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Consistent estimates of the impact of special interest groups on economic growth *

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Abstract. Empirical studies designed to test Olson's (1982) theory of institutional sclerosis are typically forced to rely upon proxies to measure the ability of special interest groups to engage in redistributive activities, which in turn are expected to hinder economic growth. This note shows that reliance on proxies biases the estimates toward zero. Here, instrumental variable routines are utilized which increase the estimated impact of special interests on the economy.

1. Introduction

Mancur Olson's (1982) seminal book regarding the negative influence special interest organizations (SIO) have on economic growth quickly sparked a series of studies designed to test his central implication that stable government institutions foster the development of SIOs which in turn retard growth. In support of the first relationship, Murrell (1984) finds that length of stability strongly influences the formation of interest groups. The evidence in favor of stability or interest groups reducing growth, however, is far more limited. Most studies have not found a strong correlation between interest groups and growth (McCallum and Blais, 1987) or length of stable borders and growth (Landau, 1985; Nardinelli, Wallace and Warner, 1987), and in those studies which do find statistically significant results, the point estimates suggest the effects are much smaller compared to other variables under consideration (Bernholz, 1986; McCallum and Blais, 1987). One of the most cited references in support of Olson is Choi (1983), but his results are actually not robust across specification or samples.

The major shortcoming to these empirical studies is the lack of a direct test of Olson's theory. Researchers have complained that although Olson's theory is provocative, the very nature of his methodology has prevented direct testing between the strength of interest groups and economic growth (Pryor, 1983;

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Nardinelli, Wallace and Warner, 1987). Olson argues that smaller special interest groups have an incentive to devote their resources to unproductive rent-seeking to redistribute social wealth, reducing total social gains in the process. In essence, by striving to enlarge their slice of the pie, special interest groups shrink the entire pie, but most of the costs are borne by the rest of society and most of the gains are captured by these minority interests. The stronger the special interests, the better able they are to affect policy to redistribute resources in their favor. Olson hypothesizes that over time, special interests grow and become stronger thereby reducing economic growth, but major upheavals, such as military invasions and coups, upset the social norms and destroy the power of the existing SIOs sparking a resurgence in economic growth.

Since the strength of the various SIOs cannot be directly measured, scholars have instead focused on the effect of the length of time of stability or similar measures to serve as proxies. As mentioned above, these proxies have led to mixed results. Olson (1983) seemingly argues against strict reliance on the length of stable borders as a sufficient proxy when he presents the case that altering certain institutions, such as passage of the 1965 Voting Rights Act and the end of Jim Crow laws in the southern United States, can create social upheaval destroying existing coalitions despite the lack of foreign invasion or internal war.

The empirical problem lies in the use of these proxies. It is a well-established econometric result that reliance on proxies leads to the notorious errors-in-variables problem. As shown in the next section, it may be the use of such proxies which bias empirical tests against the Olson hypothesis. Indeed, McCallum and Blais (1987) question the validity of some of their tests by stating, "one cannot be sure whether this negative result constitutes evidence against the Olson hypothesis or evidence against the Murrell proxy". In this study, I argue neither conjecture is correct. The Murrell proxy for special interest groups may be quite adequate, but estimation can be improved by utilizing an econometric methodology designed to account for the necessity of imperfect proxies.

The rest of the paper is outlined as follows. Section 2 discusses the data, specifically the growth rate and SIO proxy variable. Section 3 outlines the problem of proxy variables and shows that in bivariate regressions the slope coefficients will be biased downward. Alternative instrumental variable routines are described which will be used to combat this problem. Section 4 presents the empirical results which support the econometric theory that larger elasticities will result when the errors-in-variables problem is correctly accounted for. In most cases the point estimates, although always the predicted sign, are usually not statistically significant. The final representation, which is argued to be the most relevant, yields a statistically significant result in support of Olson. This holds under both the bivariate and multivariate cases considered.

2. The data

The strength of interest groups in a nation will be proxied by the number of SIOs estimated in Murrell (1984), a measure also used by McCallum and Blais (1987). To facilitate comparison across nations, this measure is converted to a per capita ratio. Murrell (1984) finds a strong degree of correlation between the estimated number of SIOs and various measures of national stability among the OECD nations, supporting the conjectures of Olson (1965, 1982).

Murrell's measure estimates the number of SIOs in 1970, which includes "all non-governmental formal organizations whose members share sectional interests". Although his study only concerned the OECD member nations, the data set he sent me included 23 non-OECD countries as well.[1] The full data set will be used here. Indeed, others have also considered larger samples. For example, Landau (1983) utilizes a sample of 96 countries in relating stable borders to growth, but McCallum and Blais (1987) believe his results are dominated by the experience of less developed nations. Murrell's data roughly splits the sample between advanced nations and LDCs.

