Can democracy help? Growth and ethnic divisions

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Received 16 December 1999; accepted 19 July 2000

Abstract

This paper presents further empirical evidence suggestive of democracy’s positive role in ameliorating the negative growth effects of ethnic diversity in nations. However, it is shown that endogeneity problems and a direct negative growth effect of democracy place inherent limitations on the strength of policy implications which may be drawn from the evidence. © 2001 Elsevier Science B.V. All rights reserved.

Keywords: Ethnic diversity; Democracy; Economic growth

JEL classification: E69; O11

1. Introduction

Recent empirical work by Easterly and Levine (1997) has shown that ethnic diversity in a nation is associated with poorer economic performance. Easterly and Levine estimated a cross-country unbalanced, seemingly unrelated regression (SUR) system, for the period from 1960 to 1990. They regressed annual real GDP per capita growth on a constant, regional dummies, initial income and its square, an education measure, a set of policy controls, and an ethnic diversity measure. They found that even after introducing policy controls, greater ethnic diversity was significantly associated with slower economic growth. Specifically, their regressions indicated a 0.46–0.8 percentage point reduction in annual growth for the average level of ethnic diversity. Easterly and Levine argue that ethnic diversity leads to poor policy choices for the nation as a whole, which in turn impacts economic growth. If such a causal link exists, the question then arises as to whether particular institutional structures exist which would ameliorate such negative effects of ethnic diversity.

Democratic institutions would seem to be a plausible candidate. Namely, more democratic institutions would perhaps be more effective at managing inter-ethnic conflict that might arise in
ethnically diverse nations. Building on Easterly and Levine’s SUR framework, a possible test of this hypothesis would be to estimate the following system of equations:

\[ G_{i,t} = \alpha_i + \beta(ELF_{i,t}) + \gamma(DEM_{i,t}) + \delta(ELF_{i,t} \cdot DEM_{i,t}) + \zeta'X_{i,t} + \varepsilon_{i,t} \]  

(1)

where \( i \) indexes nations, \( t \) denotes time period (such as a given decade), \( G \) is real GDP per capita growth, \( ELF \) is an ethnic diversity measure, \( DEM \) is a democracy measure, \( X \) is a vector of controls, and \( \varepsilon \) is an error term. If more democracy ameliorates ethnic diversity’s negative economic growth effects, then one would expect a positive coefficient on the interaction of ethnic diversity and democracy, or \( \delta \) positive.

Preliminary work along these lines by Collier (1999) has suggested that the presence of democratic institutions may serve as an ameliorating factor for the negative effects of ethnic diversity on economic growth. Collier explored how the presence of democratic institutions in ethnically diverse nations affected growth in a simple ordinary least squares framework, with growth over the period from 1960 to 1990 as the dependent variable. He found a positive and significant effect of democracy working through the interaction term which completely eliminated the negative effects of ethnic diversity found by Easterly and Levine.

This paper presents further empirical evidence supportive of democracy’s positive role in ameliorating ethnic diversity, by presenting SUR estimates from the system of Eq. (1). However, it also endeavors to show that endogeneity problems and some negative direct effects of democracy weaken the case for establishing democratic institutions as a policy solution for poor economic performance due to ethnic diversity.

2. Endogeneity in estimation

The particular endogeneity problem here is that the existence of democratic institutions in a particular nation may be a sign that the ethnic divisions in that nation are not deep or strong. Thus, a positive interaction effect may not indicate that democratic institutions ameliorate the problems associated with ethnic diversity, but rather that the ethnic divisions in the nation are not strong, allowing for democratic institutions to emerge. It is not clear what the direction of causation is. Moreover, it may be the case that the depth of ethnic divisions and the presence of democratic institutions simultaneously determine each other. Namely, democratic institutions may ameliorate the problems associated with ethnic diversity, which in turn strengthens democratic institutions. On the other hand, weak ethnic divisions may allow for democratic institutions to take hold, which in turn further ameliorate the problems associated with ethnic diversity.

Unfortunately, one cannot disentangle these possibilities using the regression framework. I have been unable to find satisfactory instruments for the democracy measure. Any instrument which is potentially related to determining factors for the ethnic diversity measure would be suspect. For example, variables indicating the degree of Western European influence (which would be highly correlated with the democracy measures) are not viable, as they would be related to the drawing of national borders. The specific delineation of national borders by Europeans is one of the factors

\(^1\)ELF stands for ethnolinguistic fractionalization.
accounting for Africa’s great numbers of ethnically diverse nations. Other possible instruments do not readily present themselves. As I am unable to effectively address the endogeneity problem, I set it aside and note that the regression results must be approached cautiously.

3. Evidence from a seemingly unrelated regression system

In estimating the unbalanced SUR system designated by Eq. (1), I also find a positive ameliorative effect of democracy working through the interaction term. As stated above, the result is not unqualified as there may be significant endogeneities at work. Further, I find that ethnic diversity and democracy independently enter with significant, negative effects. Democracy’s positive effect is only in evidence through the interaction term.

