Economic Modelling xxx (2017) 1–9

Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/econmod

Education and democracy: New evidence from 161 countries

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ARTICLE INFO

JEL Classifications:
I20
C33

Keywords:
Democracy
Education
Panel causality
161 countries

ABSTRACT

This study reinvestigates the hypothesis that education has a significant effect on democracy. It adopts a panel causality methodological approach and data from 161 countries, spanning the period 1970–2013. The empirical analysis detects the presence of democracy dividend driven by education. The results survive a number of robustness checks pertaining geographical differentiation, educational stages and the inclusion of a large number of control variables. It is the first paper that makes use of an extended country sample, time period, while it provides a number of robustness checks not previously reported in the literature.

1. Introduction

In a seminal paper published in the AER, Acemoglu et al. (2005) argue that education is a prerequisite factor that definitely promotes democracy. Their argument is based on the fact that education provides the tools with which a 'cultural of democracy' can be fostered and developed, while it also leads to higher prosperity that can foster further political developments. These arguments lie within the modernization theory, according to which, there exists a causal strong link between the economic performance and the presence, as well as the stability, of democracy. Lipset (1960) argues that a better economic performance not only gives rise to middle class, but also it can facilitate education, while there is a systematic correlation between the stages of a society's social, economic, and political developments, with democracy stemming from economic development (Huber et al., 1993). Mesquita and Downs (2005) also assert that political developments emerge as a consequence of economic liberalization processes.

The literature has provided a number of mechanisms that potentially link democracy and education. First, education enables equal participation across all economic and social dimensions in an economy, but in order for it to effectively do it all citizens must have equal access to education (Barro, 1999; Birdsall et al., 2005). Second, all groups are considered some form of a 'society', and such societies involve some variety of education in the form of socialization. The best type of such a society is one in which members share common interests, and the society as a whole has the freedom to interact with other societies. In that sense, it is democratically ideal for the state in which groups can see beyond their groups' common interests and understand how they fit in with other groups' interests. This is achieved through education (Birdsall et al., 2005; Glaeser et al., 2007). Third, Lipset (1960) argues that education can be important for democracy development, because it fosters development in other sectors. In other words, education leads to a stable society that can be more conducive to democracy, while it does it through economic development. Fourth, quality as a factor of cognition is an important determinant of democracy (Birdsall et al., 2005); the focus is on pedagogy which highlights the importance of teaching liberal values. Finally, education can affect democracy more directly through civic education. While civic education can certainly result in positive attitudes towards and practices of democracy, there remains the threat that the government can use civic education simply to promote its ruling ideology. To avoid this threat, societies should introduce the concept of citizenship education, which is education that teaches how to be a productive citizen. It is oriented toward society, rather than the state (Crick, 1998).

The hypothesis that higher education leads to more advanced levels of democracy has received empirical support in the literature (Barro, 1999; Glaeser et al., 2004; Sanborn and Thyne, 2014). Glaeser et al. (2007) provide not only empirical evidence, but also theoretical arguments on why stable democracies are so rare outside of countries with high levels of education. Their primary argument lies on the role of education as a significant driver of 'civic culture' and participation in democratic politics. In their modeling setting, schooling is the driver that raises the benefits of civic participation, i.e. voting and organizing, while dictatorships provide stronger incentives only to a limited group of the population. Education also raises the benefits of civic participation, as well as the support for more democratic regimes relative to dictatorships,

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https://doi.org/10.1016/j.econmod.2017.12.001
Received 4 September 2017; Received in revised form 2 December 2017; Accepted 3 December 2017
Available online xxxx

which increases the likelihood of democratic revolutions against dictatorships, and reduces the chances of unsuccessful anti-democratic coups.

By contrast, Acemoglu et al. (2005) confront the literature by arguing that the empirical evidence could provide not valid results driven by omitted determinants that could also have an impact on the association between education and democracy. To this end, they consider the cross-sectional relationship between education, proxied by schooling, and democracy under country fixed effects. Their findings indicate the absence of a statistically significant association between these variables. Finally, they let their econometric model consider other control variables, such as per capita income and age structure, with their new findings providing again no evidence in favor of the association between them.[1]

This work builds on the large and vibrant empirical literature on the link between democracy and economic performance. This type of relationship stems from the important notion of educational externalities which largely explain the role of education in the economic process, either through the augmented Solow neo-classical approach (Solow, 1957) or through the 'new growth theories' (Romer, 1990; Mankiw et al., 1992; Aghion and Howitt, 1998). The first approach extends the basic production function framework to allow an extra input to enter the production function: human capital, while the endogenous growth approach argues that there is an additional effect of human capital over and above the static effect on output. However, this study departs from previous within-country studies in that it considers the democracy level as it is influenced by the levels of education.