To consider the impact SIOs would have on economic growth, I use the average annual growth rate for the next ten years of 1970–80, as listed in World Bank (1994). Consistent growth rate data are missing for nations with populations below one million, forcing the removal of Barbados, Cyprus, Iceland, Lebanon, and Luxembourg, from the sample. The final sample used thus includes 22 OECD nations and 20 other nations.

3. The econometric problem of proxy variables

For the econometric model of Olson's hypothesis, we will assume a standard linear representation:

$$y_i = a + bx_i + e_i \tag{1}$$

where y is the average annual growth rate from 1970–80 and x is the strength of the SIOs in each country in 1970, a and b are parameters to be estimated, and e is a random error term. For ease of presentation, the observation indicator i will be suppressed in future equations.

As noted above, the strength of the SIOs cannot be directly measured, and is thus a latent variable. This unobservable variable will instead by proxied by the number of SIOs as estimated by Murrell (1984) and described in the previous section. Since each SIO does not have equal influence within the country, simply using the absolute number of SIOs is not a perfect indicator (McCallum and Blais, 1987), but is expected to be highly correlated with the latent variable of interest. Thus, we can argue that Murrell's measure represents the influence of SIOs subject to error, or

$$w = x + u, \tag{2}$$

where w is the Murrell proxy and u is an error term. We assume here the standard scenario that u follows a normal distribution and is uncorrelated with x or e.

Substituting (2) into (1) and distributing the terms yields

$$y = a + bw + v \tag{3}$$

where $v = e - bu$. Thus, although the true regression error in (3) is still zero mean, it is correlated with the independent variable w through (2) and thus the standard estimation technique of Ordinary Least Squares (OLS) regression on the proxy variable will lead to biased parameter estimates. Specifically, note that the correlation between w and v is negative, meaning that the OLS estimate of b will be biased toward zero.

To see this note that since

$$\begin{aligned} b^{OLS} &= (w'w)^{-1}w'y \\ &= b + (w'w)^{-1}w'v \\ &= b + (w'w)^{-1}w'(e - bu), \end{aligned}$$

the bias from OLS $= E(b^{OLS}) - b = -b(w'w)^{-1}w'u$. The bias exists due to the correlation between w and u in (2). Thus, an instrumental variable (IV) that is not correlated with u would not be subject to the bias. Let z be the instrumental variable. Then

$$\begin{aligned} b^{IV} &= (z'w)^{-1}z'y \\ &= b + (z'w)^{-1}z'(e - bu), \end{aligned}$$

which implies an unbiased estimate since $E(b^{IV}) = b$ if a suitable instrument z can be found such that z is orthogonal to e and u.

Thus, the instrumental variable technique can be used to generate estimates of b that will be asymptotically consistent. Johnston (1984) discusses the properties of three potential instrumental variables used to combat the errors-in-variables problem. The Wald method partitions the data into two subsets such that $z_i = \begin{cases} 1, & w_i > \overline{w} \\ -1, & w_i < \overline{w} \end{cases}$, where $\overline{w}$ is the mean value of w. The Bartlett procedure modifies the Wald instrument by further partitioning the data into three groups where the middle third is given the value of zero. Finally, the Durbin method defines z_i to equal the rank order of x_i.[2]

Table 1. Instrument relevance comparison.

	Constant	Slope	R^2	$T \times R^2$	Correlation
Full sample					
Wald	3.42*	2.86*	.42	17.64*	.645
	(6.39)	(5.35)			
Bartlett	3.42*	4.03*	.55	23.10*	.742
	(7.29)	(7.01)			
Durbin	3.05*	12.65*	.68	28.56*	.824
	(3.78)	(9.20)			
Sub sample					
Wald	3.66*	3.08*	.42	14.28*	.708
	(5.72)	(4.81)			
Bartlett	3.40*	4.25*	.53	18.02*	.802
	(5.86)	(6.03)			
Durbin	3.44*	13.43*	.68	23.12*	.865
	(3.40)	(8.31)			

Note. First-stage regressions of number of special interest organizations from Murrell (1984) on constant and each instrument. T-statistics in parenthesis.
* significant at $p \leq .05$.

