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Does education affect economic liberty?

The role of information and the media

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Abstract

We explore whether education plays a key role in determining economic liberty. Baseline estimates suggest that the educational level of a country, as measured by the average years of total schooling, is a significant contributor to economic freedom. To isolate exogenous variation, we use historical information on primary school enrollment rates and also rely on genetic information. We show that the exogenous component of education is strongly correlated with economic liberty after controlling for the influence of a number of other relevant factors. We identify access to information and media freedom as two channels through which higher education is translated into less interventional government policy. We offer non parametric evidence and demonstrate that the impact of schooling is non linear. At low levels of education its influence is negative implying that economic policies in favor of government intervention are more likely to prevail when the educational level of a country is low. When moving to higher levels of schooling, this effect switches to positive.

Keywords: Economic freedom, Education, Information, Media freedom, Non parametric analysis

JEL classification: D83, I25, Z18

1 Introduction

Over the last three decades a growing number of countries have chosen to liberalize their economies in response to increasing global competition. Governments have now become less involved in a number of areas such as international trade, taxation and the functioning of product, labor and financial markets. While the degree of economic freedom has generally increased around the world, the experience of individual countries varies greatly with a number of them progressing boldly towards economic liberalization and others proceeding with more step wise pace. Overall, there still exists considerable variation, with several countries still exhibiting high government intervention.

The existing research has proved that economic freedom plays a significant role in the growth process of countries. However it has not yet uncovered the channels through which liberalization policies in some regions prevail while in others retreat. Limited research has primarily emphasized that fundamental reforms come as a consequence of severe economic downturns (Rodrik 1996; Drazen and Easterly 2001; Pitlik and Wirth 2003) or that economic policy changes often reflect the decisiveness of reform oriented governments that do not bear in mind the associated political costs (Cox and McCubbins 2001). Other studies show that economic growth precedes economic reforms (Heckelman 2000), that higher levels of democracy affect economic freedom (De Haan and Sturm 2003) or that English forms of justice and common law structures are associated with higher economic liberalization (La Porta et al. 2004). Pitlik (2007) emphasized that there is a strong and positive interdependence of economic policy reforms among OECD countries suggesting that geographical proximity and learning from others' success are two important forces behind decisions for economic policy reforms.

Paradoxically, education has not yet received noteworthy attention as a driver of economic liberty. Parleviet (2017) has proven that education was a systematic determinant of public acceptance of Dutch pension reforms during 2003-2013. Similarly, Boeri and Tabellini (2012) stressed that Italian individuals who were more informed about the costs and functioning of the pension system of their country were more willing to accept reforms. Nonetheless, far reaching conclusions on the influence of education on economic liberty cannot be offered, as the aforementioned studies focus on particular aspects of economic policy in specific countries and time periods.

This paper embarks on this issue by exploring the role of education as a driver of economic liberty across a wide range of countries. Our main argument builds upon the broad consensus that economic freedom fosters economic growth. We claim that a well educated and, arguably, informed citizenry is more likely to encourage political choices aimed at improving the long term prosperity of the society as a whole, rather than support policies serving the short term interests of special groups. We expect that the extent of reforms largely depends on the existence (or not) of educated and informed citizens who are those who ultimately decide through their vote. In this process the role of the media is of crucial importance as they act as the carrier for the transmission of other countries' economic policy reforms.

We exploit an unbalanced panel dataset which consists of 125 countries during 1975-2014 and use regression analysis to look into the influence of education on economic liberty. The key difficulty in estimating such a relationship lies on the endogenous association between our key variables. To identify a causal effect from education to economic liberty we must find exogenous sources of variation in education. In doing so so we historical information on primary school enrollment rates

and we rely on genetic distance data between countries. We also use nonparametric analysis to explore whether the relationship between education and economic freedom is non linear. The attractiveness of this methodology lies in its nonparametric nature as it does not require any assumption on the statistical distribution of variables.

OLS regression estimates suggest that the educational level of a country is a significant contributor to its level of economic freedom. Our instrumental variable estimates confirm this finding, after having controlled for the influence of other relevant variables. Given that such an impact hinges on the extent of public awareness, we test whether it can be shaped by the diffusion of information. Using internet penetration and media freedom as variables to measure the extent of information diffusion, we show that the effect of education on economic freedom is countable only after a threshold point of information attainment. When emphasizing on particular aspects of economic policy, our regressions show that the government size, trade freedom and market regulation are the three dimensions of economic freedom which are mostly affected by education. Non parametric estimates demonstrate that the impact of schooling is non linear. At low levels of education its influence is negative indicating that economic policies in favor of government intervention are more likely to prevail when the schooling rates are low. When moving to higher levels of the educational distribution, this influence becomes positive and economically high. The outline of the paper is as follows. Section 2 discusses the theoretical link between education and economic liberty. Section 3 introduces the econometric specification and describes the econometric results. Section 4 concludes.

2 Education, information and economic liberty

We define economic liberty as the ability of the members of a society to undertake without hindrance economic actions. Our approach relies on the classical liberal tradition which emphasizes free markets, free trade, private property and defines economic liberty as the freedom to produce, trade and consume any goods and services. This is embodied in the rule of law, property rights and freedom of contract. Most high income countries have now pursued the path of liberalization with the stated goal of maintaining or increasing their international competitiveness. Emerging countries arguably have no choice but to reform their economies as a way to remain competitive in attracting domestic and foreign investments. Economic policies in favor of liberalization include privatization of public enterprises and assets, greater labor market flexibility, lower tax rates for businesses, less restriction on capital movement and free product markets. A great number of studies have unequivocally proved that economic freedom is associated with higher growth and prosperity of countries (some representative but not exhaustive ones include Aghion et al. 2004; Aghion et al. 2009; Alesina et al. 2005; Barseghyan 2008).

