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Special-interest groups and growth

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Abstract This paper explores empirically the relation between special-interest groups and economic growth. Our analysis exploits new data on the number of groups observed across countries and time, in order to mitigate the identification problems associated with earlier studies. Also in contrast to earlier work, we examine the impact of groups on two sources of growth—capital accumulation and technological change—in addition to the impact of groups on output growth. The findings are consistent with Olson's (The rise and decline of nations: the political economy of economic growth, stagflation, and social rigidities. New Haven, Yale, 1982) claim that societies with greater numbers of interest groups grow slower, accumulate less capital, and experience reduced productivity growth relative to others.

Keywords Special interest groups · Institutional sclerosis · Economic growth

JEL Classification O1 · O4 · D7

1 Introduction

In *The Rise and Decline of Nations*, Mancur Olson (1982) argues that special-interest groups decelerate the main engines of economic growth—capital accumulation and technological change. In particular, Olson hypothesizes that interest group activity reduces capital accumulation as well as innovation, and thus exerts a "sclerotic," or harmful, effect on growth.

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We test these claims using newly assembled data on the number of interest groups across countries and time.

Olson's contribution, while verbally articulated rather than mathematically argued, offered an elegantly parsimonious (and micro-based) theory of growth. It also spurred a large body of empirical work. The over-arching prediction of the theory—that growth is slower when more interest groups are present—in particular has been tested numerous times.[1] Nonetheless, a clear consensus on the relation (or lack thereof) between groups and growth has not emerged. Early cross-country studies suffered from an identification problem. In particular, lacking data on interest groups, Choi (1983), Whitely (1983), Bernholz (1986), and Weede (1986) all used measures of the length of time of institutional stability as a proxy for the number of interest groups, exploiting an assumption that interest groups accumulate in stable environments. These studies reveal a negative relation between stability and growth, consistent with sclerosis. However, while stability may identify the number of groups, it may also identify lots of other things. As such, while these studies are suggestive, they do not definitively link groups and growth.

More recent cross-country studies examine direct measures of interest groups. Unlike previous studies, this body of work reveals mixed findings. For example, Heckelman (2000), and Coates and Heckelman (2003b) find significant negative relations between counts of the number of interest groups and growth across countries. However, related work that examines "association activity," using data from World Values Surveys rather than group counts, reveals little evidence of sclerosis (Knack and Keefer 1997; Knack 2003). These recent studies suffer from two key (and related) shortcomings, both due to data constraints. In particular, existing studies (1) lack sufficient control variables and (2) examine only small samples of mainly developed nations (Heckelman's sample of 42 observations/countries is the largest). As a result, findings may be biased due to omission of relevant variables and may therefore not identify the "true" relation between groups and growth. In addition, it remains unclear whether the relations revealed apply generally, to both developed and developing nations, or are specific to developed nations.

Our work constitutes an attempt to address these shortcomings, and thereby to clarify cross-country evidence on the relation between groups and growth. To do so, we exploit a recently assembled cross-country dataset of interest group counts. Our sample consists of 169 observations, covering 87 nations over two time periods. In contrast to previous studies, this relatively large sample consists of a diverse set of countries—both developing and developed. In addition, the larger number of observations gives us sufficient degrees of freedom to incorporate a wide array of control variables into the analysis. Though straightforward, this extension of earlier work is key, as the potential for omitted variables bias looms large with respect to the identification of a relation between groups and growth. The literature on interest group formation indicates that a number of potential growth determinants are also determinants of the number of interest groups in an economy. For example, stability, the level of development, and the nature of the political system, have all been linked both to growth and to the number of interest groups observed in a country. As a result, care must be taken to avoid spurious correlation (or lack thereof) between groups and growth.[2]

[1] See Heckelman (2007) for a review of the literature.

[2] We note that while the cross-sectional dimension of our data is relatively large, the time-series dimension is small, with only two periods. Therefore, most of the variation explained by the analysis is cross-country variation, rather than variation over time. In general, data limitations have precluded time-series tests of Olson's theory. Horgos and Zimmerman (2009) is an exception. Their findings, using annual data for Germany, are consistent with Olson's theory.

Our analysis extends the existing literature along an additional dimension. In addition to the groups-growth relation, we also examine whether groups can be linked to two key determinants of growth—capital accumulation and technological change. To our knowledge, no other study has examined the relation between interest groups and capital stock growth or between interest groups and productivity growth. However, to the extent that groups are associated with output growth, it is of interest to know whether the relation can be attributed to capital formation, technological change, or both.

The findings are consistent with Olson's claim that societies with greater numbers of interest groups grow slower, accumulate less capital, and experience reduced productivity growth relative to others. Indeed, the findings indicate that a simple count of interest groups is a stronger and more robust determinant of growth than many of the other variables thought to play a key role in the wealth of nations. The results also indicate that the sclerotic impact of groups is, in general, similar across developed and developing countries, and reveal some evidence that groups are less sclerotic in autocracies relative to democracies.

The remainder of the paper is divided into five sections. In Sect. 2 we offer a brief background on Olson's growth theory. In Sect. 3 we describe the group count data and the measures of growth examined. In Sect. 4 we discuss the empirical model and estimation methods. In Sect. 5 we present results. We offer concluding remarks in Sect. 6.

2 Olson's growth theory—a brief background

Olson's ideas on growth follow from his seminal work on *The Logic of Collective Action* (1965). A fundamental insight of *The Logic* is that special-interest groups provide collective goods to their members. As a result, free-riding may impede group formation, and the market may fail to provide representation for all interests. Olson (1982: 37) therefore claims that society cannot expect to achieve an allocation of resources that lies in the core of the economy via a process of group bargaining; non-existent ("latent") groups cannot block those coalitions that do exist, nor can they engage in Edgeworthian recontracting. In other words, group formation is incomplete, and those groups that do form will, therefore, possess market power. Exploitation of their power through policy manipulation leads to an inefficient allocation of resources.[3] Moreover, Olson suggests that both group formation and bargaining by groups are costly to society. In other words, in pursuit of their own interests, groups divert resources away from production and towards redistributive activities such as lobbying. As a result, allocations produced by collective action are expected to be inefficient, even if market power does not arise or is not successfully exploited.

Olson's view of groups hinges on two key assumptions: (1) market failure—free-riding limits competition and enables market power—and (2) transaction costs—costs associated with group formation that offer no off-setting benefits. A contrasting "Chicago" view of groups, associated most closely with Becker (1983) and Wittman (1995), treats groups as largely benign entities.[4] This perspective is skeptical of Olson's assumption that group formation is incomplete, and dismisses the notion that competition might be limited to any

[3] Olson (1982: 46–47) acknowledges that in some cases the interests of a group may be aligned with the interests of society. However, he argues that such cases are atypical, and that "on balance" groups reduce efficiency and aggregate income.