In general, instrumental variables suffer from large asymptotic variances since the instruments are not perfectly correlated with the proxy variable. Thus, instruments are generally to be preferred which are highly correlated with the imperfect proxy variable. Tests for instrument relevance are presented in Table 1. Nelson and Startz (1990) show that the instrumental variable routine may converge to the wrong estimate in small samples when the instrument is "poor". They argue this is likely to be the case when the R^2 from the first-stage regression is less than twice the reciprocal of the number of observations. Each instrument considered here has a high degree of correlation with the proxy variable, and easily surpasses their proposed $T \times R^2$ test. For the full sample of forty-two nations, the Bartlett modification outperforms the Wald procedure in every category, which is to be expected from construction of these instruments. Note, however, that Durbin's method yields a more suitable instrument than either Wald or Bartlett. These results also hold for the sub sample of nations (explained below) lending greatest confidence to the IV estimates using the Durbin procedure. Regression results will also be reported for OLS, and the instrumental techniques of Wald and Bartlett for comparison purposes.

Table 2. Effect of special-interest groups on economic growth, 1970–80.

	Slope coefficient	Standard error	Elasticity	R^2	n
Full sample					
OLS	–.1102	.0644	–.1001	.068	42
Wald-IV	–.1622	.1005	–.1483	.062	42
Bartlett-IV	–.1524	.0872	–.1394	.072	42
Durbin-IV	–.1354	.0783	–.1238	.070	42
Sub sample					
OLS	–.1298	.0684	–.1375	.101	34
Wald-IV	–.1769	.0973	–.1873	.094	34
Bartlett-IV	–.1690	.0856	–.1790	.111	34
Durbin-IV	–.1627*	.0793	–.1723	.119	34

Note. Regressions include an intercept term. R^2 for the IV regressions calculated by two-stage procedure described in Pesaran and Smith (1994).
* significant at $p \leq .05$.

4. Empirical estimates

Bivariate regression estimates for institutional sclerosis are presented in Table 2. Regressing economic growth on the Murrell proxy variable for the entire sample yields the expected inverse relationship, but the coefficient is not significant within a 5% error bound. One might therefore interpret this as implying non-support for the Olson hypothesis (McCallum and Blais, 1987), or that the effect of SIOs is too small to be of much economic importance. However, as noted above, the estimated slope coefficient from OLS is expected to be biased downward.

To generate consistent estimates, the IV methods of Wald, Bartlett and Durbin are utilized. None of these yield statistically significant results either. However, the estimated elasticities are much larger, ranging from 24% to 48% greater than the downward biased OLS elasticities. The lack of statistical significance under the IV estimates are strictly from the inflated standard errors; each IV estimate would be considered significant using the OLS estimated standard error. The economic, if not statistical, importance of the SIOs has been enhanced by the presentation of consistent estimates under the IV routines.

Part of the Olson hypothesis relies upon the stability of these SIOs to retard growth. Economies can grow faster when the SIOs are destroyed, which Olson has argued will occur following a dramatic social upheaval, such as a foreign invasion or civil war. Thus, nations with a large number of SIOs in 1970 might still be able to achieve high levels of comparative growth by 1980 if they were able to have a rebirth following a foreign invasion or internal struggle. Of the 42 nations considered here, 8 experienced coups during the 1970s (Jodice and Taylor, 1983; Banks and Overstreet, 1980).[3] Including these unstable nations could lead to a further bias against Olson.[4] Note also that, as shown in Table 1, each of the instruments has stronger correlation with the SIO proxy in the sub sample which excludes the nations that experienced coups, thus improving the expected performance from the IV routines. The tests for institutional sclerosis for the sub sample of the 34 stable nations are presented in the lower portion of Table 2. The OLS elasticity is significantly larger than in the full sample, but still not statistically significant, again implying a rejection of Olson's theory. Once again, each of the IV estimates yields significantly larger elasticities compared to the OLS estimate (from 25% to 36% larger), and here Durbin's procedure does result in a significant coefficient. Thus correction for the errors-in-variables problem generates more convincing evidence in support of Olson's institutional sclerosis theory.

These results are not limited to the simple bivariate case. I have also run regressions on the sub sample utilizing additional socioeconomic variables taken from World Bank (1994), which include:[5] the initial level of GDP; the ratio of Gross Domestic Investment to GDP; the ratio of general government consumption to GDP; total population; and percent of population in urban areas.[6] To conserve space and focus attention on the adjustment to the estimated SIO impact under alternative estimation routines, only the SIO coefficients and elasticities are reported in Table 3. The results are similar to the bivariate case presented in the lower half of Table 2. The SIO coefficient is always negative as expected under Olson's theory, and the OLS analysis yields the smallest estimates. The IV routines again generate elasticities up to 34% greater, but also result in greater imprecision of the estimates. The most precise IV estimate is found using Durbin's method and this estimation procedure again generates a statistically significant coefficient for SIO.