Castello-Climent (2008) presents empirical evidence that explores the impact of education on democracy for a sample of 104 countries. His findings indicate that an increase in the education attained by the majority of the population is what matters for the implementation and sustainability of democracy, rather than the average years of schooling. Papaioannou and Siourounis (2008) through a dataset of political regimes coming from 174 economies demonstrate that democracy is more likely to emerge as the dominant political regime mostly in educated countries. Wang et al. (2015) investigate the role of higher education in promoting democratic values in China. Their findings document that only societal classes characterized as knowledge-based elites are willing to participate in actions that promote democratic values.

Therefore, given the presence of mixed results in the literature, this paper tests the potential presence of an association between democracy and education using a wide, as well as time extensive, country data set under a methodological approach that allows the model to provide robust evidence for the presence of both short- and long-run causality between the two variables. The empirical analysis makes use of a sample with 161 countries, spanning the period 1970–2013. For those who may argue that over this particular period a number of countries, such as the U.S., the U.K., Japan, Canada, the European countries and others were permanently under a democratic regime, thus, rendering the analysis potentially redundant, Khan (2006) argues that in a democracy, if politicians believe that their chance of re-election ex ante is very low, while corruption tends to increase ex post, then the findings can obtain a democratic equilibrium with frequent turnover, high corruption, and volatile growth chances.

To foreshadow the empirical findings, they document that the democracy dividend driven by higher levels of education is empirically and significantly confirmed throughout the empirical analysis. These results are consistent with the view that there exists a nexus between democracy and education.

[1] Other scholars argue that the modernization theory can provide invalid conclusions if the middle class may not prefer democracy, especially in the case when they depend on the authoritarian regime or are satisfied with their material well-being (Sollinger, 2008; Chen and Lu, 2011).

2. Methodology and data

The main part of the empirical analysis consists of analyzing the direction of the panel data causal links across the variables under consideration. In particular, the analysis applies the Autoregressive Distributed Lag (ARDL) model proposed by Pesaran et al. (1999).

This study makes use of time-series data on democracy, education, population, and GDP per capita, spanning the period 1970–2013 for a sample of 161 countries (the list is reported in the Appendix). Education is measured as the average years of schooling in the total population of age 25 and above. Those data come from Barro and Lee (2001) and they are provided on a five-year period basis. Data on the population and GDP per capita are on an annual basis and were obtained from the World Bank database,[3] while schooling, income per capita and population are measured in logs. Income per capita is measured in dollars. Democracy is measured by the Freedom House Political Rights index, with data being obtained from the Freedom House site.[4] The index ranges from 1 to 7, with 7 representing the lowest level of political freedom and 1 the highest freedom. However, the index has been transformed so that it lies between 0 and 1, with 1 corresponding to the highest level of democracy. Finally, to serve a part of the robustness checks the analysis also obtains annual data on the average years of schooling per stage of education (i.e., primary, secondary and higher) from the United Nations (UN Data) database. Table 1 provides some descriptive statistics both for the overall sample and for regional samples accordingly.

3. Empirical analysis: baseline results

The first step of the empirical analysis examines the unit root properties in the data through advanced panel unit root tests. Panel unit root tests of the first-generation can lead to spurious results (because of size distortions), if significant degrees of positive residual cross-section dependence exist and are ignored. Consequently, the implementation of second-generation panel unit root tests is desirable only when it has been established that the panel is subject to a significant degree of residual cross-section dependence. In the cases where cross-section dependence is not sufficiently high, a loss of power might result if second-generation panel unit root tests that allow for cross-section dependence are employed. Therefore, before selecting the appropriate panel unit root test, it is crucial to provide some evidence on the degree of residual cross-section dependence.

The cross-sectional dependence (CD) statistic by Pesaran (2004) is based on a simple average of all pair-wise correlation coefficients of the OLS residuals obtained from standard augmented Dickey-Fuller regressions for each variable in the panel. Under the null hypothesis of cross-sectional independence, the CD test statistic follows asymptotically a two-tailed standard normal distribution. The results reported in Table 2 uniformly reject the null hypothesis of cross-section independence, providing evidence of cross-sectional dependence in the data given the statistical significance of the CD statistics regardless of the number of lags (from 1 to 4) included in the ADF regressions.

Two second-generation panel unit root tests are employed to determine the degree of integration in the respective variables. The Pesaran (2007) panel unit root test does not require the estimation of factor loading to eliminate cross-sectional dependence. Specifically, the usual ADF regression is augmented to include the lagged cross-sectional mean and its first difference to capture the cross-sectional dependence that arises through a single-factor model. The lag length for the corresponding

[2] According to Clark (2002), Wantchekon and Jensen (2003) and Jensen and Wantchekon (2004), natural resources abundant countries tend to have authoritarian governments, given that the abundance of natural resources leads to stronger competition for control of the economy, linked to high levels of political violence and the use of resource rents by the ruling party to maintain their hold on political power.

[3] https://data.worldbank.org/.

[4] www.freedomhouse.org.