Following Easterly and Levine’s approach, the SUR system which is estimated consists of three equations, where each equation is fitted for a particular decade. There are three decades worth of data that are used: the 1960s, 1970s and 1980s. Each decadal equation is allowed to have a different intercept, but the coefficients on the independent variables are restricted to be the same across equations. The system is estimated four times, each using a larger set of independent variables. The independent variables used and the regression results are shown in Table 1. The Gulf Oil states are excluded from the analysis.

The basic regression (1) contains the decadal intercepts, regional dummies, decadal initial per capita real GDP and its square (to capture convergence effects), and the log of Barro and Lee’s decadal initial educational attainment measure. These variables appear in all of the regressions. Regressions (2), (3), and (4), successively add a variety of policy-related variables, which are postulated to be affected by ethnic diversity and the level of democracy. The ethnic diversity measure, democracy measure, and their interaction appear in all of the regressions. Specifically, the ethnic diversity measure is the Soviet ethnolinguistic fractionalization measure from 1960, which goes from 0 (perfectly ethnically homogeneous) to 1 (perfectly ethnically heterogeneous). The democracy measures used are Bollen’s (1990) democracy index for the 1960s, and Gastil’s (1990) political rights index for the 1970s and 1980s. Bollen attests to their comparability. Gastil’s political rights index is translated from a 1 (most democratic) to 7 (least democratic) scale, to a 0 (least democratic) to 1 (most democratic) scale similar to Bollen’s index. Subject to the above endogeneity caveats, the sign of the coefficient on the interaction term in the regression will then indicate how the level of democracy in a nation and its level of ethnic diversity are related. If the coefficient is positive, then greater levels of democracy in ethnically diverse nations are associated with improved economic performance; if the

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2The data used and their respective sources are: (1) decadal average real GDP per capita, World Bank National Accounts (various years); (2) Sub-Saharan Africa dummy, World Bank definition; (3) Latin America and Caribbean dummy; (4) log of decadal initial income and its square, Summers and Heston (1988); (5) decadal initial log of one plus average years of school attainment, Barro and Lee (1993); (6) decadal average number of assassinations per thousand population, Banks (1994); (7) decadal average ratio of the liquid liabilities of the financial system to GDP; financial depth measure, King and Levine (1993); (8) decadal average log of one plus the black market premium, World Bank (1991) and Pick’s Currency Yearbook (various years); (9) decadal average ratio of the central government fiscal surplus to GDP, IMF International Finance Statistics and Government Finance Statistics (various years); (10) log of telephones per thousand workers, Canning and Fay (1993); (11) Soviet ethnolinguistic fractionalization measure, Atlas Narodov Mira (1964); and (12) decadal initial democracy measure; for 1960 Bollen (1990), and for the 1970s and 1980s, Gastil’s (1990) political rights index.
Table 1
Growth regressions: seemingly unrelated regression procedure and pooled decadal data (1960s, 1970s, 1980s)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Coefficient</th>
<th>(2) Coefficient</th>
<th>(3) Coefficient</th>
<th>(4) Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>t-Statistic</td>
<td>Estimate</td>
<td>t-Statistic</td>
</tr>
<tr>
<td>1960s Intercept</td>
<td>-0.1905</td>
<td>-2.2869</td>
<td>-0.2251</td>
<td>-2.6332</td>
</tr>
<tr>
<td>1970s Intercept</td>
<td>-0.1904</td>
<td>-2.2920</td>
<td>-0.2239</td>
<td>-2.6286</td>
</tr>
<tr>
<td>1980s Intercept</td>
<td>-0.2102</td>
<td>-2.5339</td>
<td>-0.2437</td>
<td>-2.8652</td>
</tr>
<tr>
<td>Sub-Saharan Africa dummy</td>
<td>-0.0109</td>
<td>-2.4553</td>
<td>-0.0118</td>
<td>-2.6529</td>
</tr>
<tr>
<td>Latin America and Caribbean dummy</td>
<td>-0.0243</td>
<td>-8.3484</td>
<td>-0.0230</td>
<td>-7.7222</td>
</tr>
<tr>
<td>Log of decadal initial income</td>
<td>0.0660</td>
<td>3.1063</td>
<td>0.0752</td>
<td>3.4492</td>
</tr>
<tr>
<td>Square of log of decadal initial income</td>
<td>-0.0047</td>
<td>-3.4354</td>
<td>-0.0053</td>
<td>-3.7873</td>
</tr>
<tr>
<td>Log of schooling</td>
<td>0.0135</td>
<td>3.6178</td>
<td>0.0141</td>
<td>3.7619</td>
</tr>
<tr>
<td>Financial depth</td>
<td>0.0181</td>
<td>3.2180</td>
<td>0.0161</td>
<td>2.9770</td>
</tr>
<tr>
<td>Black market Exchange rate Premium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiscal surplus/GDP</td>
<td>0.00111</td>
<td>3.9916</td>
<td>0.1517</td>
<td>5.0397</td>
</tr>
<tr>
<td>Log of telephones per worker</td>
<td>0.0050</td>
<td>2.1985</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELF measure – Soviet</td>
<td>-0.0404</td>
<td>-4.1461</td>
<td>-0.0402</td>
<td>-4.1299</td>
</tr>
<tr>
<td>Democracy measure</td>
<td>-0.0113</td>
<td>-1.6952</td>
<td>-0.0121</td>
<td>-1.8290</td>
</tr>
<tr>
<td>ELF and democracy interaction</td>
<td>0.0341</td>
<td>2.7645</td>
<td>0.0362</td>
<td>2.9362</td>
</tr>
<tr>
<td>Number of observations</td>
<td>64; 82; 88</td>
<td>63; 82; 88</td>
<td>38; 66; 71</td>
<td>31; 61; 64</td>
</tr>
<tr>
<td>R-squared 1960s</td>
<td>0.4351</td>
<td></td>
<td>0.4269</td>
<td></td>
</tr>
<tr>
<td>R-squared 1970s</td>
<td>0.3130</td>
<td></td>
<td>0.3277</td>
<td></td>
</tr>
<tr>
<td>R-squared 1980s</td>
<td>0.3772</td>
<td></td>
<td>0.4010</td>
<td></td>
</tr>
</tbody>
</table>