[4] Yet a third view of groups, the "Putnam" view (Putnam 1993), suggests that groups may be good for society and conducive to growth. Arguably, Putnam groups and Olson groups are distinct. As such, the two views need not be mutually exclusive. Putnam groups are groups that facilitate social capital accumulation, while Olson groups are redistributive in nature. As described below, our data arguably capture Olson groups, rather

meaningful extent. Transaction costs associated with group formation are also assumed to either be too small to matter or to be offset by the beneficial information groups may contribute to the policy-making process. As a result, the market is predicted to generate an efficient allocation of resources.

In a Chicago-world with no market failure, limited transaction costs, and/or an informational role for groups, there is no groups-growth story to tell. In contrast, Olson extends his static allocative-(in)efficiency story to a dynamic growth setting in two ways. First, Olson (1982: 38–41) argues that, in stable environments, interest group activity increases over time, as impediments to organization and action are overcome. As time passes, resource allocation thus becomes increasingly inefficient, and growth therefore decreases.[5] Second, Olson (1982: 45, 62) notes that groups may create barriers to entry that diminish adaptation to change and innovation. Olson (1982: 53–58, 65) also argues that the costly nature of group decision-making stymies resource reallocation in response to shocks. Societies with interest groups are thus expected to be less flexible and less innovative, and therefore grow more slowly than others, even if interest group activity does not increase over time. In other words, as long as group formation is incomplete and/or entails transaction costs, groups are predicted to exert a sclerotic effect on growth, through both diminished capital stock growth and diminished productivity growth.

3 Interest groups, growth, and growth sources

In this section we describe the data used in the analysis. The dataset consists of an unbalanced panel of countries over two non-overlapping decades. We examine whether the number of interest groups in 1985 and 1995 explains subsequent average annual growth over the periods 1985–1994 and 1995–2004. A total of 87 countries are included, 82 of which are observed in both periods, and five of which are observed only in the second period, for a total of 169 observations. A complete country list is included in the Appendix. All country-years for which the requisite data are available are included in the analysis.

3.1 Interest groups

We construct counts of the number of interest groups using K.G. Saur's *World Guide to Trade Associations*. The *Guide* is an international directory of "trade associations," covering more than 170 countries, and nearly 400 categories of groups. The 1985 edition includes over 30,000 listings. The *Guide* is quite comprehensive with respect to association types, and includes groups in the industrial, commercial, trade, and service sectors, as well as professional organizations, consumer organizations, employer and labor groups, and organizations of service professionals. Group counts constructed from the *Guide* have been used previously by Murrell (1984), Kennelly and Murrell (1991), Bischoff (2003), and Coates

than Putnam groups. Our findings therefore do not address Putnam's hypothesis about the impact of groups, and should not be viewed as inconsistent with Putnam's work. Using survey data, Knack and Keefer (1997) attempt to distinguish membership in "Putnam" groups from membership in "Olson" groups. Their results do not support the expected impacts from either type of group.

[5] Olson acknowledges that the increased activities of some groups may "nullify or offset the effects of others." However, he nonetheless claims that as activity increases, so too do net inefficiencies (1982: 62). Effectively, Olson assumes that interest representation by groups remains sufficiently incomplete, and/or formation and bargaining costs are sufficiently large, that inefficiencies continue to accumulate as activity increases over time.

et al. (2007a) to study interest group formation, by Mueller and Murrell (1986) in a study of government size, by Coates and Wilson (2007) in a study of aggregate stock market performance, by Heckelman (2000), Coates and Heckelman (2003a, 2003b), and Coates et al. (2007b, 2010) in studies of growth, investment, and growth volatility. Coates et al. (2007a) find that well over 70% of variation in group counts assembled from the *Guide* can be explained by a relatively small number of (theoretically motivated) variables—in both rich and poor countries. These results indicate that there are not strong self- or nonrandom-selection effects present in the count data.

Six editions of the *Guide* have been published—the first in 1973 and the most recent in 2002. We construct a panel using data from the third (1985) and fourth (1995) editions only. Data limitations constrain use of additional observations. In particular, the first two editions of the *Guide* include "local organizations" that are not included in later editions. As a result, the groups listed in the first two editions of the *Guide* are not comparable to those listed in the more recent editions. The fifth and sixth editions were published in 1999 and 2002. As noted above, we utilize past counts to explain future decades of growth. As a result, the requisite growth data (1999–2008 and 2002–2011) are not available and/or overlap the 1995–2004 decade.

As noted above, Olson (1982) assumes that group formation is always sufficiently incomplete that an increase in the number of interest groups contributes to sclerosis. He does acknowledge though that groups may compete with one another more vigorously as they grow in number, and that their individual power may decrease as a result (Olson 1982: 46). We attempt to capture this combination of positive but diminishing marginal power by using the logarithm of the group counts in the empirical analysis, instead of raw group counts. If a logarithmic transformation does not accurately capture the extent to which marginal power is diminishing in the number of groups, the results will be biased away from a finding consistent with Olson's claims. (And, of course, if Olson is simply wrong and marginal power is not always positive, the findings may not reveal evidence consistent with sclerosis.) Group strength may also depend on factors such as country size and political institutions. For example, as Coates and Heckelman (2003b) suggest, the intensity of bargaining by a given number of groups may vary inversely with country size, such that a given number of groups may have greater sclerotic effects in smaller countries. We control for these possibilities by including the log of population and an index of political rights in our specifications, in addition to a standard set of growth determinants.

Summary statistics for the interest group counts are reported in the top section of Table 1. The average number of groups across the countries in the sample is 283. Haiti has a single group, the fewest in the sample, while Germany has 5000, the most in the sample. Table 1 also includes summary statistics stratified by OECD status—a proxy for development. The OECD countries sub-sample includes the 23 nations that joined the OECD prior to 1985 (each country is observed twice, for a total of 46 observations). The literature on interest group formation suggests that development is a determinant of the number of groups (Bischoff 2003; Coates et al. 2007a). It is therefore not surprising to see in Table 1 that the average number of interest groups is vastly greater in the OECD countries (914) than in the non-OECD countries (37). Even the number of groups in the OECD nation with the fewest groups (Turkey) exceeds the average number of groups among the non-OECD nations. Conditional on the level of development, there nevertheless is large variation in the number of groups. For both the OECD and non-OECD countries, the standard deviation of the number of groups is greater than the average number of groups.