Based on that economic liberty brings about benefits for the society as a whole, we document the relationship between education and economic freedom as follows: We first state that people's voting choices are based on their own self interest, as predicted by the public choice theory. However people are aware of their own self interest only if they are well informed. We thus discuss the role of the media and information diffusion in affecting policy and improving political accountability. In this field the importance of education is crucial as it favors the diffusion of knowledge which in turn affects the formation of a well informed citizenry. In brief, we come to that the importance education in overcoming public choice problems

related to the adoption of market friendly institutions takes place through its impact on citizens' information.

Public choice theory, as developed by Buchanan and Tullock in their famous *The Calculus of Consent* (1962), emphasizes rational behavior of individuals and assumes that people are guided chiefly by their own self interests and not by public interest. Therefore, the motivations of people in the political process are no different than those of people in the market. As such, voters will support candidates and encourage policies they think will make them personally better off, special interest groups will strive for higher government intervention to a greater extent than dispersed individuals, while politicians will seek election or reelection to office.

People however are often unaware on the cost or benefits of a public policy because they are not informed on their consequences. As such they might support the maintenance of the existing status quo or stick on the side of policies which are at odds with their long term interest. Therefore information or lack of information is a key factor for preferences and decisions on public policy. A number of recent studies have shown that access to information and improved citizens' knowledge increases political participation and improves public policy outcomes. Stromberg (2004b) provides evidence that decreasing the cost of acquiring information via the expansion of radio increases voter turnout. Besley and Burgess (2002) and Stromberg (2004b) illustrate that citizens with better access to information receive more favorable public policies. On the other hand, a variety of models predict that policy becomes more distorted in favor of narrow interest groups when voters are less informed and that in a pluralistic world policy outcomes favor groups with more informed members (Grossman and Helpman 2001). Into a narrower context, Winter and Mouritzen (2001) considered how the acquisition of information affects voting preferences by

reducing fiscal and asymmetrical illusion while Boeri and Tabellini (2012) stressed that Italian individuals who were more informed about the costs and functioning of the pension system were more willing to accept reforms.

As regards policy making, Besley and Burgess (2002) argued that a more informed electorate strengthens incentives of governments to be responsive. In this process the role of the media is crucial to reflect citizens' preferences in the formation of public policy. Politicians in turn have a stronger incentive to be responsive as their actions are monitored. A number of follow up studies highlight the positive role of either media coverage or media freedom on a number of outcomes related to the transmission of information, political participation, accountability of politicians and improvement of public policy outcomes (Stromberg 2001; 2004a; 2004b; Brunetti and Weder 2003; Leeson 2008; Snyder and Stromberg 2010; Gentzkow et al. 2011; Prat and Stromberg 2011; Fergusson 2014).¹²

Arguably, an educated citizenship is more likely to think actively, make informed voting decisions and elect governments which promote its self economic interest. In addition, if citizens are educated and informed then decision makers will face additional accountability (Przeworski and Stokes 1999) and governments, in turn, will have the incentive to engage in public policies in favor of the well being of the society as a whole as they wish to be re-elected. Education's role in preparing informed citizenry dates back to the time of Jefferson who quoted that widespread political participation is the outcome of a civic oriented education system. Jefferson's

¹ However, the role of the media may be damaging in cases of information misreporting. Negative aspects are also related to media capture (Djankov et al. 2003; Besley and Prat 2006) by either governments or special interest groups. Such negative aspects are eradicated with the rise of the educational level of people.

² Coyne and Leeson (2004; 2009) suggested that the media is an institutional mechanism which plays a critical role in the public choice problem of developing market institutions that facilitate economic growth. The media can play a crucial role in altering public preferences from government intervention to market friendly institutions and modify games of conflict among political agents to coordination games. Similarly Acemoglu and Robinson (2012) highlight the role of the press as a key component of inclusive institutions that promote economic success.

theory of education contends that the role of education is critical in transforming the society. He argued that the best way to consolidate democracy in the US was to provide people with higher education through which people would be able to make more rational and well informed decisions. He also believed that an educated and well informed citizenry was the best safeguard against corrupt governments and bureaucrats (Wagoner 2004).

A number of studies highlight the role of education in the process of information diffusion as literate people are those who require knowledge, accurate reporting and media freedom. Jeffrey (2000) showed that the demand for local newspapers in India was influenced by literacy which extended beyond elites and reached poorer segments of the Indian population. Educated people were in a better position to understand differences among policies and therefore choose those which best represent their self interests.³ However education is not only a prerequisite but also a means to translate information to correct political decisions. Mondak (1995) illustrated that education is a strong predictor of information acquisition as it indicates an individual's ability to assimilate information.

Coyne and Leeson (2004) stressed that educated people are more likely to understand differences in policies and decide to support market friendly policies. Milligan et al. (2004) and Dee (2004) showed that increases in education raise participation in voting while Glaeser et al. (2004; 2007) evidenced that democratic institutions benefit from higher education as it raises political involvement and civic participation. Through this process students understand their civic obligations and rights which include voting and being informed of public issues. Tabellini (2010)

³ Fowler and Margolis (2014) showed that lack of knowledge on policy positions of major parties in the U.S. hinders the ability of low socio-economic status citizens to translate their preferences to vote choices.

noticed that widespread illiteracy isolates people and reduces their ability to control and understand their external environment.

3 Empirical investigation

3.1 Model specification

The general empirical model that we use to study the relationship between economic liberty and education has the following form:

$$EFW_{it} = \alpha + \beta EDUC_{it-1} + \gamma X_{it-1} + e_i + \eta_t + u_{it} \quad (1)$$

where EFW_{it} is economic freedom of country i at time period t . Our baseline variable for economic freedom is a summary index of the Economic Freedom of the World Index (Fraser Institute 2017) which measures the degree of government involvement in various aspects of economic policy. It summarizes information in five areas which are: a) government size, b) legal structure and security of property rights, c) sound monetary policy, d) international trade and capital movements and e) regulation in business, credit and labor markets, with each of these areas entering in the final index with equal weighting. It ranges from zero to 10 with a higher score implying lower restrictions and more market friendly legislation. This index is available in five year time points during 1975-2015 for a great number of rich and low income countries.

