

## INSTITUTIONS, LOBBYING, AND ECONOMIC PERFORMANCE

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We investigate whether the impact of institutions depends not just on their current state but also on how they came to be. In particular, we hypothesize that while economic freedom that emerges spontaneously may be growth promoting, economic freedom that emerges as a result of costly lobbying efforts may be less fruitful. In an extreme case, costly lobbying efforts may even negate the growth-enhancing effect of economic freedom. To the extent that lobbying efforts constitute an opportunity cost of resources diverted away from investment and production, our hypothesis also implies that greater the opportunity cost of lobbying, the more efficient is the institutional environment. Panel data analysis reveals the expected positive relation between economic freedom and growth, and consistent with our hypothesis, the findings indicate that the impact of economic freedom on growth does indeed diminish as lobbying efforts increase. In addition, we find that lobbying is more harmful to growth at greater levels of economic freedom.

## 1. INTRODUCTION

A growing literature has highlighted the importance of institutions for economic growth and development. Although the growth promoting impact of economic freedom is well established in the literature, we nonetheless re-examine the relation. We hypothesize that the impact of institutions depends not just on their current state but also on how they came to be. Specifically, we assume a nonlinear relation between economic freedom and growth that is conditional on lobbying. To the extent that the observed level of economic freedom is influenced by lobbying, we hypothesize that the benefits of a given level of economic freedom will be diminished.

Lobbying itself may have an indirect and ambiguous effect on economic activity, depending on whether pressure enhances or inhibits institutions that foster economic freedom. Because lobbying requires resources – resources that otherwise could have been put to productive use – lobbying entails opportunity costs, and may therefore also have a direct and negative impact on economic activity. The opportunity costs of lobbying, and therefore the growth effects of lobbying, thus depend on the level of economic freedom. The higher the quality of economic institutions, the more costly is lobbying with respect to growth.

We estimate a growth model that not only accounts for the impact of economic freedom on growth but also allows for the possibilities that (1) lobbying reduces the positive impact of economic freedom on growth, and (2) the negative impact of lobbying on growth may be higher in societies with higher levels of economic freedom. As expected, our findings indicate that economic freedom is positively related to growth unless lobbying is extreme. Notably, in such extreme cases, the negative relation found is not statistically significant. The overall effect of lobbying on growth is generally negative for most of the observations in our sample, consistent with Mancur Olson's

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(1982) theory of institutional sclerosis. However, in societies with very limited economic freedom the findings indicate that lobbying promotes growth. However, this is only an out-of-sample effect, and does not apply to any of our observations. Most importantly, we find that an interaction between economic freedom and lobbying is negatively related to growth. This finding is consistent with our hypothesis that economic freedom protected or produced by the efforts of lobbying is less growth enhancing than economic freedom that occurs in the absence of lobbying, and is also consistent with the hypothesis that the opportunity cost of lobbying increases with the extent of economic freedom. Several studies have examined a conditional, nonlinear relation between political freedom and corruption and growth (Aidt et al., 2008; Méon and Sekkat, 2005; Méndez and Sepúlveda, 2006). As far as we are our aware, our study is the first to examine a conditional, nonlinear relation between economic freedom and lobbying and growth.

## 2. RELATED LITERATURE

Since the development of the “new” institutional economics by North, Coase, and Williamson, a large literature has developed testing the relation between institutions and long-run growth. Consensus has generally emerged that institutions do indeed explain the more proximate causes of growth, namely, capital accumulation and technological change. For example, Rodrik et al. (2004) claim that “institutions rule” and “trump” the role of geography and market integration in the determination of income levels. Acemoglu et al. (2005) declare institutions the “fundamental” cause of long-run growth. Whereas some of the empirical literature has focused on particular institutions, such as the legal system (La Porta et al., 2008), trade openness (Sachs and Warner, 1997b), financial regulation (Bekaert et al., 2005), or corruption (Aidt, 2009; Mauro, 1995), a great deal of studies have relied on a broad-based measure of institutions that govern market interactions, or are consistent with “economic freedom.” The most comprehensive measure is the Fraser Economic Freedom of the World index. The Fraser index has been used so extensively in empirical work that it is already the subject of several surveys (Berggren, 2003; Doucouliagos, 2005; De Haan et al., 2006; Hall and Lawson, 2011). The current index is based on five categories which represent size of government, protection of property rights, sound monetary policy, openness to international trade, and general market regulations. Dawson (1998) was one of the first to find a positive relation between (an earlier, less-extensive version of) the index and economic growth. Many subsequent studies also revealed a positive impact on economic growth in both cross-country and panel data analyses (Doucouliagos, 2005).

Most studies presume a linear relationship between the aggregate value of the index and growth, although there are some exceptions. Heckelman and Powell (2010) interact the index with a measure of corruption, although their focus is on how the effect of corruption on growth depends on the level of economic freedom, rather than the other way around. Similarly, Azman-Saini et al. (2010) interact economic freedom with the level of foreign direct investment (FDI) to show that the benefits of FDI are contingent upon the quality of institutions in the host country.<sup>1</sup> In addition, several

<sup>1</sup>Economic freedom interactions have also been considered in studies that investigate effects other than growth. For example, Stroup (2007) interacts economic freedom with political rights in a study of health, education, and disease prevention.

studies have determined that the different areas of economic freedom do not all have the same influence on growth (Berggren and Jordahl, 2005; Carlsson and Lundström, 2002; Heckelman and Knack, 2009). In our empirical work, we also use the Fraser index of economic freedom as a proxy for institutions. In contrast to much of the earlier literature, we do not assume a purely linear relation between economic freedom and growth. Rather, we estimate a nonlinear relation that captures the potential interaction between economic freedom and lobbying, noting how both the impact of institutions and the impact of lobbying depend on each other. In addition, following the recent trend we examine which specific institutions drive our initial results by examining the separate areas of the aggregate index.

A separate literature designed to test Olson's (1982) theory of institutional sclerosis has used a variety of proxy measures to determine if special interest groups reduce economic growth. Due to a lack of data, early cross-country studies relied on indirect measures of national and governmental stability to implicitly capture the formation of interest groups (e.g., Bernholz, 1986; Goldsmith, 1987; Weede, 1984). More recently, interest group activity has been proxied by the World Value Surveys which record the number of groups respondents belong to (Knack, 2003; Knack and Keefer, 1997) or the number of interest groups listed in the World Guide to Trade Associations (Babacan, 2010; Coates et al., 2011; Heckelman, 2000). Perhaps due to the large number of alternative proxies employed, the literature has generated mixed results regarding the detrimental impact of interest groups (Heckelman, 2007).

We bring together these two strands of the institutions literature by investigating the relationship between economic freedom and interest groups in affecting growth rates.

### 3. DESCRIPTIVE MODEL

Policy-makers may choose policies that reduce or enhance economic freedom for a number of reasons. Ideology may drive market interventions as well as support for free markets. For example, one might favor tariffs to redistribute rents into a particular sector due to a preference for equity over efficiency; or one might favor free trade due to a preference for efficiency over equity, or due to a preference for economic liberty. A politician's desire to retain power may also drive policy choices that affect economic freedom. For example, in democratic settings, a desire to win votes from a rationally ignorant public may drive market interventions. In autocratic settings, market interventions may produce rent that can be used to buy-off opposition or reward cronies. We focus on yet another catalyst for policy choices: Special interest groups that pressure policy-makers via lobbying and other activities. Unlike other catalysts, lobbying may exert both a direct effect on economic activity through the opportunity cost of foregone resources and an indirect effect on economic activity by altering policies and institutions that affect the productivity of resources. Via its impact on the institutional environment, lobbying may have an ambiguous effect on economic activity, depending on whether pressure enhances or inhibits institutions that foster economic freedom.