Table 1 Summary Statistics

	Mean	Standard Deviation	Minimum	Maximum	Obs.
Independent Variable of Interest					
Full Sample					
Number of Interest Groups	283.41	741.53	1	5000	169
OECD Countries					
Number of Interest Groups	914.24	1198.16	52	5000	46
Non-OECD Countries					
Number of Interest Groups	37.40	59.18	1	408	123
Dependent Variables					
Full Sample					
GDP Growth	1.62	2.23	−6.69	8.84	169
Capital Stock Growth	1.48	2.78	−6.50	10.97	153
Productivity Growth	1.20	1.72	−6.42	6.44	153
OECD Countries					
GDP Growth	2.11	1.03	0.44	6.54	46
Capital Stock Growth	2.04	0.84	0.47	4.48	45
Productivity Growth	1.45	0.91	0.21	5.19	45
Non-OECD Countries					
GDP Growth	1.43	2.52	−6.69	8.84	123
Capital Stock Growth	1.24	3.24	−6.50	10.97	108
Productivity Growth	1.10	1.96	−6.42	6.44	108

Notes: GDP Growth is average annual real per capita GDP growth; Capital Stock Growth is average annual real per capita capital stock growth. Productivity Growth is average annual real per capita productivity growth. OECD Countries are those countries that became members of the OECD prior to 1985

3.2 Growth and its sources

The three dependent variables explored in the analysis are (1) GDP Growth, the average annual growth of real per capita GDP; (2) Capital Stock Growth, the average annual growth of the real per capita physical capital stock; and (3) Productivity Growth, the average annual growth of real per capita total factor productivity. Capital stock growth is based on a capital stock series. To construct the series, we use an initial capital stock guess and the capital accumulation equation $K_t = (1-\delta)K_{t-1} + I_t$, where K is the capital stock, δ is the assumed depreciation rate of 6%, I is investment, and t indexes time. Productivity growth is computed in the standard way, as a residual from the production function $Y = AK^{\alpha}L^{1-\alpha}$, where Y is real GDP, K is the real capital stock, L is labor, and A is the level of total factor productivity. We assume $\alpha = 0.3$. Summary statistics are reported in the lower section of Table 1.

Bivariate correlations between the number of groups and the three growth measures, as well as between the log of the number of groups and the growth measures, are reported in Table 2. Olson's theory of institutional sclerosis implies a negative relation between groups and growth. Only three of the 18 correlations examined in Table 2 are negative and significant at the conventional 5% level, and therefore consistent with Olson. For the full sample, all of the correlations are in fact *positive* in sign, and the correlation between capital stock

Table 2 Correlations

	Full Sample	OECD Countries	Non-OECD Countries
Correlations (Total Groups)			
GDP Growth	0.05 (0.49)	−0.13 (0.10)	0.08 (0.32)
Capital Stock Growth	0.08 (0.31)	0.03 (0.75)	0.11 (0.20)
Productivity Growth	0.01 (0.88)	−0.17 (0.04)	0.21 (0.01)
Correlations (Log of Groups)			
GDP Growth	0.12 (0.13)	−0.19 (0.02)	0.07 (0.41)
Capital Stock Growth	0.21 (0.01)	0.04 (0.64)	0.04 (0.65)
Productivity Growth	0.01 (0.91)	−0.25 (0.00)	−0.06 (0.45)

Notes: *P*-values are in parentheses. OECD Countries are those countries that became members of the OECD prior to 1985

growth and logged groups is significant at the 1% level. In the OECD country subsample, only two of the six correlations examined are inconsistent with Olson's theory. However, in the non-OECD country subsample, all but one of the correlations are positive, and the only significant correlation is positive. In the sub-sample of OECD countries, negative and significant relationships are revealed between groups and GDP Growth and Productivity Growth. Coates and Heckelman (2003b) report a similar negative relationship between groups in 1970 and GDP growth from 1970 to 1980 among a set of 22 OECD nations.

The positive and significant as well as the insignificant correlations in Table 2 are surprising not just in light of Olson's theory, but also to the extent that convergence effects exist. As noted above, evidence indicates that groups and development are positively related. As such, if groups proxy for development, and richer nations grow slower than poorer nations, a negative correlation would be expected between groups and growth. Other influences, however, may mask both Olsonian and convergence effects in bivariate correlations. For example, groups have been negatively linked to growth volatility (Grier et al. 1994; Coates and Wilson 2007; Coates et al. 2007b). To the extent that volatility is negatively associated with growth and groups proxy for volatility, these relationships may explain the positive correlations. Such possibilities suggest that a multivariate analysis has the potential to produce results consistent with Olson's theory, despite the non-supportive findings in Table 2. Moreover, an analysis that controls for income level is required in order to reveal whether the negative correlation between groups and growth in the OECD countries is valid statistically, or attributable to convergence effects within this subsample.

4 Model and methods

In this section, we describe the empirical model, and discuss estimation techniques. Variable descriptions and data sources are included in the Appendix.

4.1 Growth regression

To assess the relation between the number of interest groups and growth, we estimate the following regression

$$Growth_{i,t} = \alpha + \beta SIG_{i,t} + \boldsymbol{\gamma} \boldsymbol{X}_{i,t} + \delta D_{85} + \varepsilon_{i,t},$$

where *Growth* is the average annual growth rate of real per capita GDP (henceforth GDP Growth), or alternatively real per capita capital stock growth (henceforth Capital Stock Growth), or real per capita productivity growth (henceforth Productivity Growth); *SIG* is the natural logarithm of the number of special interest groups; $\boldsymbol{X}$ is a vector of control variables; D is a 1985 year dummy; α, β, and δ are parameters to be estimated, $\boldsymbol{\gamma}$ is a vector of parameters to be estimated; ε is a random error term; i indexes countries; and t indexes the two time periods.

The variables included in the vector $\boldsymbol{X}$ are, for the most part, standard for a cross-country growth regression, and include a set of baseline controls, as well as proxies for policy and institutional conditions. In this regard, our specification is similar to that used in other growth studies, including Beck et al.'s (2005) work on growth effects of small and medium size enterprises, and Mobarak's (2005) work on democracy and growth. Our baseline variables include Initial GDP, Schooling (proxies for the initial physical and human capital stocks), Volatility, and Population. The policy variables are Inflation, Trade, Government Size, and Private Credit. The institutional conditions variables include the risk metrics published in the PRS Group's International Country Risk Guide: Investment Profile, Corruption, Law and Order, and Bureaucratic Quality. We also include Freedom House's index of Political Rights.

As indicated, in addition to Initial GDP and Schooling, our baseline specification includes Population and the standard deviation of annual real per capita GDP growth (Volatility). As noted above in Sect. 3.1, Population serves as a control for nation size and the density or intensity of interest group activity. We include Volatility in the model for two reasons. First, empirical evidence suggests volatility may be a determinant of growth (Ramey and Ramey 1995; Pritchett 2000; Mobarak 2005). Second, as noted above, interest groups have been linked to measures of economic volatility (Grier et al. 1994; Coates and Wilson 2007; Coates et al. 2007b). As such, Volatility is included in the specification in order to isolate any impact of groups on growth that is independent of Volatility.

4.2 Estimation

Although our sample considerably extends those used in previous studies, it is still hardly large, at 169 observations. We therefore use the bias-adjusted HC3 covariance estimator as a basis for inference, rather than the standard Eicher-Huber-White "sandwich" estimator which has been characterized as producing substantial downward bias (MacKinnon and White 1985; Cribari-Neto and Zarkos 1999, 2001).