5. Conclusions

Olson has argued that stable governmental structures foster the development of growth-retarding special interest groups. Direct support for government stability leading to the formation of special interest groups is presented in Murrell (1984). Indirect evidence that special interest groups grow over time in stable environments and lead to lower growth has been mixed. I have shown that the empirical studies of the indirect tests are biased downward

Table 3. Effect of special-interest groups on economic growth, 1970–80: Multivariate analysis on sub sample of stable nations.

	Slope coefficient	Standard error	Elasticity	R^2	n
OLS	–.1549	.0837	–.1640	.66	34
Wald-IV	–.2036	.1126	–.2156	.69	34
Bartlett-IV	–.2080	.1034	–.2203	.67	34
Durbin-IV	–.1939*	.0938	–.2053	.67	34

Note. Regressions include as control variables: initial GDP, gross domestic investment as percent of GDP, general government consumption as percent of GDP, total population, urban population as a percentage of total population. R^2 for the IV regressions calculated by two-stage procedure described in Pesaran and Smith (1994).
* significant at $p \leq .05$.

by the necessary reliance on proxy measures. Correction for the downward bias through instrumental variables has resulted in greater estimated elasticities and further support for Olson's theory of institutional sclerosis. Durbin's method yields an instrument of greatest relevance and consequently generates estimates of the highest precision of all IV routines considered. Durbin's method also produces statistically significant results for the estimated negative impact of special interests on economic growth during the 1970s for the sub sample of 34 nations that did not experience coups during this period.

Notes

1. The non-OECD nations consist of Barbados, Chile, Colombia, Costa Rica, Cyprus, El Salvador, India, Israel, Jamaica, Lebanon, Madagascar, Malaysia, Mexico, Panama, Peru, Phillippines, Sierra Leone, Singapore, Somalia, Sri Lanka, Trinidad and Tobago, Uruguay, and Venezuela. I thank Peter Murrell for sending these data.
2. Technically, $z'z$ would not exist in the probability limit, which is needed to ensure the consistency of the IV estimator. Johnston (1984: 431) notes that modifying the Durbin method by dividing z_i by the sample size satisfies this condition without otherwise affecting the IV estimates.
3. These nations are: Chile, El Salvador, Greece, Madagascar, Peru, Portugal, Turkey, Uruguay.
4. Including a dummy variable for these nations would result in a misspecification bias since the coups occurred in different years, and thus the number of years prior to 1980 in which each nation had the opportunity to experience a growth boom would not be the same.
5. See Fagerberg (1994) for a survey of the empirical growth literature.
6. All variables are measured in their 1970 levels to avoid any potential endogeneity problems.

References

Banks, A.S. and Overstreet, W. (1980). *Political handbook of the world.* New York: McGraw-Hill.

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

Choi, K. (1983). A statistical test of Olson's model. In Dennis C. Mueller (Ed.), *The political economy of growth*, 57–78. New Haven: Yale University Press.

Fagerberg, J. (1994). Technology and international differences in growth rates. *Journal of Economic Literature* 32: 1147–1175.

Jodice, D. and D.L. Taylor (1983). *World handbook of social and political indicators.* New Haven: Yale University Press.

Johnston, J. (1984). *Econometric methods.* (3rd edition). New York: McGraw-Hill.

Landau, D. (1983). Government expenditure and economic growth: A cross-country study. *Southern Economic Journal* 49: 783–792.

Landau, D. (1985). Government expenditure and economic growth in the developed countries: 1952–76. *Public Choice* 47: 459–477.

McCallum, J. and Blais, A. (1987). Government, special interest groups, and economic growth. *Public Choice* 54: 3–18.

Nardinelli, C., Wallace, M.S. and Warner, J.T. (1987). Explaining differences in state growth: Catching up versus Olson. *Public Choice* 52: 201–213.

Nelson, C. and Startz, R. (1990). The distribution of the instrumental variable estimator and its t-ratio when the instrument is a poor one. *Journal of Business* 63: S125–S140.

Murrell, P. (1984). An examination of the factors affecting the formation of interest groups in OECD countries. *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.* New Haven: Yale University Press.

Olson, M. (1983). The South will fall again: The South as leader and laggard in economic growth. *Southern Economic Journal* 49: 917–932.

Pesaran, M.H. and Smith, R.J. (1994). A generalized R^2 criterion for regression models estimated by the instrumental variables method. *Econometrica* 62: 705–710.

Pryor, F.L. (1983). A quasi-test of Olson's hypotheses. In D.C. Mueller (Ed.) *The political economy of growth*, 90–105. New Haven: Yale University Press.

World Bank. (1994). *Rapport sur le développement dans le monde 1994.* New York: Oxford University Press.