To the extent that the level of economic freedom observed is influenced by lobbying (and does not emerge solely as a result of the exogenous ideological preferences of policy-makers), we hypothesize that the benefits of a given level of economic freedom will be diminished. For example, consider two societies, both with the same high level

of economic freedom. Suppose that policy-makers in the first society have a strong exogenous preference for efficiency, so that a high level of economic freedom simply emerges spontaneously. Further suppose that policy-makers in the second society have a weaker exogenous preference for efficiency, and only maintain a high level of economic freedom due to lobbying by special interests that favor economic freedom. For example, policy-makers in the second society may propose an excise tax in a particular market. Industry groups may then lobby to ensure the tax does not become law, and succeed. In the first society, all resources are devoted to productive activities. In the second society, some resources are devoted to lobby activities. As a result, although both societies feature the same institutional environment vis-à-vis economic freedom, the first society will be more productive than the second. In other words, although the market-distorting tax that was proposed in the second society does not exist, an analysis confined to the examination of current policies, without consideration for the process that induced the outcomes observed, fails to account for the opportunity costs of lobbying to prevent the tax. In the extreme, the more lobbying that is necessary to prevent the imposition of a tax, the less efficient it may be not to have the tax. As Tullock (1967, 1971), Krueger (1974), Varian (1989) have all noted, cumulative losses from collective rent seeking can be quite large relative to the rents under consideration.

Put differently, one might characterize lobbyists as entrepreneurs who devote their efforts to innovation in policy, rather than to innovation that enhances production. While such an allocation of resources may be good for the entrepreneurs, it may not be good for society overall, even though it may well be better than the alternative – no lobbying, but a lower level of spontaneously emerging economic freedom. Markets, in other words, do not function as well as they otherwise might when lobbying takes place. Institutional arrangements influenced by lobby activities may also be more difficult to sustain relative to those adopted for “principaled” reasons because in the former case specific institutions and policies may be dependent on the persistence of lobbying which may or may not occur. Lobbying, therefore, can reduce the effectiveness of existing economic freedom by contributing to an environment of policy uncertainty.

The example offered above features successful lobbying in favor of economic freedom. Of course, lobbying in favor of economic freedom may fail rather than succeed. Or lobbying may oppose economic freedom and succeed. Or lobbying may oppose economic freedom and fail. The argument that the benefits of a given level of economic freedom may be diminished by lobbying applies to these cases as well, as fewer resources are devoted to production, and thus the advantages of strong economic institutions are being less utilized. Furthermore, entrepreneurs may be unsure over what changes, if any, future lobbying will bring, thereby limiting their long-run planning horizon. In addition, we note that the behavior of policy-makers may not be nearly as straightforward as suggested by our example. In particular, McChesney’s (1987, 1997) theory of rent extraction predicts that if lobbying directly benefits policy-makers (through bribes, entertainment, etc.), policy-makers may encourage such activities by threatening to alter institutions in such a way that targets specific groups for harm. Examples might include proposing new regulations or removing existing tariffs. These groups will then lobby to maintain the status quo. The extent to which policy choices and lobbying are intertwined may thus be even greater than our example suggests.

A corollary follows from our hypothesis that the impact of economic freedom on growth depends on the extent of lobbying in a society. In particular, if the growth effects of economic freedom depend on the extent of lobbying, then the growth effects of lobbying depend on the extent of economic freedom. If economic freedom is relatively low, we expect resource productivity to be relatively low. The opportunity costs of lobbying will then also be relatively low, as the reallocation of resources away from production and toward lobbying will not entail as great an efficiency loss as when markets are open and competitive. However, if economic freedom is relatively high, we expect resource productivity to be relatively high. The opportunity costs of lobbying will then also be relatively high. The opportunity costs of lobbying, and therefore the growth effects of lobbying, thus depend on the level of economic freedom. The more freedom, the more costly is lobbying with respect to growth.

Our hypothesis implies that the relation between economic freedom and growth is nonlinear due to the interplay between economic freedom and lobbying. Economic freedom is expected to be most beneficial when it occurs naturally in the absence of lobbying. Similarly, lobbying is least harmful, in an opportunity cost sense, when it occurs in an environment of very limited economic freedom.

#### 4. DERIVING THE EMPIRICAL FRAMEWORK

We adopt the growth framework utilized by Barro et al. (1995).<sup>2</sup> Assuming a Cobb–Douglas production function, Barro et al. show that during the transition to steady state,

$$y(t) = (1 - \gamma)y^* + \gamma y(0), \quad (1)$$

where  $y(t)$  represents the log of per capita output at time  $t$ ,  $y^*$  represents the log of steady-state per capita output,  $y(0)$  represents the log of initial per capita output, and  $\gamma = e^{-\beta t}$ . Written in this form, the log of per capita output (shortened as output hereafter) for a country at any time  $t$  is the weighted average (i.e.,  $0 \leq \gamma \leq 1$ ) between its initial output and its steady-state level, as long as  $\beta \geq 0$ . Thus,  $\beta$  represents the rate of convergence to the steady state. Because  $\beta = 0 \implies \gamma = 1$ , in this case,  $y(t) = y(0) \forall t$ , which implies a stagnant economy with no movement toward the steady state. For this reason, we assume  $\beta > 0$ . Then, given a long enough period such that  $t \rightarrow \infty$ , it can be shown that  $y(t) \rightarrow y^*$ .

The total growth rate over any specified  $T$  periods can be found by rewriting (1) as

$$y(T) - y(0) = (1 - \gamma)y^* + (\gamma - 1)y(0). \quad (2)$$

Our interest is in specifying the determinants of  $y^*$ . As in Sachs and Warner (1997b), we treat  $y^*$  not as a constant value to which a country is converging, but rather as a variable with a constant trend growth rate. Various factors may influence the steady state, and Sachs and Warner focus on the national savings rate and efficiency. Barro et al. (1995) detail how these are affected by openness, tax rates, inflation, and real interest rates, all of which have been used in various combinations by empirical growth scholars under the current rubric of “institutions.” As detailed

<sup>2</sup>See also Sachs and Warner (1997a).

below, our proxy for institutions contains measures of all these, as well as additional policy/institutional variables.

We therefore model  $y^* = f(I)$  as a function of institutions. Specifically,

$$f(I) = \lambda_0 + \lambda_1 I(L) + \lambda_2 L + \lambda_3 I(L) * L, \tag{3}$$

where in the empirical work which follows,  $I$  is an index of institutional quality and  $L$  represents the amount of lobbying that takes place. (To foster our discussion, we assume throughout that, consistent with our empirical proxies defined below,  $I, L \geq 0$ .) The inclusion of  $I(L)$  in the model implies that the quality of institutions affects growth and that the quality of institutions is affected by lobbying. The inclusion of  $L$  in the model implies that lobbying affects growth. Most importantly, the inclusion of  $I(L)*L$  in the model reflects our central hypothesis that the impact of institutions is affected by the amount of lobbying that takes place, and the associated corollary that the effect of lobbying depends on the prevailing institutional environment. Thus, lobbying has both a direct effect on growth through resource allocation, and a further indirect effect on growth through its impact on institutions. The parameter  $\lambda_0$  measures initial efficiency independent of institutions and lobbying, which may be due to culture or other unobservable factors.