A number of the control variables included in the model may both cause and be caused by growth. We use two approaches to avoid endogeneity bias. First, we estimate "initial value regressions" with OLS, using beginning of period values of control variables, rather than average values. In other words, we use only predetermined values for all right-hand-side variables, to avoid contemporaneous reverse causality by construction. Second, we use average values of the control variables and employ an instrumental variables estimator to extract their exogenous contribution to growth. The primary drawback of the initial-value OLS approach is that it cannot capture contemporaneous relations between growth and the various control variables. The primary drawback of the average-value IV approach is that identification of theoretically compelling and empirically appropriate instruments is a significant challenge. We thus view the two approaches as complementary.

The literature features an innovative array of instruments to control for endogeneity in growth regressions, as well as in models designed to explain cross-country differences in GDP levels. Proxies for Western influence are most common, such as latitude (Hall and

Table 3 Shea's partial R^2

Volatility	0.136 (0.033)
Inflation	0.082 (−0.028)
Trade	0.413 (0.343)
Government Size	0.528 (0.472)
Private Credit	0.610 (0.563)
Investment Profile	0.062 (−0.050)
Corruption	0.412 (0.341)
Law and Order	0.548 (0.494)
Bureaucracy Quality	0.313 (0.230)
Political Rights	0.461 (0.397)

Notes: Adjusted partial R^2 in parentheses

Jones 1999; Acemoglu et al. 2001), and religious heterogeneity (Landes 1998; La Porta et al. 1999). Legal origin variables have also been used (La Porta et al. 1997, 1998; Beck et al. 2000, 2005), as well as European colonial mortality rates (Acemoglu et al. 2001). Unfortunately, we find that most of these variables are barely correlated with our explanatory controls, and are thus not clearly relevant instruments.[6] We therefore use initial values of potentially endogenous explanatory variables as instruments, along with Latitude, a dummy variable for OECD membership, and a dummy variable for majority Muslim population.

Hansen tests are used to verify that the excluded instruments are orthogonal to the errors. In order to gauge the relevance of the instruments used, we examine Shea's Partial R^2. Partial R^2 results are reported in Table 3. It appears that several variables are poorly instrumented with respect to relevance, including Volatility, Inflation, and Investment Profile. Unfortunately, the addition of legal origin and religious composition variables as excluded instruments does not increase the Partial R^2s. Moreover, when legal origin variables are used, the Hansen test rejects the validity of the instruments at the 10% level. Lack of instrument relevance can increase the inconsistency of estimates, increase asymptotic standard errors, and cause the finite sample distribution of the estimates to differ from the asymptotic normal distribution. We therefore caution that the lack of individual significance of control variables in Table 4 may be attributable to poor instrumentation, or multicollinearity (as a number of the control variables are highly correlated with one another), or both, rather than insignificance per se.

5 Results

We report our main findings and discuss sensitivity analysis in this section of the paper.

5.1 Main findings

Table 4 includes both OLS and IV estimates for regressions utilizing each of the three dependent variables, GDP Growth, Capital Stock Growth, and Productivity Growth. As the

[6] We acknowledge that a bivariate correlation may be a poor metric for relevance, given that the instrument need be highly correlated only with the exogenous component of a variable in order to be relevant. However, as noted below, the addition of religious composition and legal origin variables to the employed instruments does not improve Shea's partial R^2 metric for relevance, confirming the presumed irrelevance based on bivariate correlation.

Table 4 Growth and Interest Groups

	GDP Growth			Capital Stock Growth			Productivity Growth		
	(OLS 1a)	(OLS 1b)	(IV 1)	(OLS 2a)	(OLS 2b)	(IV 2)	(OLS 3a)	(OLS 3b)	(IV 3)
Interest	−0.365	−0.643	−0.781	−0.576	−0.725	−1.109	−0.285	−0.497	−0.604
Groups	(0.056)	(0.001)	(0.000)	(0.019)	(0.006)	(0.011)	(0.055)	(0.002)	(0.015)
Baseline Controls									
Initial	0.132	−0.346	−0.278	0.375	0.183	0.442	0.203	−0.199	−0.187
GDP	(0.550)	(0.175)	(0.304)	(0.232)	(0.564)	(0.337)	(0.279)	(0.346)	(0.449)
Schooling	1.025	0.823	0.534	1.263	0.766	−0.095	0.419	0.295	0.236
	(0.030)	(0.030)	(0.089)	(0.047)	(0.286)	(0.900)	(0.336)	(0.530)	(0.595)
Volatility	−0.188	−0.115	−0.461	−0.476	−0.354	−0.701	−0.038	0.001	−0.166
	(0.018)	(0.178)	(0.057)	(0.000)	(0.001)	(0.058)	(0.651)	(0.993)	(0.488)
Population	0.376	0.597	0.761	0.516	0.649	0.832	0.214	0.399	0.524
	(0.023)	(0.002)	(0.001)	(0.024)	(0.016)	(0.017)	(0.098)	(0.015)	(0.009)
Policy Controls									
Inflation		−0.000	−0.001		−0.000	0.003		−0.000	−0.001
		(0.988)	(0.427)		(0.990)	(0.368)		(0.994)	(0.425)
Trade		0.008	0.015		0.015	0.025		0.005	0.007
		(0.154)	(0.039)		(0.011)	(0.011)		(0.350)	(0.230)
Government		−0.040	−0.028		−0.110	−0.176		−0.004	0.024
Size		(0.329)	(0.576)		(0.049)	(0.068)		(0.934)	(0.680)
Private		0.003	0.001		−0.002	−0.011		−0.001	−0.002
Credit		(0.564)	(0.900)		(0.738)	(0.273)		(0.812)	(0.745)
Institutional Conditions Controls									
Investment		0.071	−0.037		0.333	1.062		0.016	−0.076
Profile		(0.693)	(0.919)		(0.132)	(0.025)		(0.916)	(0.806)
Corruption		0.144	0.224		−0.308	−0.574		0.133	0.241
		(0.589)	(0.534)		(0.322)	(0.296)		(0.566)	(0.492)
Law and		0.281	0.333		0.187	0.080		0.212	0.207
Order		(0.264)	(0.207)		(0.534)	(0.835)		(0.315)	(0.404)
Bureaucracy		0.114	0.099		0.502	1.421		0.114	0.031
Quality		(0.687)	(0.823)		(0.126)	(0.024)		(0.681)	(0.945)
Political		−0.431	−0.490		−0.332	−0.219		−0.374	−0.435
Rights		(0.001)	(0.003)		(0.027)	(0.391)		(0.003)	(0.007)
R^2	0.14	0.24	0.33	0.27	0.38	0.43	0.03	0.13	0.23
Hansen (df)			2.31(3)			7.57(3)			2.97(3)
Observations	169	169	169	153	153	153	153	153	153