* Dependent variable: average annual decadal real per capita GDP growth.

The coefficient is negative, then greater levels of democracy in ethnically diverse nations are associated with even lower economic growth.

The results show that the interaction term’s coefficient is consistently positive and significant at standard levels in all of the regressions, except regression (3). For regression (3), the interaction term’s t-statistic is just under the 10% significance level. This regression includes a host of policy-related variables, through which it may be argued that ethnic diversity and democracy have indirect effects. When the log of telephones per thousand workers is added, the interaction term’s coefficient recovers its significance at the 1% level. The positive and significant coefficient suggest...
that greater democratic institutions may in fact ameliorate the negative growth effects of ethnic diversity, even after controlling for a variety of policy-related variables. Correspondingly, it could be interpreted as suggesting that democracy’s effectiveness in encouraging growth is increasing in ethnic diversity.

Unlike Collier’s results though, the negative coefficient on ethnic diversity alone remains and is significant. Thus, the positive coefficient on the interaction term is offset by the direct negative growth consequences of ethnic diversity. Further, the coefficient on democracy alone is negative, and significant at the 10% level or better for all of the regressions except regression (3). Such a result indicates that democracy is beneficial for growth only in the most ethnically diverse nations; there may be some non-democracy benefit for relatively ethnically homogeneous nations.

The implications of the results become clearer if one looks at the marginal impacts of ethnic diversity and democracy, respectively, on annual economic growth. These are:

\[
\frac{\partial G_{i,t}}{\partial ELF_{i,t}} = \beta + \delta( DEM_{i,t} ) \quad \text{and} \quad \frac{\partial G_{i,t}}{\partial DEM_{i,t}} = \gamma + \delta( ELF_{i,t} )
\]

given the functional form of Eq. (1). Evaluated at the world averages and using the uncontrolled regression (1) as a base case, the marginal impacts of ethnic diversity and democracy, respectively, are $-2.3$ percentage points and 0.3 percentage points. Thus, increases in ethnic diversity have a large negative effect, while increases in democracy have a small positive effect, for the average nation. The marginal impacts are zero when $DEM_{i,t} = 1.18$ and $ELF_{i,t} = 0.33$, for ethnic diversity and democracy, respectively. Clearly, the negative marginal impact of increases in ethnic diversity can never fully be overcome by democracy, as the necessary democracy level for zero impact is greater than the upper bound for the measure (which is one). However, over 55% of the nations for which ethnic diversity data exist have ethnic diversity measures greater than 0.33, including some of the largest in population, such as India, the US, and Indonesia. For these nations, the marginal impact of increases in democracy is positive.

4. Conclusion

The SUR analysis over three decades is tentatively supportive of the positive role of democratic institutions in ameliorating the negative growth effects of ethnic diversity. However, inherent endogeneity problems arise in the regression framework, as good instruments for democracy are lacking. These endogeneity problems cast some doubt on the ameliorative power of instituting a more democratic regime in ethnically diverse nations. Moreover, the evidence indicates that democracy may actually have a net negative effect on growth for relatively ethnically homogeneous nations. Given these endogeneity problems and the negative direct effects of democracy, the policy implications of this work must be taken cautiously.

3The world average Soviet ELF is 0.418, and the world average democracy measure is 0.51.
Acknowledgements

I would like to thank David Romer and J. Bradford De Long for their invaluable comments and suggestions, and Björn Brügemann and Elizabeth Cascio for discussions which helped me focus my efforts.

References