Substituting equation (3) into equation (2) results in the reduced form growth specification

$$\dot{y} = b_0 + b_1 I(L) + b_2 L + b_3 I(L) * L - b_4 y(0), \tag{4}$$

where  $\dot{y} = y(T) - y(0)$  and  $b_j = \lambda_j(1 - \gamma)$ . (The general representation for  $b_j$  holds for  $b_4$  by defining  $\lambda_4 \doteq 1$ .) Differentiating with respect to  $I$ , the model implies that the marginal impact of institutions on growth is

$$\frac{\partial \dot{y}}{\partial I} = b_1 + b_3 L. \tag{5}$$

In the absence of lobbying, institutions evolve spontaneously and equation (5) reduces to  $b_1$ . If institutions spontaneously evolve, we expect that stronger institutions will promote growth. Thus, we expect  $b_1 > 0$ . To the extent that resources are used in the course of lobbying that accompanies institutional formation, or that faith in the long-run viability of the institutional structure is undermined by lobbying, our hypothesis is that growth will be negatively impacted. In other words, we hypothesize that  $b_3 < 0$ . Our specification admits the possibility that a country may exhibit stronger growth if institutions are allowed to (somewhat) weaken without resistance than if a great deal of social resources are devoted to protecting the institutions instead of being used for production. Such an extreme case seems unlikely. In general, we expect that between two countries with the same institutional structure, the country whose institutional environment operates with less lobbying will experience greater growth. In other words, except under the most severe case of resource misallocation (where  $L$  is extremely large), we expect that  $\partial \dot{y} / \partial I = b_1 + b_3 L > 0$ .

Differentiating equation (4) with respect to  $L$  yields the marginal impact of lobbying, which is

$$\frac{\partial \dot{y}}{\partial L} = b_1 \frac{\partial I}{\partial L} + b_2 + b_3 (I + \frac{\partial I}{\partial L} L). \tag{6}$$

A common assumption is that interest groups focus on redistributive policies, even if such policies are socially inefficient (Olson, 1982).<sup>3</sup> For example, an industry group may lobby to enact a protective tariff. Thus, lobbying may lower growth both through the socially inefficient use of resources devoted to policy instead of production, and the weakening of the institutional environment which further retards growth. However, the symmetry of rent protection (McChesney, 1987, 1997) suggests lobbying may also occur to prevent inefficient policy that targets specific groups for harm, such as a proposed windfall profits tax on oil revenues, or the imposition of wage and price controls.<sup>4</sup> Thus, lobbying may either weaken or protect the institutional environment (Becker, 1985).<sup>5</sup> In other words, the sign of  $\partial I/\partial L$  is ambiguous. As a result, the sign of equation (6) is ambiguous.

If we suppose that lobbying is completely ineffective in affecting policy ( $\partial I/\partial L = 0$ ), the only economic impact of lobbying would be the opportunity cost of resources allocated to lobbying rather than to production. Similarly, if rent protection dominates the rent-seeking aspect of lobbying then successful lobbying primarily preserves the status quo. In either case, equation (6) simplifies to

$$\partial \dot{y}/\partial L = b_2 + b_3 I. \quad (7)$$

From above, we know that  $b_3 I < 0$ . However, nothing about our hypothesis identifies the sign of the parameter  $b_2$ , which represents the impact of lobbying conditional on  $I = 0$ , that is, the theoretically lowest possible level of economic freedom. In general, because equation (7) captures the opportunity cost of lobbying, we expect the sign of equation (7) to be negative. However, if  $b_2$  is positive in sign and sufficiently large in magnitude relative to the magnitude of  $I$ , then the net marginal impact of lobbying on growth may be positive. Our framework suggests that we might only observe such an outcome in countries with very weak institutions. In such a setting, the direct impact of lobbying on growth may be positive because special interest groups actually engage in activity that enhances productivity, rather than rent seeking. When institutions are very weak, there may be few additional rents available to capture through the policy process.

We note that Lane and Tornell (1996) develop an alternative theory of the interplay between institutions and lobbying.<sup>6</sup> They presume lobbying is always harmful and that high-quality institutions keep interest groups relatively in check. When institutions are

<sup>3</sup>The exception would be if an interest group is so large it encompasses close to the entire society. As Olson (1982) details, such groups would have difficulty forming due to collective action problems. In the empirical section which follows, our proxy for lobbying by interest groups arguably does not include any such groups.

<sup>4</sup>To be clear, rent protection need not be limited to socially inefficient policy. Rent protective lobbying may occur, for example, when a tariff already in place is threatened with removal, as described in the previous section.

<sup>5</sup>Doner and Schneider (2000) argue that interest groups may serve to improve institutional quality in developing nations, in particular, because their institutions tend to be the weakest. However, as a reviewer points out, active lobbying may also undermine faith in the longevity of the existing institutional structure rendering institutional reform less effective.

<sup>6</sup>A recent contribution to the theoretical literature on institutions and rent seeking is Barelli and Pessôa (2012). Similar to Lane and Tornell (1996), they assume that rent seeking is economically harmful through the Tullock opportunity cost of resource usage. The efficiency of institutions in preventing rent-seeking activities determines the size of the welfare loss. A further complication is added by incorporating distortions in capital accumulation into the model, but such distortions are shown to be dominated by the Tullock costs. Barelli and Pessôa's model assumes that strong institutions reduce rent seeking. In contrast, we focus on the possibility that rent seeking affects institutions (possibly for the better and possibly for the worse).

weak, interest groups are presumed to run amok, pilfering as much for themselves as they can at the expense of general efficiency. High-quality institutions lessen the damage wrought by interest groups. Their theory also implies an interaction term between institutions and lobbying as in equation (4), but in contrast to our model they predict  $b_2 < 0$  and  $b_3 > 0$ .

##### 5. DATA FOR INSTITUTIONS AND LOBBYING

To estimate the proposed model of growth, we require measures of institutions and lobbying. We use the Fraser Economic Freedom of the World index (EF) as a proxy for the quality of institutions. The current version of the index ranges from 0 to 10 based on an unweighted average of the scores assigned to five areas covering government size, legal structure, sound money, international trade, and regulation.<sup>7</sup> Higher scores represent greater levels of freedom in market-oriented institutions and policies, or less government intervention. The data used to construct the Fraser index is drawn largely from sources such as the World Bank's World Development Indicators and Worldwide Governance Indicators and Doing Business database; the IMF's International Financial Statistics; and the PRS Group's International Country Risk Guide. Annual data are available beginning in 2000 and in 5-year intervals for years prior to 2000 as far back as 1970.<sup>8</sup>

There are different ways to measure the extent of lobbying activities, but little work has been done to quantify such activity across a large span of countries. Lane and Tornell (1996) assume that concentrated industries are more prone to engage in lobbying and therefore use a dummy variable to indicate when the largest three sectors possess a share of total manufacturing market value above 0.50 as their proxy of lobby activity. We adopt a more direct measure. We presume that there is a direct relationship between the number of special interest groups and the amount of lobbying activity that takes place. As such, we use the number of interest groups compiled in the series *World Guide to Trade Associations* (WGTA). Data from the WGTA have been used in several previous growth studies (Babacan, 2010; Coates et al., 2011; Heckelman, 2000; McCallum and Blais, 1987), although these studies feature a limited sample size relative to our study. The WGTA is an international directory of "trade associations," providing contact information for various groups. The groups listed are quite comprehensive with respect to association type, and include groups in the industrial, commercial, trade, and service sectors, professional organizations, consumer organizations, employers' and labor groups, and organizations of service professionals. To date, WGTA has been published six times at irregular intervals: in 1973, 1980, 1985, 1995, 1999, and 2002. However, the criterion for inclusion in the WGTA had changed over time. In particular, "local organizations" were included in the first two editions but not in subsequent editions. Thus, the groups listed in the earlier editions are not entirely comparable with those listed in the more recent editions.<sup>9</sup> We therefore rely on counts derived from the more recent 1985, 1995, and 1999 editions to explain total growth rates over the subsequent 5-year intervals 1985–1989, 1995–1999,

<sup>7</sup>Each area score is based on an unweighted average of various components within that category. The number of components varies across the areas.