As our goal is to study the link between education ($EDUC_{it-1}$) and market freedom, we use information for the average years of total schooling provided by Barro and Lee (2013). Observations for education are also in five year points, start from 1975 and end in 2010. If education drives up economic freedom, then its estimated coefficient β should have a positive sign. Figure 1 plots average economic freedom against average years of total schooling for our sample of countries. Their

association is strongly positive as the regression line slopes upwardly and the associated confidence intervals demonstrate a statistically significant correlation.

Economic policy reforms are also determined by a number of other economic factors. In our vector X we include wealth determinants such as the income per capita variable and also GDP per capita growth. We also include the variables of imports and exports (denoted as % of GDP) to control for foreign competition and international trade effects. All these variables are provided from the Penn World Tables 9.0 database (Feenstra et al. 2015). We also include in our specification an explanatory variable which measures the percentage of population whose age is over 65 (World Bank Development Indicators 2016), as older individuals might be more reluctant to accept changes and economic reforms.

Political and institutional factors are likely to affect choices for economic policy. Following Pitlik (2007) we include in equation (1) a number of political and institutional variables. We first consider that corruption is a factor that adversely affects the ability of a government to legislate and implement economic policy reforms. Therefore, we enrich our model specification by including a public sector corruption index that is provided from the Varieties of Democracy Institute (Coppedge et al. 2016). It is a variable whose final outcome depends on the respondents' answers to the question of what extent do public sector employees grant favors in exchange for bribes, kickbacks, or other material inducements, and how often do they steal, embezzle, or misappropriate public funds or other state resources for personal or family use. This index runs from less to more corrupt (scale 0 to 1).

The degree of political freedom and liberties arguably affects economic freedom. Therefore our model encompasses an index which measures the level of democracy (Dahlberg et al. 2016) and ranges between 0 and 10. The legal tradition of

a country has also been shown to exert an important influence on policy choices (La Porta et al. 1999). Hence we consider four dummies which indicate if the legal system of the country is British, France, socialist or German oriented (La Porta et al. 2008). We finally include in our specification a variable which measures the percentage of parliamentary seats of social democratic and other left parties in government to proxy for the political orientation of a government (Armingeon et al. 2017). However its extent is very limited as it covers only a number of OECD countries.

To reduce the impact of the business and political cycle, the economic and institutional variables (income per capita, GDP per capita growth, imports, exports, people aged over 65, level of democracy, index of corruption and political orientation) of equation (1) are 5-year averaged. Our model also encompasses time and country specific effects (η_t and e_i respectively) in the form of dummy variables to account for time invariant unobserved heterogeneity and control for common macroeconomic shocks. Main descriptive statistics and cross correlations of the variables of our model are reported in Tables 1 and 2.

3.2 Initial estimates

Table 3 presents OLS econometric results of regressions performed on a sample of 125 developed and developing countries during 1975-2015. Column 1 of Table 3 reports coefficient estimates when the identification strategy involves only the variable of education. Next we include the determinants of the level of democracy and public sector corruption (Columns 2-3). We also introduce in Column 4 the variables of income per capita (in logs) and GDP per capita growth. In Column 5, we consider the influence of exports and imports (in % of GDP). Column 6 reports results when we control for the impact of the variable of the share of population which is over 65.

Then we consider the variables of legal origin (Column 7) and political orientation (Column 8).

The majority of econometric estimates of Table 3 are in favor of a positive and statistically significant influence of the variable of education on economic freedom. The only exception comes from estimates shown in Column 8 when the estimated coefficient of education becomes statistically insignificant. However, the sample of observations is limited as the political orientation variable is available for a number of OECD countries. Other variables that to exert a substantial influence on economic liberalization are the growth rate of GDP, the log of income per capita, imports and exports (denoted as shares of GDP), public sector corruption and the level of democracy. Also the variable which measures the percentage of parliamentary seats of social democratic and left parties exercises a weakly negative effect on economic freedom.

In Column 9 we check if our estimates remain unchanged when controlling for persistence in our dependent variable. As institutions evolve slowly, current economic freedom is arguably determined by its history. The econometric estimates of Column 9 confirm that lagged economic freedom affects current economic freedom and suggest that we should control for its effects. We verify that the influence of education on economic liberalization remains positive and statistically significant though the magnitude of its coefficient estimate is lower. As freedom to trade is part of the economic freedom index, regression estimates of Column 10 exclude the variables of imports and exports as their inclusion could cause a bias in the estimation. The econometric results remain practically unchanged and confirm the statistically significant influence of education on economic freedom.

3.2 Individual dimensions of economic freedom and different education variables

Estimates of previous section demonstrated that education causes a significant impact on economic freedom. However, it would be instructive to uncover which areas of economic policy are mostly affected by schooling. Hence, our empirical analysis proceeds by exploring which of the five dimensions of economic freedom (government size, legal system and protection of property rights, sound monetary policy, international trade freedom, market regulation) are influenced by education. Regressions are performed in the same way as in Table 3 and are based on the specification of Column 9.

Column 1 of Table 4 provides us with estimates as regards the influence of schooling on government size. This dimension of economic freedom shows the extent to which countries rely on personal choice rather than political process to allocate their resources. The regression results reveal that education exerts a remarkable influence on this dimension of economic policy. Columns 2 and 3 show that education does not exercise a strong impact on the proper functioning of the legal system and the protection of property rights (Column 2) or on monetary policy stability (Column 3).

Regression results of Columns 4-5 show us that education is a key factor in determining the dimensions of international trade freedom (Column 4) and market regulation (Column 5). Freedom to trade internationally is an area consisting of tariff barriers, regulatory trade barriers, black market exchange rates and controls for the movement of capital and people. Market regulation focuses on regulatory restraints which limit the freedom of exchange in credit, labor, and product markets. We also examine if estimates hold when average years of secondary schooling and average years of tertiary schooling enter in the regression as educational variables (Table 5).

As can be seen by regression results reported in Columns 1-4, both secondary and tertiary education variables cause an increase in economic freedom.

