)***
GDP				0.07	0.17	0.13
				(0.11)	(0.13)	(0.12)
Observations	929	667	827	929	667	827
Number of countries	127	91	105	127	91	105
R-squared (within)	0.47	0.50	0.47	0.48	0.50	0.47
Panel B: Coefficient Estimates using Five Year Averages						
	(1)	(2)	(3)	(4)	(5)	(6)
DEM	0.38	0.31	0.33	0.34	0.39	0.36
	(0.17)**	(0.14)**	(0.15)**	(0.17)**	(0.17)**	(0.16)**

Notes: White period standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All columns include year fixed effects, country fixed effects, and regional trends to account for dynamic heterogeneity across regions. Specifications in Panel A employ nine 3-year averages beginning with 1984-6 and ending with 2008-10. Specifications in Panel B employ five 5-year averages beginning with 1984-88 and ending with 2004-08.

As described above, a potential problem is the presence of right hand side endogenous variables. Therefore, we utilize dynamic GMM estimation as discussed earlier. Table 6 presents the results of this methodology, both using annual data and the 3-year windows. The regressors include the lagged rule of law, the democracy dummy, and GDP. To avoid problems of "too many instruments" (see Roodman, 2009), we instrument only using the two-period lags of the endogenous variables. The coefficient estimates upon DEM are approximate in magnitude to those of the fixed effects

years. As with the three-year windows, *DEM* can now take on values between zero and one.

estimation when using annual data but increase in magnitude when considering the 3-year windows.

Table 6. Dynamic GMM Regressions, 1984-2007
Dependent Variable is the Rule of Law, RULE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Data	Annual Difference			3-year Difference			5-year Difference		
Sample of Countries	ALL	No always democratic	No socialist countries	ALL	No always democratic	No socialist countries	ALL	No always democratic	No socialist countries
Lagged RULE	0.60 (0.01)***	0.73 (0.02)***	0.66 (0.02)***	0.29 (0.04)***	0.42 (0.05)***	0.30 (0.03)****	0.73 (0.04)***	0.78 (0.05)***	0.70 (0.04)***
DEM	0.63 (0.11)***	0.70 (0.31)**	0.80 (0.17)***	0.80 (0.28)***	0.91 (0.30)***	0.71 (0.25)***	0.38 (0.17)**	0.29 (0.11)**	0.43 (0.20)**
Lagged GDP	0.21 (0.12)*	0.57 (0.33)*	0.97 (0.24)***	0.27 (0.12)***	0.20 (0.23)	0.22 (0.15)	0.25 (0.08)**	0.30 (0.10)**	0.26 (0.08)***
Number of Countries	124	91	105	124	91	105	124	91	105
Number of Observations	2879	2066	2568	805	576	723	584	420	518
Hansen Test (*p*-value)	0.18	0.13	0.65	0.07	0.04	0.04	0.06	0.05	0.66
AR(2) Test (*p*-value)	0.96	0.96	0.88	0.06	0.10	0.10	0.64	0.26	0.08

Notes: White period standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All specifications include period fixed effects. The Hansen test (*p*-value) denotes the *p*-value from a Hansen test that the model is not overidentified. The AR(2) Test (*p*-value) denotes the *p*-value from a second order serial correlation test where the null hypothesis is of no serial correlation. All GMM specifications employ two lags of instruments for the endogenous variables. GDP denotes the natural log of GDP per capita.

We further check the robustness of our results in Table 6 by replacing the variable DEM with two alternative measures of democracy, namely the Freedom House [FH] and the Polity IV [POLITY] indices.[17] Use of these alternatives is important, not only for ensuring that results are robust to other ways of measuring democracy, but because of the particular way DEM is created. Because DEM only switches from zero to one for permanent democratizations, results could be biased in favor of democracy. Unsuccessful democratizations in which the democracy did not survive are not

[17] To be consistent, we actually use the negative of the Freedom House index and so higher values now denote more political freedoms.

considered. If these unsuccessful democratizations have a less positive (or even negative) impact upon the rule of law then that would diminish the positive association between the two found above. However, the coefficients upon FH and POLITY remain positive and significant, both in columns 1 and 2 and in columns 4 and 5 that remove the countries that were always democratic throughout the sample period. The estimates in Table 7 confirm the findings of our earlier analysis.