<sup>8</sup>Country coverage for 1970 is much more limited than in recent years.

<sup>9</sup>For consistency, our group counts do not include chambers of commerce which appear in some but not all editions of the WGTA.



TABLE 1. DESCRIPTIVE STATISTICS

Variable	<i>n</i>	Mean	Median	Minimum	Maximum	SD
Growth	346	10.559	9.151	-54.778	85.875	16.270
Groups	346	209.510	24.	0.	5,773	661.620
Log groups	346	3.460	3.178	0.	8.661	1.742
EF	346	6.016	6.058	2.299	9.082	1.175
Log GDP	346	8.572	8.687	4.764	11.045	1.315
Population	346	42.608	9.709	0.166	1253.740	139.720
GCF ratio	333	21.594	21.582	5.958	40.071	5.804
PRCL	344	4.747	5.	1.	7.	1.865
Polity	326	3.678	7.	-10.	10.	6.691
Violence	326	0.706	0.	0.	13.	1.713
Ethnic	346	0.436	0.423	0.002	0.930	0.262
Religious	346	0.446	0.451	0.004	0.860	0.237
Linguistic	338	0.384	0.340	0.002	0.923	0.296
Education	279	5.831	5.556	0.423	12.247	2.853
EF1	345	5.645	5.758	1.753	9.466	1.565
EF2	343	5.856	5.855	0.722	10.000	2.142
EF3	346	6.773	6.862	0.000	9.838	2.408
EF4	336	6.058	6.333	0.500	9.968	1.900
EF5	340	5.883	6.022	0.000	9.532	1.796

and 2000–2004. To match the data for group counts, we use the 1985, 1995, or 2000 values for all additional variables, except where noted. Growth is measured as the percentage change in PPP converted GDP per capita at 2005 constant prices. Data are taken from Penn World Tables, version 7.0.

We have a matched sample of 346 observations for EF, groups, and growth data.<sup>10</sup> As shown in the second row of Table 1, there is a wide range of interest group counts across the dataset. Bahrain, Oman, and Sierra Leone have zero interest groups listed for 1985,<sup>11</sup> whereas Germany has over 4,500 groups in every year. At the next highest level, United States ranges from 3,316 to 3,796 groups. France and Great Britain range between 1,788 and 2,798, and Austria from 1,575 to 1,695. Of these, only United States increased the number of groups in each year, whereas France, Great Britain, and Austria declined in each year. These latter five nations with the most groups have much larger economies in terms of population size and/or wealth than countries such as Bahrain, Oman, and Sierra Leone. This observation suggests that it is important to control for economy size in the growth regressions, to ensure that the group count is not simply capturing a size effect.<sup>12</sup>

In terms of economic freedom, no country in our sample has either the minimum or maximum potential value. EF values are quite symmetrically dispersed, with the mean-to-median ratio almost at 1. In contrast, the group count has a mean-to-median ratio of almost 10. Using the log form for Groups balances the ratio tremendously.<sup>13</sup>

<sup>10</sup>There are 348 observations that match EF and groups. From these, GDP data are missing for Kuwait and United Arab Emirates for the first growth period.

<sup>11</sup>Bahrain and Oman are both listed as having one chamber of commerce in 1985, and are not included in subsequent editions of the WGTA. Sierra Leone lists three interest groups for 1995 and 1999.

<sup>12</sup>Coefficients on both population and log real GDP per capita are positive and statistically significant in an OLS regression using Groups as the dependent variable. See also Bischoff (2003) and Coates et al. (2007).

<sup>13</sup>The log of groups is reset to zero for the three observations of zero groups.

TABLE 2. GROWTH REGRESSIONS

Specification	(1)	(2)
	Country and time dummies	Colonial and time dummies
EF	13.490** (4.488)	7.796** (5.135)
Log groups	10.545* (1.967)	5.252** (2.308)
EF × log groups	-1.897** (-2.500)	-0.989** (-3.106)
Population	0.194** (3.027)	0.017** (5.449)
Log GDP	-41.761** (-9.975)	-2.392** (-2.083)
<i>n</i>	346	346
No. of countries	122	122
$\bar{R}^2$	0.354	0.205

Notes: Dependent variable is PPP converted real GDP per capita total growth over 5-year intervals. *t*-statistics in parentheses are derived from bias-adjusted HAC standard errors.

\* and \*\* indicate significance at the 10% and 5% level.

Although we only present estimates when using the log form for groups, our results are robust in terms of sign and statistical significance to using either the raw count or its log form.

## 6. REGRESSION RESULTS

### 6.1 Baseline Specification

Our baseline regression is estimated using a slightly unbalanced panel of growth rates for 121 nations over three time periods, from 1985 to 1989, 1995 to 1999, and 2000 to 2004, for a total of 346 observations. (See the appendix for a list of countries and missing observations.) Our specification is based on equation (4), with population (from Penn World Tables) added to control for economy size (initial GDP is already included as part of the derived model).<sup>14</sup> Estimation results from OLS with panel-adjusted Arellano HAC standard errors are reported in the first column of Table 2.<sup>15</sup> Both country and time fixed effects are included in the model to capture unobserved cross-sectional and time-dimension heterogeneity.<sup>16</sup>

The findings in column (1) of Table 2 indicate that the coefficient estimate on economic freedom ( $b_1$ ) is positive and statistically significant, as expected. That is, in the absence of lobbying ( $L = 0$ ), stronger institutions promote growth. The coefficient estimate on the interaction between economic freedom and lobbying ( $b_3$ ) is negative and statistically significant, as hypothesized. That is, the relation between

<sup>14</sup>In all cases, the raw value of population produces a better specification fit than log population. We measure population in millions.

<sup>15</sup>We also ran a similar specification using data from ICRG as our institutional proxy instead of the Fraser index. Our ICRG measure represents the average value of their Military in Politics, Law and Order, Corruption, Investment Profile, and Bureaucracy Quality indexes. (The first two are also part of the Fraser index.) The qualitative findings are similar to those in Table 2, although the sample is smaller and the significance level of the interaction term is slightly lower. Results are available upon request.