3.3 Endogeneity of education

Coefficient estimates of Tables 3-5 might be subject to endogeneity bias as both variables of education and economic freedom are interrelated. Glaeser et al. (2004) suggest that the improvement of institutions typically follows a higher level of schooling, however reverse causality might be at work, as education is not a fixed variable. Well functioning market institutions induce growth which could in turn affect education. Also, schooling and liberalization could be jointly determined by third common factors rendering drawn inferences invalid. Therefore, omission to include other relevant variables and measurement error could create bias in the estimated regressions. To establish a causal effect of education on market freedom, we need to employ a set of instruments which satisfy the exclusion criterion. If we could pinpoint factors which are correlated with schooling but at the same time are not associated with economic freedom or its determinants, then these could be used as valid instruments to create a causal effect.

It has become common in the empirical literature to use historical variables as determinants for current economic outcomes (North 1981). We start by defining as key instrument for education in our analysis primary school enrollment rates in 1930 which are provided by Benavot and Riddle (1988). An early date minimizes the risk of reverse causation and probably increases variation as educational differences were more pronounced in the past.

Another set of instruments that could create exogenous variation in education comes from information on genetic distance of nations. Cavalli-Sforza et al. (1994)

created summary measures of genetic relatedness between populations and, as such, they capture divergence in the whole set of implicit beliefs, customs, habits and attitudes that are transmitted across generations with high persistence. Our interpretation is that this measure could conceive differences in people's perceptions and attitudes towards several aspects including schooling and education. Desmet et al. (2011) documented a close relationship between genetic distance and cultural differences and showed that populations that are genetically closer have common beliefs on a set of issues, norms, values, cultural characteristics and perceptions of life, family, religion, and morals. Spolaore and Wacziarg (2009) used this measure to show that genetic distance can explain a significant part of contemporary income variation across nations while recently Giuliano et al. (2014) showed that genetic distance can be used as a measure to proxy for geographical constraints on bilateral trade.⁴

We therefore use as instrument the weighted genetic distance between each country and the USA (Spolaore and Wacziarg 2009) which is the country with the highest level of average years of schooling in our sample. We also mimic Gorodnichenko and Roland (2017) and use information on the Mahalanobis distance between the frequency of blood types in a given country and the USA. PISA scores in science of students across countries (OECD 2015) constitute another possible instrument to proxy for schooling. PISA scores are now one of the world's main

⁴ Progress in genetic research now makes possible to predict a number of behavioral outcomes from genetic information. Relevant studies have shown that such factors account for at least a modest share of differences in educational outcomes in developed countries (Plomin et al. 2008; Branigan et al. 2013). Rietveld et al. (2013) identified an increasing number of genes associated with years of schooling. Cesarini and Visscher (2017) noticed that genes influence cognitive ability through heritability, while Belsky et al. (2016) showed that single-nucleotide polymorphisms are positively associated with speaking and writing skills in early childhood and subsequent scholastic achievement. By this logic, genetic instruments could provide exogenous variation as parents vertically transmit their genes to their offspring, with an adverse impact from education to genes being highly unlikely to take place. It bears stressing that the heritability per se is not the only relevant factor for predicting educational outcomes and does not imply that a person's educational development is already predetermined as other factors contribute to its evolution over time.

yardsticks in evaluating the quality and effectiveness of educational systems and therefore could be employed as additional instruments to establish a causal effect of education on economic freedom.

Having defined all possible instruments, we proceed to estimate the effect of education on economic freedom. Table 6 reports first stage and second stage regression results performed by two stage least squares. The effect of schooling on economic freedom is always large and statistically significant for all instruments selected for education. We also notice from first stage regression estimates that all possible instruments exert the expected influence on our variable of education. In particular, primary school enrollment rates and PISA scores in science impact positively and significantly on education, while variables which measure genetic distance from countries with the highest levels of education (USA is the country with the highest current level of total years of schooling, while Canada had the largest primary school enrollment ratio in 1930) adversely affect current rates of total schooling.

A natural question to ask is whether a variable presumed to be endogenous in our model could instead be treated as exogenous. The bottom part of Table 6 displays chi square and F tests with their associated p-values confirming that our education variable is in fact endogenous when considering primary schooling, PISA scores in science, genetic and blood distance as instruments for schooling. The identification strategy also hinges on the hypothesis that variables which are used as instruments for education are uncorrelated with the error term. We also perform a number of tests to confirm that all instruments meet the exclusion criterion as they do not reject the initial hypothesis of validity.⁵

⁵ When using two instruments the model is over-identified and, therefore, if at least one of the two instruments is valid, we can test for the validity of the other instrument.

Education is probably correlated with a number of factors which are commonly associated with economic freedom but not included in regression estimates of Table 6. In this case our estimates would suffer from endogeneity due to omission to include in our model a number of important covariates. To eliminate the risk of the omitted variable bias we consider a number of factors which could affect education through their influence on economic liberty. Accordingly, we include in our model the variables of GDP per capita (in logs), ethnic fractionalization and a number of geographical factors. Alesina et al. (2003) showed that different forms of fractionalization are important determinants of institutional quality and growth. In a similar spirit, we include latitude, longitude and continent dummies as they are associated with climatic factors and barriers for technology diffusion. All results reported in columns 1-4 of Table 7 confirm the positive influence of education on economic freedom after having controlled for the influence of the aforementioned variables.

We also take into account the influence of trust which can be seen as an aspect of a culture within a society. Aghion et al. (2010) showed that trust is negatively associated with regulation and also for the demand for regulation. They also find that distrust leads to support for government regulation. Alesina and La Ferrara (2002) argue that trust in societies is lower if education is also lower. Information for trust is provided from the World Values Survey (2015) and the relevant variable is created as the percentage of people that answer positively on the question if they trust other people from various groups (complete or partial trust). Results of column 5 confirm that the influence of education on economic freedom remains robust to the inclusion of this determinant. They also indicate that trust affects positively (at 10% level of statistical significance) the liberalization of countries. It bears noting that, as the

number of available observations for trust is low, the regression analysis is performed without considering all previously discussed covariates.