Notes: p-values are in parentheses. Specification also includes a constant and a 1985 year dummy. Adjusted R^2 is reported for OLS regressions; Generalized R^2 for IV regressions. The null of the Hansen test is that the instruments are not correlated with the residuals. The 10% critical value of the Hansen test is 6.25 (3 df). Excluded instruments include: OECD membership dummy, Latitude, Initial Volatility, Initial Inflation, Initial Trade, Initial Government Size, Initial Private Credit, dummy variable for Muslim country, Initial Investment Profile, Initial Corruption, Initial Law and Order, Initial Bureaucracy Quality, Initial Political Rights

first row of the table indicates, the coefficient on Interest Groups is negative and statistically significant in each specification. Moreover, Interest Groups is the only variable that is statistically significant at the 5% level or better for each growth measure. The models estimated in columns (OLS 1a), (OLS 2a), and (OLS 3a), that include only baseline controls, are likely misspecified and the coefficient estimates therefore biased due to omitted variables. Nonetheless, it is of interest to observe the changes in the coefficient estimates on Interest Groups as controls are added. Although the bivariate correlations between Interest Groups and the three growth measures reported in Table 2 are positive for the full sample, Table 4 indicates that when Initial GDP, Schooling, Volatility, and Population are included as controls, the relationship between Interest Groups and each measure of growth is negative and significant. Columns (OLS 1b), (OLS 2b), and (OLS 3b) report results for specifications that include the full array of control variables. The relationship between Interest Groups and each measure of growth remains negative and statistically significant. Moreover, both the (absolute) marginal impact and level of statistical significance of the estimates increase markedly in each case. These findings suggest that Interest Groups is not simply a proxy for previously identified determinants of growth, but rather exerts an independent influence.

In columns (IV 1), (IV 2), and (IV 3), we report coefficient estimates from specifications that control for Volatility, as well as for average annual values (rather than initial values) of the policy and institutional conditions variables. These models are estimated using instrumental variables. Compared to the initial-value OLS regressions, the magnitude of the detrimental marginal impact of Interest Groups is larger, although the significance levels fall somewhat for Capital Stock Growth and Productivity Growth. We also note that in the case of Capital Stock Growth, the Hansen test null, that the instruments are not correlated with the residuals, is rejected. In all other cases, we cannot reject the null.

Overall, these findings are consistent with Olson's claim that groups exert a sclerotic effect on output growth, capital accumulation, and technological advance. In every model estimated, the number of groups is negatively and statistically significantly related to the three dependent variables. Moreover, the magnitude of the estimated coefficients implies that the number of interest groups has an economically meaningful impact. In the full specifications, the coefficient on Interest Groups ranges from -0.497 to -0.781 (excluding the -1.109 coefficient in the Capital Stock Growth IV regression, as that case fails the Hansen test). These figures imply that a 1% increase in the number of interest groups lowers growth between roughly one half and three-quarters of a percentage point. In our sample, the means of GDP Growth, Capital Stock Growth and Productivity Growth are, respectively, 1.618%, 1.477%, and 1.202%. Relative to mean growth rates, the estimates thus imply that a 1% increase in the number of groups in a country cuts the growth rates from a third to nearly a half—a substantial effect. In the developing countries (non-OECD), where the mean number of groups is only 37.4, a single group is over 2% of the total. Consequently, for the developing countries, even one more interest group has a substantial harmful effect, according to the estimates. Among the developed countries (OECD), with an average of 914.2 groups, one group is a small share of the total. But ten groups is about 1% of the total, and therefore ten additional groups would reduce growth rates by that same third to one half, relative to the mean growth rates in the sample.[7]

[7] In Sect. 5.2 below, we explore the possibility of parameter heterogeneity with respect to the impact of groups in developing and developed nations.

5.2 Sensitivity analysis

In this section we briefly summarize results of sensitivity analysis. Tables with specific findings are available upon request.

Doner and Schneider (2000) suggest that interest groups may *promote* efficiency in developing countries, with rent-seeking that improves existing institutions. The bivariate correlations in Table 2 also suggest that the impact of groups may depend on the level of development. We therefore examine whether the marginal impact of groups differs in developed and developing nations, by interacting Interest Groups with dummies for OECD and non-OECD status.[8] In the cases of GDP and Productivity Growth, we find that interest groups exert sclerotic effects in both developing and developed nations. Although Wald tests indicate that we can reject the hypothesis that the coefficients on groups in developing and developed nations are equal, from an economic perspective the estimated coefficient magnitudes indicate that the effects of groups are similar. In the Capital Stock Growth case, we find that the estimated coefficient on interest groups in developing countries is significant only at the 10% level. Moreover, the magnitude of the coefficient is only about two-thirds the size of the coefficient for developed countries. In a much smaller sample, Coates and Heckelman (2003a) report a negative and statistically significant effect of groups on the share of GDP devoted to investment in the OECD countries, but either a weak positive relationship or no relationship between groups and investment share in non-OECD countries. The results here on Capital Stock Growth are weakly consistent with their findings.

We also use interaction variables to examine whether the marginal impact of groups differs between more-democratic and less-democratic nations. We first examine the impact of groups in the most democratic nations, compared to all others, where "most democratic" are those nations with a value of the Political Rights variable equal to one. Second, we examine the impact of groups in the least democratic nations, compared to all others, where "least democratic" are those nations with a value of the Political Rights variable greater than or equal to five.[9] In more democratic countries, where freedom to organize is the norm and the potential for policy influence may be great, the impact of groups may be substantial. However, the relatively low cost of organization for such groups implies that many groups may form and compete with one another, such that the expected benefit and impact (influence) of groups is also low. In less democratic countries, organization may prove more difficult (or may even be actively discouraged), implying that policy influence may be more limited. Yet, the relatively high cost of organization for groups in such countries implies that groups form only if the expected benefits of organizing are large. Thus, with respect to the extent of democracy, the relative importance of groups in the policy process is theoretically ambiguous.

In the most democratic countries, groups do not have a statistically different effect on GDP Growth or on Productivity Growth than in all other countries. With respect to Capital Stock Growth however, groups have a greater sclerotic impact in the most democratic countries. In fact, the estimated marginal impact of groups on capital stock growth in the rest of the sample is not statistically significant. This finding is similar to that noted above, where the impact of groups in developing countries is also found to be statistically insignificant.

[8] "OECD" nations are those nations that joined the OECD prior to 1985.

[9] The Political Rights variable ranges from a low of 1 (most democratic) to a high of seven (least democratic). Of 169 observations in the GDP Growth regressions, 51 have a value of Political Rights equal to 1; 37 have a value of Political Rights greater than or equal to five.

Not surprisingly, many of the less democratic countries are also developing countries—the correlation between the non-OECD country dummy and the most-democratic country dummy is −0.79. (The correlation between the non-OECD country dummy and the least-democratic country dummy is much weaker, at −0.32.) Interestingly, in the least democratic countries, IV results indicate that groups have no statistically significant impact on either GDP-, Capital Stock-, or Productivity Growth, although OLS estimates continue to suggest that groups significantly hinder all three types of growth. The statistical insignificance of the IV coefficients suggests that groups may not be sclerotic in the least-democratic countries, perhaps because their numbers are too small (the average numbers of groups in the least-democratic and all-other countries are 18.9 and 357.5, respectively) or perhaps because groups in the least-democratic countries have little impact on policy and decision-making.