Table 7. Panel Data Regressions using Alternative Measures of Democracy (Annual), 1984-2007

Dependent Variable is the Rule of Law, RULE

	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect
Sample of Countries	ALL	ALL	ALL	No always democratic	No always democratic	No always democratic
Lagged RULE	0.84	0.84	0.84	0.83	0.83	0.83
	(0.009)***	(0.01)***	(0.009)***	(0.12)***	(0.01)***	(0.01)***
FH	0.02			0.02		
	(0.01)**			(0.01)**		
POLITY		0.005			0.005	
		(0.003)**			(0.002)*	
DEM_P			0.10			0.09
			(0.05)*			(0.05)*
DEM_F			0.12			0.11
			(0.04)**			(0.05)**
GDP	0.01	0.03	0.01	0.06	0.01	0.09
	(0.04)	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)
Observations	2707	2466	2707	1730	2327	1729
Number of countries	127	121	127	84	107	84
R-squared (within)	0.82	0.82	0.94	0.82	0.83	0.92

Notes: White period standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All Columns include year fixed effects, country fixed effects, and regional trends to account for dynamic heterogeneity across regions.

Therefore, we generally find a positive association between democracy and the rule of law. Countries that became democratic during the sample period experienced improvements in the rule of law relative both to countries that never underwent a change in status (that is, remained democratic or nondemocratic) and to only those countries that remained nondemocratic. These results are robust to excluding former socialist countries and so findings are not solely driven by the fall of the Soviet Union. However, to what

extent are these findings applicable to specific regions and how fast does the rule of law improve following democratization? Do partial democracies affect the rule of law differently than do full democracies? We now consider these issues.

Columns 3 and 6 of Table 7 present results under the specification in Equation (2). We replace DEM with two variables, *DEM_P* (partial democracies) and *DEM_F* (full democracies). In column 3, the coefficient estimate on *DEM_F* is positive and significant at the 5% level. On the other hand, the parameter estimate for *DEM_P* is positive but only significant at the 10% level. However, the magnitudes of the coefficient estimates of both variables are similar. Therefore, we find some evidence that the rule of law improves when countries first become democratic even if democratic reforms are not complete. Evidence is statistically stronger that countries becoming fully democratic improve the rule of law. Nevertheless, no evidence arises that the effect upon the rule of law differs between the set of countries becoming partially democratic and those becoming fully democratic. That is, the benefit of democratic reforms appears to come with initial reforms, regardless of whether the democracy becomes stronger. These results hold for both the full sample and the sample removing always democratic countries.

These results with partial and full democracies also better explain a finding from Assiotis and Sylwester (2014). They do not find a strong association between (their analogs of) *DEM_F* and RULE. However, the focus of that study was upon full democratization and so their control group consisted of three groups of countries: countries that remained nondemocratic, countries that were fully democratic throughout the sample period, and countries that became only partially democratic. The similarity of coefficient estimates between *DEM_F* and *DEM_P* provides a possible explanation for their results. With little difference between the two groups of democracies, relegating partial democracies to the control group would then lessen differences between full democracies and the control group.

The above analysis finds that democracy is positively associated with the rule of law. Steps were also taken to better ensure that this association is causal from democracy to rule of law. We now consider our second question as to whether associations could differ across countries. The first specification in Table 8 contains an income-democracy interaction term where income is measured using the one-year lag of the natural log of GDP per capita. The coefficient upon this interaction term is negative, suggesting that any beneficial effects of democracy upon the rule of law decline for richer countries. Albeit an indirect test of the model in Acemoglu and Robinson (2000), our results offer some support for their theoretical model. Column 2 replaces the lag of current income with the 1984 value of the natural log of GDP per capita. This income measure precedes the sample period and so changes in democracy or the rule of law cannot affect 1984 income, thereby diminishing endogeneity concerns. Results remain robust.