Table 8 reports instrumental variable estimates when using two instruments for the variable of education. Primary school enrollment of countries is used as our main predictor for the variable of schooling and then all other instruments discussed previously are successively introduced in the regressions.⁶ We notice that the effect of education remains strong across all estimates reported in Table 8. We should notice that explanatory covariates included in Tables 7-8 could be endogenous. In this case, Acemoglu et al. (2001) reassure us that the coefficient of the variable of our interest, which is education, is biased downwards and therefore our hypothesis that education affects economic freedom is not affected.

A final step to address endogeneity of education is to follow the GMM approach. We use the system GMM panel data estimator (Arellano and Bover 1995; Blundell and Bond 1998) which is the augmented version of the first differenced panel data estimator (Arellano and Bond, 1991). It has been designed for panel datasets with many panels and few periods as is the case for our model. This estimator eliminates country specific effects and employs as instruments the lagged levels and differences of endogenous covariates. As a rule of thumb for the choice of the number of lags, the selection is based on the criterion that all diagnostic tests should satisfy the condition of validity of the chosen instruments. Instead of the one step estimator, we use the two step estimator, since it is asymptotically more efficient and its standard covariance matrix is robust to panel specific autocorrelation and heteroskedasticity. We also use its robust version to get the corrected covariance matrix.

⁶ In countries for which no available information exists for 1930, we use primary school enrollment rates for 1935-1940.

In brief, the obtained GMM regression estimates of all columns in Table 9 ascertain that the variable of education exerts a positive and significant influence on economic freedom though its effect is lower in magnitude compared to our instrumental variable estimates. We also notice that democracy acts in a positive way in the process of economic liberalization confirming that economic freedom goes hand in hand with political freedom. The system GMM panel data estimator reports several diagnostic tests. The null hypothesis of the Sargan test is that the chosen instruments are uncorrelated with the residuals and therefore are acceptable instruments. The GMM estimator also reports a test for autocorrelation, which is applied to the first differenced residuals. If the null hypothesis of no autocorrelation is rejected, then the test indicates that lags of the used instruments are in fact endogenous and thus are considered as weak instruments. The results of the Sargan test verify that the instruments are not correlated with the obtained residuals. In all regressions, the autocorrelation diagnostic test also confirms the null of no autocorrelation in the first differenced residuals.

3.5 Non parametric analysis

The majority of the econometric results provided so far show us that education influences economic freedom in a positive way. As the influence of schooling is probably non-linear, we proceed with non parametric regression to identify levels of schooling for which economic liberty is affected in a positive way. The most important feature of this approach is that no assumption for the functional form between economic freedom and education is needed but instead we let estimates be determined by the data. We rewrite Equation (1) as follows:

$$EFW_{it} = a + \theta(EDUC_{it}) + \beta_t + \gamma_i + \varepsilon_{it} \quad (2)$$

where $\theta(\cdot)$ is an unknown non linear function related to the influence of education on economic freedom. The model includes country and time specific effects (γ_i, β_t) to control for unobserved heterogeneity and omission biases related to technical change and macroeconomic shocks. We first estimate coefficients of the linear part of equation (2) by least squares which are used to redefine the dependent variable as $y = EFW^*$ which is the part of *economic freedom* net of the influence of time and country fixed effects. In matrix notation the equation that we estimate is:

$$y = \theta(x) + u \quad (3)$$

where y and x are the $n \times 1$ vectors of *economic freedom* and education, respectively. $\theta(x)$ is approximated at a particular value x_0 by a p th order local polynomial smooth in $(x - x_0)$ for some x near x_0 (Fan 1992). For each $j = 0, \dots, p$ we estimate $\beta_j = m(x_0)$ by minimizing in β_j the weighted least squares expression:

$$\sum_{i=1}^n \left\{ y_i - \sum_{j=0}^p \beta_j (x_i - x_0)^j \right\}^2 K_h(x_i - x_0). \quad \text{The weights } K_h(\cdot) \text{ are defined as}$$

$K_h(x) = h^{-1} K(x/h)$, with $K_h(\cdot)$ being a Gaussian kernel function used to calculate the weighted local polynomial estimate and h defining a bandwidth which specifies the half width of the kernel around each point.

Figures 2.1-2.4 plot estimates of the impact of education (horizontal axis) on economic freedom (vertical axis) along with 95% confidence intervals across quartiles of education and illustrate that the influence on economic freedom rises as the level of education increases. For very low levels of schooling, Figure 2.1 ascertains that its influence is rather negative suggesting that economic policies in favor of government intervention are more likely to prevail when the educational level of the population shrinks. Figure 2.2 illustrates that economic freedom is not affected substantially across low to medium-low levels of education (average years of schooling between

4.5 and 7 years). By contrast, when moving to the medium-high quartile of the educational distribution (7 to 9.2 years of schooling) the influence of education rises and becomes statistically significant as the years of schooling increase (Figure 2.3). When it comes to very high levels of education (Figure 2.4) we confirm that its impact on economic freedom is positive and economically large.

3.6 Impact of education subject to the degree of information

So far we have seen that education exerts a decisive influence on the process of economic liberalization. We have argued that this kind of impact takes place through the channel of the information of citizens. Societies which consist of highly educated people are more likely to choose to liberalize their economic structures as citizens are aware that this kind of economic policy generates long term benefits despite the existence of short run adjustment costs.

In this process, the quality and quantity of citizens' information plays a key role. Even when the provision of education remains at high standards, its beneficial effects will erode if public awareness is limited and the decision process is not based on precise information. We will test if this hypothesis holds and assess econometrically if the effect of schooling on economic freedom can be shaped by the extent of the available information. To our knowledge, the existing measures are rather inadequate to reflect the quantity and importantly the quality of people's information. Nonetheless, indicators illustrating the diffusion of information and communications technology (ICT) are available and provide us with a measure to proxy for the amount of knowledge that is disseminated within a society. The advancement of ICT's has already impacted on the public information process in a catalytic way as it enhances knowledge sharing by reducing temporal and spatial

barriers with a number of traditionally disadvantaged groups now having better access to information.