Next, we instrument the interest groups variable, in order to examine whether potential endogeneity of groups and/or measurement error affect the results. The panel has been constructed in such a way as to avoid endogeneity bias due to potential influence of growth on the formation of interest groups. In particular, the group counts are measured in 1985 and 1995, while growth is measured over the subsequent periods 1985–1994, and 1995–2004. Contemporaneous correlation has therefore been eliminated by construction, as future growth cannot impact past group counts. However, if current growth affects future group counts (for example, if growth over the 1985–1994 period impacts the formation of groups and therefore impacts the number of groups in 1995), then strict exogeneity is violated, and our estimates may be inconsistent. We note that if greater growth today is indeed associated with larger group counts in the future, then treating groups as exogenous actually biases findings against the hypothesis that groups are negatively associated with growth, and implies that the findings in Table 4 *underestimate* the sclerotic impact of groups.

Instrumentation of the interest groups variable may also compensate for potential measurement error in the group counts. In particular, interest groups in developing countries may be under-represented in the *Guide* relative to groups in developed countries, due both to difficulty of data collection as well as greater informality of institutions. If this is the case, the findings reported in Table 4, again, *underestimate* the sclerotic impact of groups.

Mancur Olson's theory of interest group formation informs our choice of instrument. In his *Rise and Decline of Nations*, Olson (1982) claims that stable societies with unchanged boundaries tend to accumulate more groups organized for collective action over time and a greater likelihood of collusion among them. He further suggests that stability constitutes the absence of upheaval that alters fundamental institutional structures. We therefore utilize a measure of institutional instability developed by Coates et al. (2007a) as an instrument for interest groups. We also use lagged group counts—from 1973 (for the 1985 subsample) and 1980 (for the 1995 subsample)—as an instrument.

We find that the statistical relation between groups and all three measures of growth remains highly significant when the interest group variable is instrumented. Moreover, the magnitude of the estimated relation increases, as is expected if either groups are endogenous because growth is associated with future group formation or if the data underestimate groups in developing countries.

We have also formally assessed the impact of potential outliers using the procedure described by Belsley et al. (1980). In particular, we ran each regression without the ith observation. The resulting coefficient estimates were then used to compute a "modified" residual for the ith observation. This residual was then standardized. We categorized observations with standardized residuals in excess of two as outliers. When potentially influential observations are excluded from the sample, the estimated coefficients on Interest Groups remain negative and significant, and the estimated magnitudes of the relations remain meaningful.

Finally, we examine the sensitivity of the results when an additional time period is included in the panel. We utilized only the 1985 (third) and 1995 (fourth) editions of the *Guide* in the primary analysis. An additional decade-long span of observations can be constructed, corresponding to the 1973 (first) edition of the *Guide*. As noted in Sect. 3.1, the 1973 group count is not strictly comparable to the 1985 and 1995 counts, due to changes in the construction of the *Guide* introduced in the 1985 edition. Moreover, with the exception of Political Rights, the institutional conditions control variables are not available prior to 1984. We nonetheless constructed a sample using the 1973, 1985, 1995 editions of the *Guide*, covering the decades 1973–1982, 1985–1994, 1995–2004, and analyzed this sample as an additional robustness check on the groups result. The Interest Groups result holds up in this larger sample. The estimated coefficients on Interest Groups are negative and statistically significant in all cases. The magnitudes of the estimates are smaller than that reported in Table 4, when a full set of Institutional Conditions controls are included in the specification.

6 Concluding remarks

In this paper, we investigate the relation between interest groups and growth. Our study provides a multi-year, joint cross-country test of Mancur Olson's (1982) claim that interest groups exert a sclerotic effect on output growth, capital accumulation, and technological advance. Consistent with Olson's claim, the findings reveal a negative, statistically significant, and economically meaningful relation between interest groups and output growth. The results hold in both initial-value regressions estimated using OLS and average-value regressions estimated using IV, and are robust to potential outlying observations as well as to an extension of the time-dimension of the sample. We also find a negative and statistically significant relation between groups and capital stock growth and productivity growth.

Previous cross-country studies of the relation between interest groups and output growth have suffered from significant identification problems. Early studies identify links between stability and output growth that may or may not reflect a link between groups per se and growth. More recent studies identify links between groups and output growth that may reflect links between groups and other growth determinants rather than links between groups and growth per se. In contrast, the groups and growth link identified here is independent of the impact of numerous policy variables and measures of institutional conditions on growth. Moreover, links between groups and output growth as well as capital stock growth and productivity growth are revealed. Inference based on cross-country data is always complicated by the potential for misidentification. However, the findings presented here are far more clearly identified than any offered before. Moreover, the revealed relation between growth and interest groups is statistically at least as strong (or stronger) and at least as robust as (or more robust than) the relation between growth and commonly examined proxies for policy and institutional conditions. As such, the findings suggest that further exploration of the impact of groups on economic activity—both theoretical and empirical—is warranted.

Although the findings are consistent with Olson's claim that groups slow growth, they should not be interpreted as a test of his broader growth theory. As Gray and Lowery (1988) have emphasized, Olson's work describes various mechanisms via which groups and growth may be linked. Our findings reveal a significant negative link between groups and growth, but they do not fully illuminate the source(s) of the relation. Future research is needed to identify the mechanisms that underly the link between groups and growth revealed here.

A microeconomic rather than a macroeconomic approach may yield the most fruitful next steps. As Olson (1982) wrote in chapter three of *Rise and Decline*, "most of the economics

we shall use is well-established; it is mainly the widely tested 'microeconomic theory' of individual firms, consumers, and industries . . . To this we must add the less formal but invaluable 'Schumpeterian' insight into innovation and entrepreneurship." In other words, while Olson's work has macroeconomic implications—groups exert a sclerotic effect on growth - the mechanisms underlying the implications are microeconomic. These mechanisms include formation transaction costs, diversion of resources away from productive activity, slow decision-making, decision-making influence within firms and industries, and public policy manipulation.

Many existing studies tie groups to Olson's mechanisms, especially to firm and industry behavior and to policy. For example, Li and Xu (2002) link interest groups (and democracy) to the structure of the telecommunications industry; Roberts (1990), Fisman (2001), Jayachandran (2006), and Dombrovsky (2008) all link the political connections of firms to firm performance; a large literature indicates industries that lobby for trade protection get what they ask for (see, for example, Goldberg and Maggi 1999 and Gawande and Bandyopadhyay 2000); groups have been linked to volatility in fiscal, trade, and monetary policy (Coates et al. 2009); Kroszner and Strahan (1999) argue that interest group factors explain the timing of intrastate banking deregulation in the United States; Rajan and Zingales (2003) find evidence that suggests groups impede financial development. However, it remains a challenge for future research to construct a complete chain of evidence, from groups to a mechanism to growth, in a systematic and comprehensive way.