<sup>16</sup>Results are robust to dropping the time dummies. Below, we also present estimates replacing the country dummies by colonial heritage dummies.

economic freedom and growth is indeed conditional on lobbying, and lobbying diminishes the positive impact of economic freedom on growth. The magnitude of the estimated coefficient on economic freedom implies that in the absence of lobbying, every 1 unit increase in economic freedom generates 13.5 percentage points higher growth over a 5-year interval. The findings thus suggest that countries in which strong institutions emerge spontaneously can expect substantial growth benefits. The growth benefits of strong institutions, though, diminish markedly as lobbying increases. For example, a country with the mean number of groups (209.5) can expect not a 13.5 percentage points boost, but only 6.9 percentage points higher growth over a 5-year interval for every 1 unit increase in economic freedom. If we exclude the interaction term from the model, the coefficient estimate on economic freedom drops nearly in half, from 13.490 to 7.473. This unconditional estimate (7.473) of the impact of economic freedom reflects the weighted average of the conditional effects ( $b_1$  and  $b_3$ ) revealed when the interaction term is included in the model. The large difference in magnitude of these two estimates further illustrates the importance of estimating a conditional relation to understand the full potential of strong institutions for generating growth.

The conditional marginal effects of economic freedom on growth and the conditional marginal effects of lobbying on growth implied by the coefficient estimates in column (1) of Table 2 are summarized in Table 3 and visually depicted in Figures 1 and 2, respectively. In addition to plots of the conditional marginal effects and the associated 90% confidence intervals, the figures also include plots of all the combinations of economic freedom levels and log group levels observed in the data. Turning first to Figure 1, we see that the marginal effect of economic freedom on growth is positive if log groups are less than 7.111 (1,225 groups), but *negative* if log groups exceed this level. However, the marginal effect is only statistically significant if log groups are less than 5.278 (196 groups). This significantly positive effect holds for 85% of the sample observations. The negative association between the marginal impact of economic freedom and the number of groups is consistent with our hypothesis that spontaneously emerging economic freedom is more beneficial for growth than the same level of economic freedom generated by lobbying due to the opportunity costs of resources devoted to lobbying. The effect is also consistent with the notion that institutional improvements driven by lobbying efforts may be viewed by investors as more uncertain to be maintained into the future, and are therefore less effective.<sup>17</sup> As we noted in section 4, our framework admits the possibility that the negative impact of excessive lobbying might swamp the positive impact of economic freedom. Figure 1 reveals that there are indeed a handful of countries – namely, France, Germany, Great Britain, and United States – in which lobbying rises to such levels, though the effect is not statistically significant.

<sup>17</sup> Similarly, reductions in economic freedom brought about by lobbying may be less harmful under the belief that they will be easier to reverse in the future. For example, suppose the steel industry successfully lobbies for a protectionist tariff. Firms which rely on steel as an input would then be saddled with higher costs and normally lay off workers and reduce output. If these firms believe that counter-lobbying by them might be able to successfully repeal the tariffs, they might not feel the need to reduce current output as much. Greater reductions in current price to keep inventories stable, or allowing inventories to build greater than had been optimal, may be more beneficial to save the costs of rehiring and training as many new workers in the future when steel input costs come back down.

TABLE 3. ESTIMATED MARGINAL IMPACT

	Potential Minimum	Sample Minimum	Sample Median	Sample Maximum	Potential Maximum	Statistically significant Break point	Statistically significant Break point	Positive to negative Turning point
Log groups value	0	0	3.178	8.661	N/A	5.278		7.111
$dy/dEF$	13.490	13.490	7.461	-2.940		3.478		0.0
$p$ -value	<0.01	<0.01	<0.01	0.49		0.10		1.0
EF value	0	2.299	6.058	9.082	10	2.117	7.630	5.559
$dy/dGroups$	10.545	6.184	-0.947	-6.684	-8.425	6.529	-3.929	0.0
$p$ -value	0.05	0.11	0.67	0.03	0.02	0.10	0.10	1.0

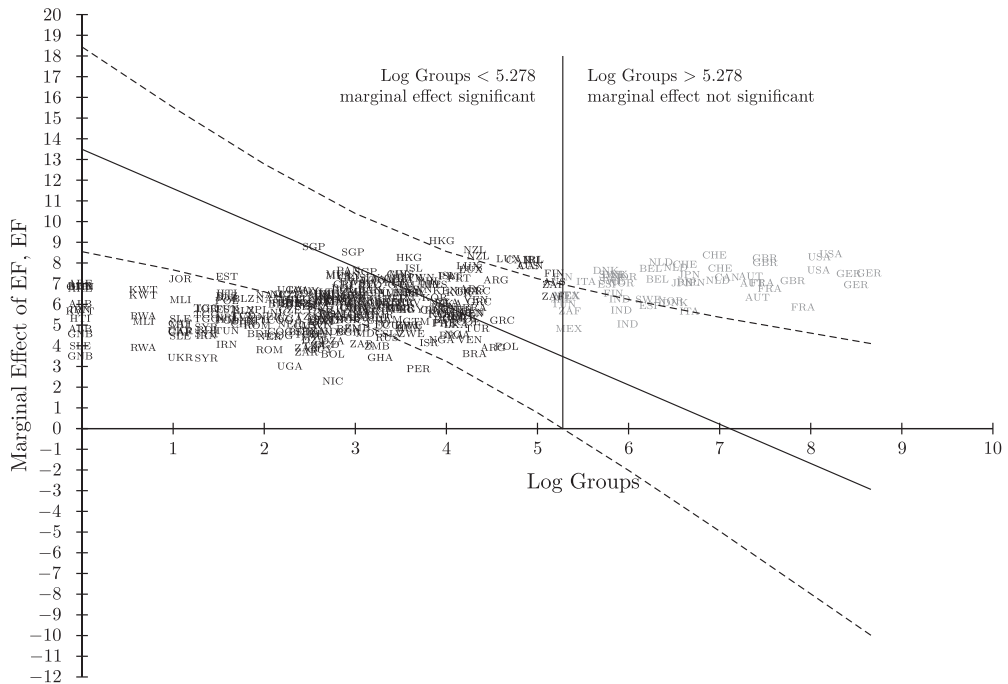


Fig. 1. Marginal effect of economic freedom conditional on number of groups.

Returning to Table 2, the coefficient on log groups by itself represents the effect from adding groups specifically when a country has an EF index value of zero, representing minimal economic freedom in every category. No actual country observation comes close to this extreme. With respect to the conditional marginal effects of lobbying on growth, Figure 2 indicates that the impact of lobbying on growth remains positive as long as the level of economic freedom is below 5.559, and becomes negative at all higher levels of economic freedom. The effects are only significant for levels of economic freedom below 2.117 and above 7.630. The smallest observed level of economic freedom in the sample is 2.299, in Nicaragua. Thus, the positive and statistically significant relation between lobbying and growth occurs only out of sample. The only statistically significant relation within sample is always negative, consistent with institutional sclerosis. Approximately 10% of our sample observations (29 observations representing 15 countries) exceed the 7.630 threshold value that indicates that their growth rates are significantly harmed by additional groups. Put differently, and as the plot of data points indicates, we do not find a statistically significant relation between lobbying and growth for most of the observations in our sample. This finding contrasts with the argument that the opportunity costs associated with lobbying efforts may be substantial.<sup>18</sup> Our findings can be compared with earlier studies that also use group counts as a proxy for lobbying activity. In small sample pure cross-sections, McCallum and Blais (1987) and Heckelman (2000) report negative but statistically

<sup>18</sup>An important caveat to this finding is noted below, in section 6.2. In particular, when colonial history dummies are used instead of country dummies, we find a negative and statistically significant relation for nearly half of the sample.