For the purpose of our research, we use the number of internet users per 100 people (World Bank Development Indicators) as a measure for the extent of information diffusion. Following the non-parametric methodology described in the previous section, we get estimates of the impact of education on economic freedom throughout various levels of internet use (Figures 3.1-3.4). When the diffusion of internet is low (lower than 1.48 users per 100 people), we notice that the influence of education is negative (Figure 3.1). Similarly, Figure 3.2 illustrates that this impact is lower than zero when the number of users ranges between 1.48 and 8.74 per 100 people and the average years of schooling variable is lower than 8. However, for higher levels of education this influence switches to positive. When considering higher internet penetration rates (Figures 3.3 and 3.4) we obtain estimates which are in favor of a superior impact of schooling which rises as the number of total years of schooling increases.

Non parametric estimates of Figure 4 analyze the influence of schooling at various quartiles of media freedom (Freedom House 2017). This index could be used as a measure of citizens' information since it assesses the degree of print, broadcast, and digital media freedom across countries. It provides numerical scores evaluating the legal environment for the media, political pressures that influence reporting, economic factors that affect access to news and information and repressive actions such as killing of journalists, etc. It ranges from 0 to 100 with lower scores implying a higher score of media freedom. Again we verify that the degree of media freedom shapes the impact of education as its influence on economic liberty gets lower as freedom of the press diminishes (Figures 4.1-4.4).

As in the case of the educational variable, measures of information attainment that were used in the non parametric estimates of Figures 3 and 4 are probably endogenous. For this reason we employ as an instrument for the level of citizens' information a global warming ignorance measure (Ray and Pugliese 2011) as the risk of being associated with economic freedom is low. The econometric estimates shown in Table 10 show the impact of education on economic freedom taking into account the degree of people's information. To avoid endogeneity bias we use as instruments for the variables of education and information those of primary school enrollment rates in 1930 and global warming ignorance, respectively. We verify that the influence of education subject to the degree of people's information is strongly positive while citizens' ignorance acts as a deterrent to the process of economic liberalization.

4. Conclusion

We explored whether education plays a key role in the process of economic liberalization. Our basic argument is that economic freedom largely depends on the existence or not of a well educated and informed citizenry which ultimately decides through its voting decision whether economic policy should follow the liberal paradigm.

Our findings suggest that the educational level is indeed a decisive factor of economic freedom. Information attainment and media freedom are the main channels through which education affects preferences towards less government intervention. We illustrated that this influence is non linear and raises as education increases. For low levels of schooling this impact is negative and implies that government intervention is more likely to prevail when the educational level of the population is

low. We showed that the size of the government, trade freedom and market regulation are the dimensions of economic freedom which are mostly affected. As the diffusion of information is an important factor in achieving economic freedom, we consider of crucial importance public policies that encourage pluralism in the mass media, promote the privatization of the media industry and open the market to foreign investors.

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Tables & Figures

Figure 1: Economic freedom against average years of schooling

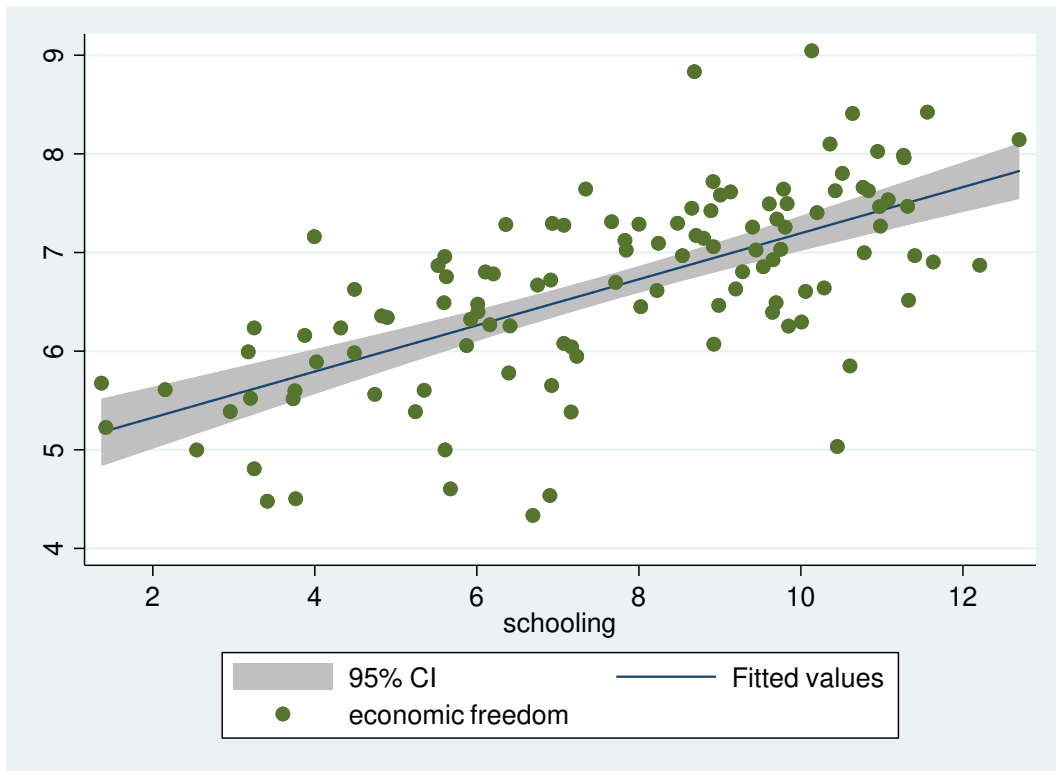


Table 1: Main descriptive statistics of variables

Variable	Obs.	Mean	Standard Deviation	Min	Max
Economic freedom (0-10)	1,051	6.10	1.33	1.82	9.23
Average years of schooling (years)	1,000	6.90	2.96	0.45	13.18
GDP per capita (log)	1,175	8.72	1.23	5.99	12.35
GDP per capita growth (%)	1,156	0.03	0.05	-0.21	0.35
Exports (% GDP)	1,175	0.23	0.25	0.001	2.17
Imports (% GDP)	1,175	0.28	0.27	0.0004	2.46
Age 65+ (% of population)	1,229	7.12	4.68	0.82	23.90
Public sector corruption (0-1)	1,057	0.48	0.30	0.01	0.97
Level of democracy (0-10)	1,161	5.93	3.34	0.25	10.00
Legal origin (UK)	1,233	0.28	0.45	0.00	1.00
Legal origin (FRANCE)	1,233	0.45	0.50	0.00	1.00
Legal origin (Socialist)	1,233	0.20	0.40	0.00	1.00
Legal origin (German)	1,233	0.04	0.20	0.00	1.00
Government left (% of seats)	275	19.33	16.35	0.00	62.82