The listing of groups in the *World Guide to Trade Associations* (used to construct the aggregate group counts for this study) is stratified by sector as well as by country, which should allow micro-level investigations of Olson's theory. A data set comprised of sector- and country-specific counts of groups could be used to analyze the relation between sector-level interest group activity and economic activity, policy choices, and firm behavior, as well as to explore determinants of sector-level variation in collective action. Analysis of sector-level data may also reveal whether certain combinations and kinds of groups are more sclerotic than others. For example, perhaps labor groups, manufacturing groups, or financial sector interests drive the aggregate findings. Or perhaps sclerosis is decreasing in the number of labor relative to manufacturing groups, suggested in Gray and Lowery (1988) and Crain and Lee (1999), as the power of groups on one side is offset by the power of groups on the other. Some types of groups may have a greater impact on capital accumulation, while other groups affect technological change. Such disaggregated investigations may shed light on the forces underlying the aggregate results reported here and are an important avenue of future research.

Appendix

A.1 Country list

Algeria	El Salvador	Kenya	Senegal
Argentina*	Finland	Korea	Sierra Leone*
Australia	France	Kuwait*	South Africa
Austria	Gambia	Malawi	Spain

Bangladesh	Germany	Malaysia	Sri Lanka
Belgium	Ghana	Mali	Sudan
Bolivia	Greece	Malta	Sweden
Botswana	Guatemala	Mexico	Switzerland
Brazil	Guyana	Mozambique*	Syria
Cameroon	Haiti	Netherlands	Thailand
Canada	Honduras	New Zealand	Togo
Chile	Hungary	Nicaragua	Trinidad & Tobago
China	Iceland	Niger	Tunisia
Colombia	India	Norway	Turkey
Congo, Dem.	Indonesia	Pakistan	Uganda
Congo, Rep.	Iran	Panama	UK
Costa Rica	Ireland	Papua New Guinea	US
Cyprus	Israel	Paraguay	Uruguay
Denmark	Italy	Peru	Venezuela
Dominican Republic	Jamaica	Philippines	Zambia
Ecuador	Japan	Poland*	Zimbabwe
Egypt	Jordan	Portugal	

*indicates 1985 sub-sample only.

A.2 Variable definitions and data sources

The sample consists of a cross-section of countries, with observations on two time periods. Averages cover the two periods 1985–1994 and 1995–2004. Initial values are for the years 1985 and 1995. 82 countries are included in the 1985 subsample, and 87 countries are included in the 1995 subsample, for a total of 169 observations.

Dependent variables

GDP Growth (average): Growth of annual real per capita GDP. Source: World Bank *World Development Indicators*.

Capital Stock Growth (average): Growth of annual real per capita capital stock. Constructed using real investment, population, and an initial capital stock guess. Source: World Bank *World Development Indicators*.

Productivity Growth (average): Growth of annual real per capita productivity growth. Computed as a residual from a neoclassical aggregate production function, assumed to be common across countries and time invariant. Source: World Bank *World Development Indicators*.

Independent variable of primary interest

Interest Groups (initial value): Log of the number of interest groups in a country. Source: Third and fourth editions of the *World Guide to Trade Associations.*

Baseline controls

Initial GDP (initial value): Log of real GDP per capita in USD. Source: World Bank *World Development Indicators*.

Schooling (initial value): Log of average years of schooling in the total population over 25. Source: Barro-Lee, "International Data on Educational Attainment: Updates and Implications."

Volatility: Standard deviation of annual real per capita GDP growth over the periods 1985–1994 and 1995–2004. (Initial values computed using annual growth observations for the periods 1980–1984 and 1990–1995.) Source: World Bank *World Development Indicators*.

Population (initial value): Log of the total population. Source: World Bank *World Development Indicators*.

Policy controls

Inflation (average and initial value): Annual percent change in the CPI. Source: World Bank *World Development Indicators*.

Trade (average and initial value): Annual share of trade in GDP. Source: World Bank *World Development Indicators*.

Government Size (average and initial value): Annual share of government consumption expenditure in GDP. Source: World Bank *World Development Indicators*.

Private Credit (average and initial value): Annual share of domestic credit provided by banking sector in GDP. Source: World Bank *World Development Indicators*.

Institutional conditions controls

Investment Profile (average and initial value): An index of investment risk, with values from 0 (very high risk) to 12 (very low risk); index components are Contract Viability/Expropriation, Profits Repatriation, and Payment Delays. Source: The Political Risk Services' *International Country Risk Guide*.

Corruption (average and initial value): An index of corruption within the political system, with values from 0 (very high corruption) to 6 (very low corruption). Source: The Political Risk Services' *International Country Risk Guide*.

Law and Order (average and initial value): A combined index of the strength and impartiality of the legal system along with popular observance of the law, with values from 0 (a low rating) to 6 (a high rating). Source: The Political Risk Services' *International Country Risk Guide*.

Bureaucracy Quality (average and initial value): An index of the institutional strength and quality of the bureaucracy, with values from 0 (high risk) to 4 (low risk). Source: The Political Risk Services' *International Country Risk Guide*.

Political Rights (average an initial value): An index of the degree of freedom in the electoral process, political pluralism and participation, and functioning of government, using an inverse of the original 1–7 scale such that higher values now represent more political rights. Source: Freedom House, "Freedom in the World 2006: The Annual Survey of Political Rights and Civil Liberties."

Excluded instruments (with the exception of initial values noted above)

Latitude: Latitude in degrees. Source: Global Development Network.

Muslim Dummy: Dummy variable indicating majority Muslim population. Source: *World Christian Encyclopedia*.

OECD Dummy: Dummy variable indicating OECD membership prior to 1985. Source: OECD.

Institutional Instability: Year of most recent fundamental regime shift, significant constitutional change, or independence. Source: Coates et al. (2007a).

Lagged Groups: Log of the number of interest groups in a country in 1973 (for 1985 subsample) and 1980 (for 1995 subsample). Source: First and second editions of the *World Guide to Trade Associations.*

References

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The colonial origins of comparative development: an empirical investigation. *American Economic Review*, *91*, 1369–1401.

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2005). SMEs, growth, and poverty: cross-country evidence. *Journal of Economic Growth*, *10*, 199–229.

Beck, T., Levine, R., & Loayza, N. (2000). Finance and the sources of growth. *Journal of Financial Economics*, *58*, 261–300.

Becker, G. (1983). A theory of competition among pressure groups for political influence. *Quarterly Journal of Economics*, *98*, 371–397.

Belsley, D., Kuh, E., & Welch, R. (1980). *Regression diagnostics: identifying influential data and sources of collinearity*. New York: Wiley.