In sum, we find that groups are harmful to growth in most countries unless economic freedom is relatively low. The benefits of spontaneously emerging economic freedom are found to be substantial. Importantly though, the benefits of economic freedom are estimated to diminish with the number of groups but remain positive overall, except in those few nations with the most groups.

## 6.2 Robustness

We next supplement the base specification by adding additional control variables that might alter the extent of economic freedom or group formation. Many of these variables, such as democracy and stability indicators, do not vary much, if at all, over time for many countries. As such, they are highly correlated with several of the country dummy variables. We therefore replace the country fixed effect with a series of colonial heritage dummies.<sup>20</sup> Before including the additional variables, we first report in column (2) of Table 2 the effect of replacing the country dummies with colonial history dummies. Signs and significance for all variables (including the interaction term) remain the same. Economic freedom maintains its significantly positive influence on growth until the number of groups exceeds 388, a higher count than found using the country fixed effect (196). Only 35 total observations exceed this threshold. The marginal effect from increasing EF does not become negative until the group count exceeds 2,643 (valid only for Germany and United States), and the negative impact is never statistically significant. The break point at which groups become significantly harmful for growth occurs at a substantially lower level of 6.3 on the EF index. Almost half the sample observations (144, comprising 44% of the sample) representing at least one observation from 75 of the 120 sample countries lie beyond this threshold. Thus, in general, results are largely similar when using either the country or colonial dummies, but the range of data representing statistically significant marginal effects for both groups and economic freedom is greater in the latter case.

In terms of additional controls, we first consider adding measures of democracy, which have been positively linked to both group formation (Coates et al., 2007) and the level of economic freedom (Dawson, 1998; Feng, 2003). The two most popular proxies for the degree of democratization are those created by Freedom House and Polity. Freedom House has separate indexes for the extent of political rights and civil liberties. Each is measured on a 1–7 scale where 1 represents the most democratic freedoms. The Freedom House democracy index is then computed as a straight average of the political rights and civil liberties values (PRCL). To avoid confusion, we follow the standard practice of inverting the index, so that greater values represent more democratic freedom. The Polity index is computed as the Polity democracy index minus the Polity autocracy index. Each runs from a 0–10 scale, so that the Polity index ranges from –10 to 10, where higher values represent more checks and balances on the executive and greater openness in political competition.

Regression estimates using the democracy proxies are presented in the first two columns of Table 4. Despite the high degree of correlation between the two variables ( $\rho = 0.89$ ), the Freedom House index is found to be statistically significant, whereas

<sup>20</sup>Bertocchi and Canova (2002) show that colonial dummies outperform regional dummies in standard growth regressions.

TABLE 4. ROBUSTNESS CHECKS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log groups	5.222** (2.353)	5.204** (2.220)	5.526** (2.431)	5.128** (2.279)	4.854** (2.069)	4.997** (2.164)	8.072** (3.574)	3.299 (1.324)
EF	7.713** (5.173)	7.573** (4.934)	7.295** (4.974)	7.706** (5.137)	7.601** (5.002)	8.228** (5.485)	8.822** (5.375)	5.725** (3.468)
EF × log groups	-1.035** (-3.368)	-1.004** (-3.209)	-1.001** (-3.203)	-0.968** (-3.073)	-0.914** (-2.749)	-0.959** (-3.012)	-1.360** (-4.315)	-0.585 (-1.632)
Population	0.020** (-5.302)	0.018** (-4.772)	0.019** (-6.705)	0.016** (-4.790)	0.017** (-4.889)	0.017** (-5.626)	0.021** (-5.201)	0.008** (2.116)
Log GDP	-2.966** (-2.583)	-2.583** (-2.203)	-2.448** (-2.001)	-2.699** (-2.157)	-2.490** (-2.219)	-3.268** (-2.616)	-2.000 (-1.021)	-3.348** (-2.791)
PRCL	1.278** (2.488)							
Polity		0.206 (1.145)						
Violence			-0.619 (-0.969)					
Ethnic				-3.736 (-1.032)				
Religious					-3.597 (-0.966)			
Linguistic						-6.347** (-2.299)		
Education							0.591 (0.919)	
GCF ratio								0.725** (3.409)
<i>n</i>	344	326	326	346	346	338	279	336
No. of countries	121	115	115	122	122	119	95	120
<i>R</i> <sup>2</sup>	0.213	0.210	0.209	0.205	0.205	0.210	0.162	0.244

Notes: Dependent variable is PPP converted real GDP per capita total growth over 5-year intervals. *t*-statistics in parentheses are derived from bias-adjusted HAC standard errors. All regressions include time and colonial dummies. Colonial dummies include Great Britain, France, Spain, Netherlands, Portugal, Belgium, Japan, South Africa, United States, and Russia. The default category is never a colony. Ethnic, Religious, and Linguistic represent fractionalization categories. \* and \*\* indicate significance at the 10% and 5% level.



the Polity index is not.<sup>21</sup> The Polity sample is missing 18 observations compared with the Freedom House sample.<sup>22</sup> Restricting the Freedom House data to the smaller Polity sample still results in the PRCL index coefficient achieving statistical significance at better than 5%. Thus, it appears that individual rights of association and (especially) the electorate (see note 21) are more important than the structural form of government in determining growth. Most importantly, for our purposes in this study, inclusion of either democracy index does not affect the signs or significance of the coefficients on EF, log Groups, or their interaction.

Stability is also a variable commonly associated with economic freedom (De Haan and Sturm, 2003), group formation (Bischoff, 2003; Coates et al., 2007), and growth (Alesina et al., 2003; Barro, 1997; Feng, 2003). We therefore examine whether the findings are robust to a control for stability. Our measure of stability is an index of political violence taken from the Major Episodes of Political Violence database that captures the extent of domestic violence and warfare due to ethnic, civil, and international episodes. As shown in column (3), the estimated coefficient on the Violence index is not significant and its inclusion in the model does not affect the other coefficients.

Columns (4)–(6) include various measures of fractionalization developed by Alesina et al. (2003). Although each measure of fractionalization is inversely correlated with growth, only linguistic fractionalization is statistically significant. (Both ethnic and religious fractionalization remain insignificant in the smaller linguistic fractionalization sample as well.) Still, controlling for fractionalization, regardless of type, does not affect our earlier results. In column (7), we add a measure of education from the Barro-Lee dataset representing the average number of years of schooling for the entire population. The variable is not significant and has no effect other than to eliminate significance of the initial level of GDP variable. This change is due strictly to the smaller sample. GDP remains insignificant even when dropping the education variable from the restricted sample. No other variables are affected. Thus, controlling for education itself does not have any impact on the earlier findings.<sup>23</sup>

Finally, in the last column we control for investment levels. Investment is the only variable to pass Levine and Renelt's (1992) robustness tests, although as they and many others have argued, investment may be endogenous to growth. Investment is measured here by the gross capital formation to GDP ratio taken from World Bank World Development Indicators database. The GCF ratio is calculated as the average over each 5-year interval. The GCF ratio is found to be positive and statistically significant. Due to its potential for endogeneity, we do not interpret this as a causal effect on growth. Nonetheless, it is important to note that controlling for GCF renders the groups variable and its interaction insignificant, with the latter just failing to make

<sup>21</sup>In additional regressions, we find that the Political Rights index would be considered significant at the 0.05 level, whereas the Civil Liberties index would be significant at only the 0.10 level. The two indexes are correlated at  $\rho = 0.91$ .

<sup>22</sup>Neither index includes values for Hong Kong.