Table 8. Panel Data Regressions (Annual), 1984-2007
Dependent Variable is the Rule of Law, RULE

	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect
Lagged RULE	0.86	0.86	0.85	0.86	0.86	0.86
	(0.008)***	(0.008)***	(0.008)***	(0.008)***	(0.008)***	(0.008)***
DEM	0.53	0.62	0.63	0.001	0.66	0.43
	(0.21)**	(0.20)***	(0.19)**	(0.04)	(0.30)**	(0.24)*
GDP(-1)	0.02				-0.01	
	(0.03)				(0.03)	
Life Expectancy (-1)			0.06			
			(0.03)**			
GDP(-1)*DEM	-0.06				-0.07	
	(0.02)**				(0.03)**	
GDP(1984)*DEM		-0.07				-0.05
		(0.02)***				(0.03)*
Life Expectancy(-1)*DEM			-0.009			
			(0.002)***			
SSA*DEM				0.14	-0.02	0.05
				(0.05)**	(0.08)	(0.06)
Wald Statistics (*p*-value)	0.000	0.000	0.000	0.000	0.000	0.000
Observations	3003	3010	2959	3010	3003	3010
Number of countries	124	24	124	124	124	124
R-squared (within)	0.83	0.84	0.83	0.83	0.80	0.83

Notes: White period standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All regressions contain country and time fixed effects. GDP(-1) denotes the lag of the natural log of GDP per capita. GDP(1984) denotes the 1984 value of the natural log of GDP per capita. SSA denotes sub-Saharan Africa.

Column 3 replaces income with life expectancy. Life expectancy is another measure of economic development that is widely available. Column 4 considers a sub-Saharan African-democracy interaction term. Democracy appears to have a greater effect upon the rule of law in sub-Saharan African countries. However, columns 5 and 6 show that Africa's poverty is likely to explain the association. Once income per capita is included, the association between the SSA-democracy interaction term and rule of law greatly weakens.[18]

To put these results into context, take the estimates from column 1 and consider

[18] Including other regional interaction terms does not change the results.

three hypotheticals. The first uses the average natural log of GDP per capita from Malawi (7.46). The other two consider the average over the entire sample (8.59) and the average from Spain (10.02). Suppose that for each, DEM goes from zero to one. For Malawi, this change to DEM is predicted to raise RULE by 0.082 points ($=0.53-0.06\times 7.46$). For a country at the sample average, RULE is predicted to only increase by 0.015 points. For a country like Spain, RULE is predicted to fall by 0.71 points. One reason RULE could even fall for higher income countries is that rising uncertainty due to the change in the political regime could even lower the rule of law where it was previously strong. Therefore, to the extent that democracy promotes the rule of law depends upon where that country is along a development path at the time democratization occurs.

The above analysis generally finds evidence that democratization promotes the rule of law. However, a weakness of this specification is that the effects of democratization on the rule of law are constrained to be instantaneous. However, democratization could initially have negative effects due to transitional costs. Effects could then become stronger as democracies solidify. Of course, other possibilities exist as well. To address these issues, we replace DEM with *DEM_SHORT* and *DEM_LONG*. Table 9 provides the results. As expected, coefficients estimates across these dummies differ.

In column 1, the coefficient upon *DEM_SHORT* is two to three times as great as that upon *DEM_LONG*. Democratization appears to have greater effects upon the rule of law in the short run. One possibility is that the rule of law truly improves following democratization but then deteriorates for some reason as the democracy solidifies. Another possibility, however, is that the increase in the rule of law is not "real" but stems from a presumption of the analysts creating the RULE index that the rule of law should be higher when a country becomes democratic. Perhaps such analysts give the benefit of the doubt in such cases when information is limited as to the changes that democratization creates. In the following years, if more information becomes available that changes to the rule of law are small or nonexistent, then their re-assessments better reflect this fact. This finding somewhat contrasts findings from other research. More specifically, Papaioannou and Siourounis (2008) provide empirical evidence suggesting that the merits of democratization on growth come in the long-run. To the extent that improvements in the rule of law raise growth then we would expect to see a greater short run impact. Our finding is also somewhat attenuated in column 3 where we remove the countries that were always democratic. Coefficient estimates upon *DEM_SHORT* and *DEM_LONG* are less distinct.