Bernholz, P. (1986). Growth of government, economic growth and individual freedom. *Journal of Institutional and Theoretical Economics*, *142*, 661–683.

Bischoff, I. (2003). Determinants of the increase in the number of interest groups in western democracies: theoretical considerations and evidence from 21 OECD countries. *Public Choice*, *114*, 197–218.

Choi, K. (1983). A statistical test of Olson's model. In D. Mueller (Ed.), *The political economy of growth*. New Haven: Yale University Press.

Coates, D., & Heckelman, J. C. (2003a). Interest groups and investment: a further test of the Olson hypothesis. *Public Choice*, *117*, 333–340.

Coates, D., & Heckelman, J. C. (2003b). Absolute and relative effects of interest groups on the economy. In J. C. Heckelman, & D. Coates (Eds.), *Collective choice: essays in honor of Mancur Olson*. Berlin: Springer.

Coates, D., & Wilson, B. (2007). Interest group activity and long-run stock market performance. *Public Choice*, *133*, 343–358.

Coates, D., Heckelman, J. C., & Wilson, B. (2007a). Determinants of interest group formation. *Public Choice*, *133*, 377–391.

Coates, D., Heckelman, J. C., & Wilson, B. (2007b). Special-interest groups and volatility. *Economics Bulletin*, 1–13.

Coates, D., Heckelman, J. C., & Wilson, B. (2009). *Democracy and volatility: do special-interest groups matter*? Manuscript.

Coates, D., Heckelman, J. C., & Wilson, B. (2010). The political economy of investment: sclerotic effects from interest groups. *European Journal of Political Economy*. doi:10.1016/j.ejpoleco.2009.12.003.

Crain, W., & Lee, K. (1999). Economic growth regressions for the American states: a sensitivity analysis. *Economic Inquiry*, *37*, 242–257.

Cribari-Neto, F., & Zarkos, S. (1999). Bootstrap methods for heteroskedastic regression models: evidence on estimation and testing. *Econometric Reviews*, *18*, 211–228.

Cribari-Neto, F., & Zarkos, S. (2001). Heteroskedasticity-consistent covariance matrix estimation: White's estimator and the bootstrap. *Journal of Statistical Computation and Simulation*, *68*, 391–411.

Dombrovsky, V. (2008). *Campaign contributions and firm performance: the 'Latvian way.'* Manuscript.

Doner, R., & Schneider, B. R. (2000). Business associations and economic development: why some associations contribute more than others. *Business and Politics*, *2*, 261–288.

Fisman, R. (2001). Estimating the value of political connections. *American Economic Review*, *91*, 1095–1102.

Gawande, K., & Bandyopadhyay, U. (2000). Is protection for sale? Evidence on the Grossman–Helpman theory of endogenous protection. *Review of Economics and Statistics*, *82*, 139–152.

Goldberg, P., & Maggi, G. (1999). Protection for sale: an empirical investigation. *American Economic Review*, *89*, 1135–1155.

Gray, V., & Lowery, D. (1988). Interest group politics and growth in the U.S. states. *American Political Science Review*, *80*, 109–131.

Grier, K. B., Munger, M. C., & Roberts, B. E. (1994). The determinants of industry political activity, 1978–1986. *American Political Science Review*, *88*, 911–926.

Hall, R., & Jones, C. (1999). Why do some countries produce so much more output per worker than others? *The Quarterly Journal of Economics*, *114*, 83–116.

Heckelman, J. C. (2000). Consistent estimates of the impact of special interest groups on economic growth. *Public Choice*, *104*, 319–327.

Heckelman, J. C. (2007). Explaining the rain: *the rise and decline of nations* after 25 years. *Southern Economic Journal*, *74*, 18–33.

Horgos, D., & Zimmerman, K. (2009). Interest groups and economic performance: some new evidence. *Public Choice*, *138*, 301–315.

Jayachandran, S. (2006). The Jeffords effect. *Journal of Law and Economics*, *49*, 397–425.

K. G. Saur Verlag KG (1973, 1985, 1995). *World guide to trade associations*.
Kennelly, B., & Murrell, P. (1991). Industry characteristics and interest group formation: an empirical study. *Public Choice*, *70*, 21–40.
Knack, S. (2003). Groups, growth and trust: cross-country evidence on the Olson and Putnam hypotheses. *Public Choice*, *117*, 341–355.
Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross country investigation. *The Quarterly Journal of Economics*, *112*, 1251–1288.
Kroszner, R., & Strahan, P. (1999). What drives deregulation? Economics and politics of the relaxation of bank branching restrictions in the United States. *Quarterly Journal of Economics*, 1437–1467.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *Journal of Finance*, *52*, 1131–1150.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, *106*, 1113–1155.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The quality of government. *Journal of Law, Economics, and Organization*, *15*, 222–279.
Landes, D. (1998). *The wealth and poverty of nations: why some are so rich and some so poor*. New York: Norton.
Li, W., & Xu, L. (2002). The political economy of privatization and competition: cross-country evidence from the telecommunications sector. *Journal of Comparative Economics*, *30*, 439–462.
MacKinnon, J., & White, H. (1985). Some heteroskedasticity-consistent covariance matrix estimators with improved finite-sample properties. *Journal of Econometrics*, *29*, 305–325.
Mobarak, A. (2005). Democracy, volatility and development. *The Review of Economics and Statistics*, *87*, 348–361.
Mueller, D., & Murrell, P. (1986). Interest groups and the size of government. *Public Choice*, *48*, 125–145.
Murrell, P. (1984). An examination of the factors affecting the formation of interest groups in OECD. *Public Choice*, *43*, 151–171.
Olson, M. (1965). *The logic of collective action*. Cambridge: Harvard University Press.
Olson, M. (1982). *The rise and decline of nations: the political economy of economic growth, stagflation, and social rigidities*. New Haven: Yale.
Pritchett, L. (2000). Understanding patterns of economic growth: searching for hills among plateaus, mountains and plains. *World Bank Economic Review*, *14*, 221–250.
Putnam, R. D. (1993). *Making democracy work: civic traditions in modern Italy*. Princeton: Princeton University Press.
Rajan, R., & Zingales, L. (2003). The great reversals: the politics of financial development in the 20th century. *Journal of Financial Economics*, *69*, 5–50.
Ramey, G., & Ramey, V. (1995). Cross-country evidence on the link between volatility and growth. *American Economic Review*, *85*, 1138–1151.
Roberts, B. (1990). A dead senator tells no lies: seniority and the distribution of federal benefits. *American Journal of Political Science*, *34*, 31–58.
Weede, E. (1986). Sectoral reallocation, distributional coalitions and the welfare-state as determinants of economic growth rates in industrialized democracies. *European Journal of Political Research*, *14*, 501–519.
Whitely, P. (1983). The political economy of economic growth. *European Journal of Political Research*, *11*, 197–213.
Wittman, D. (1995). *The myth of democratic failure: why political institutions are efficient*. Chicago: The University of Chicago Press.