<sup>23</sup>Despite the high collinearity, we also ran a regression including all the additional controls from specifications (1)–(7) at once. The sample was further reduced to 260 observations representing 88 separate countries. Not surprisingly, none of the additional control variables was individually statistically significant, yet all the base specification variables retain their same signs and significance levels as in column (7).

TABLE 5. INVESTMENT REGRESSIONS

Specification	(1)	(2)
	County and time dummies	Colonial and time dummies
EF	3.854** (4.902)	2.893** (3.791)
Log groups	4.138** (3.084)	2.513** (2.158)
EF × log groups	-0.650** (-3.127)	-0.554** (-3.351)
Population	0.018** (2.081)	0.013** (6.324)
Log GDP	-1.634 (-1.011)	1.428** (3.185)
<i>n</i>	336	336
No. of countries	120	120
$\bar{R}^2$	0.589	0.311

Notes: Dependent variable is average gross capital formation to GDP ratio over 5-year intervals. *t*-statistics in parentheses are derived from bias-adjusted HAC standard errors. Colonial dummies include Great Britain, France, Spain, Netherlands, Portugal, Belgium, Japan, South Africa, United States, and Russia. The default category is never a colony.

\* and \*\* indicate significance at the 10% and 5% level.

the standard 10% error cutoff.<sup>24</sup> The separate EF coefficient remains significant. This finding suggests that one way in which groups affect growth is through investment, and is consistent with Coates et al. (2010, 2011) who find groups significantly reduce capital stock growth and investment ratios. We investigate the relation between investment, economic freedom, and groups more fully in the next subsection.

### 6.3 Groups and Economic Freedom Effects on Investment

Previous studies have identified a connection between economic freedom (Ali, 2003; Dawson, 1998; Feng, 2003) or group counts (Coates et al., 2010) and investment levels, but have not considered an interplay between economic freedom and groups. Table 5 reports estimates from investment regressions based on the growth specifications presented in Table 2. Results are similar to the growth regressions, except the control variables of population and initial GDP are not always significant. The positive and significant coefficient on the EF index suggests that economic freedom is beneficial to investment when there are few interest groups operating in the economy. However, the negative and significant interaction term indicates that as groups increase, more and more resources that could have been utilized for investment are lost to alternative redistributive opportunities, thereby mitigating the benefits of economic freedom. It may also be that the increased uncertainty connected to lobbying

<sup>24</sup>Lack of significance for the interaction term is not robust. The interaction term is significant at the 10% level when using country fixed effects instead of colonial dummies. Significance levels in column (8) for the other variables are not affected. Unlike the other additional control variables utilized in columns (1)–(7), investment ratios do have sufficient time variation that country fixed effects may be the proper specification. Including all the additional control variables (using colonial dummies) also yields a significant interaction term coefficient at the 10% level (despite the inclusion of Polity, the PRCL coefficient is statistically significant at close to 5%, whereas none of the other additional controls is except for investment; *n* = 256, countries = 87). Still, in both cases, significance of the interaction term is weaker when including investment than without.

reduces the incentive to devote additional resources to investment. To conserve on space, we have not included a version of Table 3 or of Figures 1 and 2 for the investment regressions, but they are available on request. The figure depicting the marginal impact of economic freedom on investment is very similar to Figure 1. In particular, roughly 80% of the observations in the sample fall into the region in which the impact of economic freedom is positive and statistically significant. Also as in the case of the growth regression, although a few observations fall into the region in which the estimated impact of economic freedom is negative, none is statistically significant. The marginal impact of lobbying on investment is statistically significant for only 24 observations. These observations have the lowest levels of economic freedom. And for these observations, lobbying has a *positive* impact on investment. The findings thus suggest that group lobbying can play a positive role in promoting an institutional environment more conducive to investment when institutions are particularly weak. For a large number of observations, with relatively high levels of economic freedom, the marginal effects of lobbying on investment are negative. However, the effects are not statistically significant. Combined with the growth findings, these results suggest that any sclerotic impact of groups on growth may be attributable largely to the technological progress channel, rather than to the investment channel. As in the case of growth, the findings again serve to emphasize the importance of the potential for interaction between institutions and lobbying and the resulting conditional nature of the impact of institutions and lobbying.

The results in Table 5 are robust to inclusion of the other control variables used in Table 4. None of the additional variables is found to be statistically significant (Violence comes closest, but falls just short of the 10% level of significance); the coefficients for log groups and EF always remain positive and statistically significant; and the coefficient on the interaction term between log groups and EF is always negative and significant.

#### 6.4 *EF Area Regressions*

As noted earlier, the EF index is a broad indicator of economic freedom, composed of five distinct areas covering government size (EF1), legal structure (EF2), sound money (EF3), international trade (EF4), and regulation (EF5). (Area scores are based on the average of the score for every component in that area.) As revealed in the bottom rows of Table 1, the greatest level of freedom on average, and by the median observation, is achieved in the area of sound money. (Sound money is also the only area score for which there are not any missing observations.) As the descriptive statistics also indicate, sound money and regulation are the only areas in which the lowest score of zero for every component in the area is observed.<sup>25</sup> Sound money also shows the greatest variation in country scores. In contrast, legal structure is the only area in which a top score for each component in an area is observed.<sup>26</sup> Interestingly, area scores are not highly correlated, with correlation coefficients ranging from  $-0.24$  (EF1 and EF2) to  $0.59$  (EF2 and EF4) in the common sample of 330 observations. See Table 6.

<sup>25</sup>Eight countries received a zero score for EF3 in 1985, and a different nation, Romania, received a score of zero for EF5 in 1985.

<sup>26</sup>Four nations received a top score of 10 for EF2 in 1985.

TABLE 6. CORRELATION MATRIX FOR EF AREAS

	Government size	Legal structure	Sound money	International trade
Legal structure	-0.241			
Sound money	0.055	0.472		
International trade	0.043	0.587	0.505	
Regulation	0.198	0.405	0.482	0.487

Several studies have determined that the different areas of economic freedom do not all have the same influence on growth (Berggren and Jordahl, 2005; Carlsson and Lundström, 2002; Heckelman and Knack, 2009). Furthermore, it is unlikely that interest group activity affects the impact of each area symmetrically. In particular, it seems plausible that interest groups may have the largest impact on property rights (legal structure), trade barriers (international trade), and business restrictions (regulation). Similarly, the opportunity cost of devoting resources to lobbying and away from production would be diminished the most when property rights are insecure and businesses are heavily regulated. In contrast, sound money practices, such as a low inflation environment, may not be expected to have much influence on the opportunity cost of resources.

To test these notions, we replace the aggregated EF index by the individual area scores, one at a time, in the growth regressions. We include both country and time fixed effects, using the same specification as in column (1) of Table 2. The results are generally weaker than when using the aggregated EF index which assumes an equal contribution to EF across all areas. The estimated coefficient on economic freedom is statistically significant in only three of the five areas, and the interaction term coefficient, while always negative, is only significant for legal structure and regulation. The estimated coefficient on log groups is also positive and close to statistical significance at the 10% level in both these regressions. Thus, largely as expected, it appears our hypothesis and earlier conclusions regarding the impact of groups on the benefits of economic freedom apply mainly to the areas of legal structure and regulation.