However, we also find a possible caveat. Democratization does appear to have larger effects upon the rule of law in the long run in SSA countries as shown in columns 2, 4, and 6 of Table 8. Although coefficients on $DEM\_SHORT\times SSA$ are not statistically significant, they are positive and similar in magnitude to their long run counterparts. No evidence arises that the rule of law deteriorated in SSA country shortly after democratization. For comparison purposes in panel B of Table 8, we present the coefficients on the democracy variables when replacing SSA in column 2 with dummies

for other regions. For these other regions, less evidence arises that democratization increased in the rule of law in the long run. In fact, long run estimates are even negative for LAC countries. As before, these findings can further help explain why democratization appears to be more beneficial for long run growth for SSA countries than for other regions as reported in Rodrik and Wacziarg (2005) and Sylwester (2009).

Table 9. Panel Data Regressions (Annual), Short Versus Long Run Effects, 1984-2007
Dependent Variable is the Rule of Law, RULE

Panel A

	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect
Sample of Countries	ALL	ALL	No always democratic	No always democratic	ALL	ALL
Lagged RULE	0.86	0.86	0.84	0.85	0.86	0.86
	(0.008)***	(0.008)***	(0.01)***	(0.009)***	(0.008)***	(0.008)***
DEM_SHORT	0.08	0.02	0.07	0.005	0.08	0.02
	(0.04)**	(0.04)	(0.04)*	(0.04)	(0.04)**	(0.04)
DEM_LONG	0.03	-0.02	0.07	-0.04	0.03	-0.02
	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)
*DEM_SHORT*SSA*		0.12		0.12		0.12
		(0.07)		(0.07)		(0.07)
*DEM_LONG*SSA*		0.15		0.16		0.15
		(0.05)***		(0.05)***		(0.05)***
GDP					-0.006	-0.001
					(0.03)	(0.03)
Observations	2710	2710	1733	1733	2707	2707
Number of countries	127	127	84	84	127	127
R-squared (within)	0.83	0.83	0.84	0.84	0.83	0.84

Panel B

	REG		
	SA	ESEA	LAC
DEM_SHORT	0.08	0.10**	0.10
DEM_LONG	0.03	0.02	0.07
REG× DEM_SHORT	0.12***	-0.14**	-0.07
REG× DEM_LONG	0.06	0.13	-0.12*

Notes: White period standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. All Columns include year fixed effects, country fixed effects, and regional trends to account for dynamic heterogeneity across regions. SSA denotes sub-Saharan Africa. SA denotes South Asia. EAP denotes East Asia and Pacific and LAC denotes Latin America and Caribbean. REG denotes region. Panel B presents coefficient estimates when SSA in column 2 of Panel A is replaced by the respective region. Other coefficient estimates are suppressed to ease presentation.

6. CONCLUSIONS

This paper investigates the association between democratization and rule of law. We generally find that the rule of law increases as countries become democratic although results are strongest for sub-Saharan Africa. Utilizing various panel data techniques we find that democratization does, indeed, positively influence the rule of law. Additionally, our results reveal that the timing of the effects of democratization upon the rule of law also matters. With our global sample, we find more evidence that democratization only increases the rule of law in the short run. However, stronger long-run effects are found for sub-Saharan African countries. These results can help us better understand why democratization could raise economic growth as found in the recent literature. Nevertheless, investigating other channels through which democracy could affect growth is warranted. From a policy perspective, sub-Saharan Africa could be a focus of the international community in promoting democratic reforms, since the payoffs to such reforms could be relatively larger in this region than in others. Of course, the devil is in the details. Future work will consider what aspects of democratic reforms are most conducive to improvements in economic institutions such as the rule of law. Moreover, although the methodology attempted to address causality concerns, one can still be skeptical that such steps sufficed, thereby tempering conclusions. Future work will also try to find new ways to better pinpoint causal effects from democracy to the rule of law.

APPENDIX

A. Variable Definitions and Sources

GDP: Natural log of GDP per capita adjusted for PPP. *Source*: Penn World Tables, version 6.3 (Constant prices: Chain Series).

GOV: Annual Government Share of Real GDP per capita. *Source*: Penn World Tables, version 6.3 (Constant $).