Table 2: Correlation of variables

Variable	Economic freedom (0-10)	Average years of schooling (years)	GDP per capita (log)	GDP per capita growth (%)	Exports (% GDP)	Imports (% GDP)	Age 65+ (% of population)	Public sector corruption (0-1)	Level of democracy (0-10)	Legal origin (UK)	Legal origin (FRANCE)	Legal origin (Social)	Legal origin (German)
Economic freedom (0-10)	1.00												
Average years of schooling (years)	0.68	1.00											
GDP per capita (log)	0.61	0.84	1.00										
GDP per capita growth (%)	0.29	0.18	0.12	1.00									
Exports (% GDP)	0.38	0.49	0.54	0.12	1.00								
Imports (% GDP)	0.47	0.48	0.48	0.09	0.79	1.00							
Age 65+ (% of population)	0.55	0.75	0.80	0.08	0.47	0.48	1.00						
Public sector corruption (0-1)	-0.41	-0.52	-0.60	0.00	-0.37	-0.34	-0.56	1.00					
Level of democracy (0-10)	0.64	0.65	0.68	0.07	0.38	0.45	0.63	-0.55	1.00				
Legal origin (UK)	0.04	0.02	-0.08	-0.09	-0.07	-0.03	-0.17	-0.10	0.09	1.00			
Legal origin (FRANCE)	-0.23	-0.41	-0.22	-0.06	-0.15	-0.16	-0.30	0.27	-0.23	-0.62	1.00		
Legal origin (Social)	0.05	0.31	0.08	0.21	0.04	0.07	0.30	0.11	-0.04	-0.25	-0.37	1.00	
Legal origin (German)	0.22	0.22	0.26	0.03	0.16	0.11	0.27	-0.26	0.18	-0.14	-0.21	-0.08	1.00

Table 3: Baseline estimates

<i>Dependent variable: Economic freedom</i>										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	4.806*** (22.54) [†]	4.240*** (18.84)	5.811*** (14.04)	4.609*** (5.38)	3.494*** (4.00)	3.102*** (3.51)	3.754*** (6.43)	-3.248* (-1.68)	2.008*** (7.24)	2.116*** (7.60)
Economic freedom (lagged once)									0.686*** (30.77)	0.702*** (31.98)
Average years of schooling	0.058 (1.43)	0.069* (1.72)	0.088** (2.08)	0.083** (1.99)	0.107*** (2.55)	0.113*** (2.70)	0.086*** (3.19)	0.059 (1.48)	0.057*** (4.17)	0.057*** (4.10)
Level of democracy		0.092*** (6.03)	0.069*** (4.33)	0.071*** (4.67)	0.062*** (4.09)	0.069*** (4.49)	0.065*** (4.91)	0.293*** (3.58)	0.043*** (5.04)	0.049*** (5.75)
Public sector corruption			-0.555** (-2.34)	-0.520** (-2.23)	-0.439* (-1.91)	-0.417* (-1.79)	-0.346** (-2.08)	-0.404 (-1.47)	-0.187** (-2.24)	-0.174** (-2.07)
GDP per capita (in log)				0.113 (1.28)	0.185** (2.12)	0.201** (2.20)	0.182*** (2.60)	0.642*** (3.28)	-0.077** (-2.07)	-0.109*** (-2.96)
GDP per capita growth				4.502*** (8.10)	4.680*** (8.56)	4.619*** (8.36)	4.979*** (8.66)	7.380*** (5.30)	3.840*** (8.20)	3.690*** (7.83)
Exports (% of GDP)					-1.505*** (-3.75)	-1.534*** (-3.81)	-1.353*** (-4.38)	-0.202 (-0.51)	-0.614*** (-3.82)	
Imports (% of GDP)					2.011*** (5.34)	2.005*** (5.24)	1.715*** (5.77)	0.266 (0.66)	0.575*** (3.56)	
Age 65+ (% of population)						0.015 (0.66)	0.005 (0.36)	0.018 (1.01)	0.007 (1.03)	0.009 (1.41)
Legal tradition (UK)							-0.024 (-0.10)	0.545*** (2.89)	-0.046 (-0.52)	-0.0003 (-0.00)
Legal tradition (France)							-0.109 (-0.45)	0.102 (0.57)	-0.077 (-0.88)	-0.030 (-0.35)
Legal tradition (Social.)							-0.477* (-1.83)	0.140 (0.58)	-0.164 (-1.59)	-0.103 (-1.01)
Legal tradition (German)							0.285 (0.94)	0.439** (2.32)	0.003 (0.03)	0.019 (0.18)
Government left								-0.003* (-1.86)		
Time effects	included	included	included	included	included	included	included	included	included	included
Country effects	included	included	included	included	included	included				
R ²	0.581	0.604	0.624	0.656	0.670	0.673	0.672	0.791	0.769	0.766
Observations	913	903	831	823	823	815	807	221	767	767

[†] The t-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Regressions of columns 7-10 have been performed with the use of the random effect panel data estimator.