In column (1), when using government size as the measure of economic freedom, each of the coefficients of interest has the expected sign, but none is statistically significant. An F-test reveals no evidence of even joint significance. Thus, we conclude that the overall size of government (captured here by components relating to expenditures, marginal tax rates, and the like) does not have an independent impact on growth. When economic freedom is represented by international trade in column (4), the individual estimates appear even weaker than for government size. However, the null of no joint significance for log groups, international trade, and their interaction can be rejected at the 10% level, and for just international trade and the interaction at better than 5%. Dropping the interaction term generates a statistically significant coefficient for international trade ( $p$ -value = 0.02), but the estimated coefficient on log groups remains insignificant. Thus, freedom in international trade does benefit growth, and the benefits do not appear to be significantly affected by interest groups. One potential explanation for the lack of importance regarding interest groups is that the freedom in international trade category does not distinguish between the types of international trade. Opportunity costs of resources devoted to lobbying may differ between freer trade in exports compared with imports, or between final vs. intermediate goods. We

TABLE 7. GROWTH REGRESSIONS USING SEPARATE EF AREAS

EF area:	(EF1) Government size	(EF2) Legal structure	(EF3) Sound money	(EF4) International trade	(EF5) Regulation
EF area	2.413 (0.941)	6.517** (3.184)	2.890* (1.815)	1.035 (0.397)	8.298** (2.935)
Log groups	1.523 (0.379)	8.147 (1.632)	2.152 (0.490)	-1.502 (-0.324)	9.237* (1.685)
EF area × log groups	-0.361 (-0.495)	-1.341** (-2.292)	-0.331 (-0.758)	0.364 (0.570)	-1.547** (-2.096)
Population	0.176** (2.578)	0.207** (2.792)	0.188** (2.930)	0.145** (2.133)	0.129** (2.987)
Log GDP	-39.906** (-5.251)	-40.710** (-5.550)	-42.788** (-5.736)	-38.198** (-4.637)	-40.558** (-5.372)
<i>n</i>	345	343	346	336	340
$\bar{R}^2$	0.289	0.303	0.304	0.331	0.343

Notes: Dependent variable is PPP converted real GDP per capita total growth over 5-year intervals. *t*-statistics in parentheses are derived from bias-adjusted HAC standard errors. All regressions include country and time dummies.

\* and \*\* indicates significance at the 10% and 5% level.

also find that, as expected, groups do not significantly affect the benefit of sound money policies.

Estimates presented in Table 7 use all available data. To receive an aggregated EF index value, a country must have available scores in at least four of the five categories. Because each area is considered on its own, in Table 7 we included an observation regardless of missing data for any other areas. If we restrict the sample to only those observations for which an aggregated EF value is available (as in Table 2, in which case there is at most only one area missing data for any given country-year observation), the estimates are very similar except that log groups generate a statistically significant coefficient for the regulation regression at just under 10%.<sup>27</sup> If we further restrict the sample to a common sample of the 333 observations where there are no missing data for any areas, then log groups generate a statistically significant coefficient at better than 5% when EF is represented by legal structure, but the coefficient for the EF area coefficient using sound money falls in significance to 11%. None of the interaction terms for any of the areas is affected by the sample adjustments.

## 7. CONCLUDING REMARKS

Our findings reveal that, as hypothesized, while economic freedom that emerges spontaneously promotes growth, economic freedom that emerges as a result of costly lobbying efforts is less fruitful. In other words, the impact of institutions appears to depend not just on the current state of institutions but also on how they came to be. Successful lobbying may undermine the expected stability of institutional arrangements. The findings likewise reveal that the opportunity costs of lobbying are increasing in the level of economic freedom. In other words, lobbying is more socially costly in those institutional environments for which resources devoted to production are employed relatively efficiently. Interestingly, the findings also reveal that when the

<sup>27</sup>This restriction does not affect the international trade sample in column (4) of Table 6.

institutional environment is especially weak, lobbying may not exert a sclerotic impact on growth via the opportunity costs of rent seeking.

Importantly, the findings indicate that the relation between economic freedom and growth is a conditional one – conditional on the extent of lobbying. Estimates in prior literature that assume an unconditional relation reflect only the average of the conditional effects. Given that the evidence here suggests that the conditional relation may be positive in some instances and negative in others, the unconditional average fails to reveal important cross-country differences in the impact of economic freedom. Moreover, the findings suggest that unconditional estimates likely underestimate the true potential impact of economic freedom. Our findings suggest that the full potential of spontaneously emerging economic freedom to spur growth is quite large. A clear next step is to explore what institutions facilitate and what institutions impede spontaneous emergence of economic freedom.

Given our findings, it would also be useful in future work to more directly measure the impact of interest groups on institutional quality. Interest groups can be expected to promote their own interests, even at the expense of greater society. In some cases, this will manifest itself in more protectionist and redistributive policies, where the benefits are concentrated and the costs are diffused throughout society (Olson, 1982). In other cases, when the policy costs are concentrated on them, interest groups will seek to block new regulations and taxes, thereby maintaining the status quo rather than allow an erosion of these particular types of economic freedom. The net impact on the policy environment will depend on which effect dominates. New insights may be gleaned from empirical studies of the determinants of institutional quality by directly incorporating measures of interest group behavior.

## APPENDIX COUNTRY LIST

TABLE A1

	1985-89	1995-99	2000-04	1985-89	1995-99	2000-04	1985-89	1995-99	2000-04
Albania		+	+		+	+			
Algeria	+	+	+	+	+	+			
Argentina	+	+	+	+	+	+			
Australia	+	+	+	+	+	+			
Austria	+	+	+	+	+	+			
Bahamas		+	+	+	+	+			
Bahrain	+			+	+	+			
Bangladesh	+	+	+	+	+	+			
Barbados	+	+	+	+	+	+			
Belgium	+	+	+	+	+	+			
Belize	+	+	+	+	+	+			
Benin	+	+	+	+	+	+			
Bolivia	+	+	+	+	+	+			
Botswana	+	+	+	+	+	+			
Brazil	+	+	+	+	+	+			
Bulgaria	+	+	+	+	+	+			
Burundi	+	+	+	+	+	+			
Cameroon	+	+	+	+	+	+			
Canada	+	+	+	+	+	+			
Central African Rep	+	+	+	+	+	+			
Chad	+	+	+	+	+	+			
Chile	+	+	+	+	+	+			
China	+	+	+	+	+	+			
Colombia	+	+	+	+	+	+			
Congo, Rep	+	+	+	+	+	+			
Costa Rica	+	+	+	+	+	+			
Côte d'Ivoire	+	+	+	+	+	+			
				Germany					
				Ghana					
				Greece					
				Guatemala					
				Guinea-Bissau					
				Guyana					
				Haiti					
				Honduras					
				Hong Kong					
				Hungary					
				Iceland					
				India					
				Indonesia					
				Iran					
				Ireland					
				Israel					
				Italy					
				Jamaica					
				Japan					
				Jordan					
				Kenya					
				Korea, Rep					
				Kuwait					
				Latvia					
				Lithuania					
				Luxembourg					
				Madagascar					
				Nigeria					
				Norway					
				Oman					
				Pakistan					
				Panama					
				Papua New Guinea					
				Paraguay					
				Peru					
				Philippines					
				Poland					
				Portugal					
				Romania					
				Russia					
				Rwanda					
				Senegal					
				Sierra Leone					
				Singapore					
				Slovak Rep					
				Slovenia					
				South Africa					
				Spain					
				Sri Lanka					
				Sweden					
				Switzerland					
				Syria					
				Taiwan					
				Tanzania					

(continued)





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