GPOP: Annual Population Growth. *Source*: World Bank World Development Indicators CD-ROM (2009 Edition).

LIT: Literacy rates (% of people ages 15 and above). *Source*: World Bank World Development Indicators CD-ROM (2009 Edition).

RULE: International Country Risk Guide indicator of the rule of law from Political Risk Services, Inc.

POLITY: Polity IV measure of democracy from the Polity IV project from Marshall and Jaggers (2004).

FH: Average of the Freedom House political rights and civil liberties indices. To

ease interpretation of the coefficient estimates we reversed the scaling so that a "1" indicates fewest political freedoms and "7" the most. *Source*: www.freedomhouse.org.

DEM: Dummy variable that equals one for a partial or full democracy and equals zero otherwise. *Source*: Papaioannou and Siourounis (2008). See Table 1 for their classification. From DEM, we also derive *DEM_P* and *DEM_*F. The former equals one only for partial democracies and the latter equals one only for full democracies.

B. The Difference-in-Differences Methodology

The canonical functional form for the difference in differences methodology is given by:

$$Y_{it} = a + b \times X_i + d \times T_t + g \times X_1 \times T_t + e_{it}, \quad \text{(A1)}$$

where *i* denotes the cross sectional unit (a country in our application) and $T_0 = 0$ and $T_1 = 1$. Thus, to keep the model simple, we consider only two periods and have omitted other control variables. The residual, e_{it}, follows the usual assumptions.

Y_{it} is the outcome variable, the rule of law in our case. X_i is a dummy variable where $X_i = 0$ if *i* is in the control group and $X_i = 1$ if *i* is in the treatment group. Four state/time combinations can arise:

For a control country at time zero, $E(Y_{i0}) = a$,

For a control country at time one, $E(Y_{i1}) = a + d$,

For a treatment country at time zero, $E(Y_{i0}) = a + b$,

For a treatment country at time one, $E(Y_{i1}) = a + b + d + g$.

Therefore:

the expected increase in outcome from T_0 to T_1 for a control country is: $a + d - a = d$,

the expected increase in outcome for a treatment country is: $a + b + d + g - a - b = d + g$.

Thus, the expected difference in outcome between these two differences is: $d + g - d = g$.

And so the coefficient upon the interaction term, *g*, provides the difference-in-differences estimate of the treatment. The specification we employ in (1) is equivalent to the above difference-in-differences specification. Simplifying the fixed effects model in (1), gives:

$$Y_{it} = A_i + TIME_t + g \times DEM_{it} + e_{it}, \quad \text{(A2)}$$

where:

a) $A_i = a + b \times X_i$,

b) $TIME_t =$ is normalized to zero when $t = 0$ and equals $d \times T_1 = b$ when $t = 1$,

c) $DEM_{it} = X_i T_t$.

In (a), the classification of whether a country is in the control group or the treatment group is time invariant. That is, even though the treatment has not occurred at time zero, the country is still assigned to be part of the treatment group because a democratization will occur. But because this classification is time invariant, the fixed effect captures the classification. The substitution in (*b*) is nothing more than a change of notation. For (*c*), the democracy variable, DEM_{it}, equals zero at time zero (before the treatment occurs) but equals one after the treatment occurs at $t = 1$, just as with the interaction term $X_i \times T_t$.

Because (A1) and (A2) are equivalent but merely written in two different ways, then the estimate upon *g* in (A2) is equivalent to that in (A1), implying that the estimate of *g* provides the difference in differences estimate from the fixed effects model.

Note, however, that the control group when employing the full sample consists of not only those countries that remained autorcracies during the sample period but also those countries that were always democratic during the sample period. A country that was always democratic means that "its treatment" occurred before time zero in which case $T_0 = T_1 = 1$, meaning that the interaction term becomes time invariant and so is subsumed within the fixed effect, A_i. Therefore, the variation in DEM_{it} arises solely from those countries that democratized during the sample period.

The case with more than one period is a simple extension since one can still construct an interaction term $X_i \times T_t$ where $T_t = 0$ before the treatment occurs and $T_t = 1$ afterwards. But this is no different than how we defined DEM_{it}.

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