Table 4: Individual measures of economic freedom

	Government size	Legal system and property rights	Sound money	International trade freedom	Regulation
	(1)	(2)	(3)	(4)	(5)
Constant	2.810*** (5.43) [†]	0.550 (1.29)	2.739*** (3.98)	2.421*** (4.49)	1.876*** (5.68)
Once lagged dependent variable	0.639*** (29.59)	0.626*** (23.58)	0.640*** (27.96)	0.579*** (23.58)	0.769*** (35.11)
Average years of schooling	0.079*** (3.04)	-0.002 (-0.13)	0.051 (1.48)	0.009*** (3.63)	0.040*** (2.55)
GDP per capita (in log)	-0.171** (-2.50)	0.187*** (3.10)	-0.106 (-1.14)	-0.147** (-2.00)	-0.093** (-2.16)
GDP per capita growth	2.259*** (2.61)	2.335*** (3.14)	8.362*** (7.17)	5.144*** (5.44)	2.119*** (3.94)
Exports (% of GDP)	-0.545* (-1.82)	-0.373 (-1.50)	-1.241*** (-3.05)		-0.220 (-1.20)
Imports (% of GDP)	0.141 (0.48)	0.405 (1.61)	1.615*** (3.96)		0.397** (2.15)
Age 65+ (% of population)	-0.040*** (-3.08)	0.021* (1.92)	0.035** (2.00)	0.031** (2.31)	0.010 (1.26)
Public sector corruption	0.234 (1.50)	-0.470*** (-3.45)	-0.332 (-1.60)	-0.084 (-0.50)	-0.229** (-2.40)
Level of democracy	0.041*** (2.64)	0.026* (1.98)	0.033 (1.57)	0.091*** (5.30)	0.019* (1.95)
Legal tradition (UK)	0.408** (2.41)	-0.410*** (-2.97)	-0.097 (-0.42)	-0.050 (-0.29)	0.065 (0.64)
Legal tradition (France)	0.365** (2.19)	-0.673*** (-4.86)	0.095 (0.42)	0.076 (0.44)	-0.054 (-0.54)
Legal tradition (Social.)	0.283 (1.46)	-0.616*** (-3.88)	-0.196 (-0.75)	-0.304 (-1.51)	-0.003 (-0.03)
Legal tradition (German)	0.463** (2.25)	-0.281* (-1.71)	0.125 (0.45)	-0.117 (-0.55)	-0.042 (-0.35)
Time effects	included	included	included	included	included
R ²	0.532	0.362	0.548	0.627	0.641
Observations	790	730	802	759	760

[†] The t-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Table 5: Other measures of schooling

<i>Dependent variable: Economic freedom</i>				
	(1)	(2)	(3)	(4)
Constant	3.578*** (6.26) [†]	1.709*** (6.29)	3.495*** (6.15)	1.698 (6.41)
Economic freedom (lagged once)		0.687*** (30.39)		0.685*** (30.29)
Average years of secondary schooling	0.125*** (2.82)	0.046* (1.92)		
Average years of tertiary schooling			0.425** (2.50)	0.192** (2.27)
GDP per capita (in log)	0.235*** (3.72)	-0.012 (-0.37)	0.268*** (4.49)	-0.003 (-0.12)
GDP per capita growth	5.055*** (8.76)	3.861*** (8.17)	5.061*** (8.76)	3.904*** (8.26)
Exports (% of GDP)	-1.412*** (-4.57)	-0.609*** (-3.75)	-1.475*** (-4.71)	-0.630*** (-3.87)
Imports (% of GDP)	1.743*** (5.86)	0.595*** (3.65)	1.803*** (6.01)	0.642*** (3.90)
Age 65+ (% of population)	0.003 (0.026)	0.004 (0.70)	0.001 (0.08)	0.004 (0.62)
Public sector corruption	-0.357** (-2.15)	-0.232*** (-2.78)	-0.335** (-2.01)	-0.230*** (-2.76)
Level of democracy	0.070*** (5.38)	0.048*** (5.57)	0.073*** (5.53)	0.047*** (5.54)
Legal tradition (UK)	0.004 (0.02)	-0.007 (-0.009)	-0.038 (-0.15)	-0.013 (-0.15)
Legal tradition (France)	-0.126 (-0.52)	-0.075 (-0.85)	-0.197 (-0.80)	-0.090 (-1.02)
Legal tradition (Social.)	-0.422* (-1.65)	-0.060 (-0.60)	-0.374 (-1.46)	-0.051 (-0.52)
Legal tradition (German)	0.253 (0.83)	0.012 (0.12)	0.311 (1.03)	0.034 (0.32)
Time effects	included	included	included	included
R ²	0.670	0.766	0.670	0.765
Observations	807	767	807	767

[†] The z-statistics are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Table 6: Instrumental variable estimates (initial estimates)

<i>First stage regression, Dependent variable: Average years of schooling</i>				
	(1)	(2)	(3)	(4)
Constant	-0.738 (-0.44) [†]	5.954*** (12.60)	6.118*** (11.00)	5.175** (9.51)
Primary Enrollment Ratio in 1930	0.029*** (3.35)	0.069*** (10.05)	0.069*** (9.69)	0.077*** (12.53)
Pizza score	0.018*** (4.36)			
Weighted genet distance to Canada		-0.007*** (-2.69)		
Weighted genet distance to the USA			-0.0008** (-2.35)	
Blood distance from the USA				-0.090 (-0.32)
F test	53.95 (0.00)	96.26 (0.00)	90.83 (0.00)	93.77 (0.00)
Adj. R ²	0.632	0.6387	0.623	0.625
Observations	55	100	100	97
<i>Second stage regression, Dependent variable: Economic freedom</i>				
Constant	3.809*** (8.36) ^{††}	4.393*** (17.44)	4.373*** (17.05)	4.315*** (17.49)
Average years of schooling	0.356*** (7.63)	0.294*** (10.24)	0.296*** (10.11)	0.304*** (10.81)
Wald test	58.20 (0.00)	104.82 (0.00)	102.31 (0.00)	116.91 (0.00)
R ²	0.240	0.442	0.436	0.450
Observations	55	100	100	97
Endogeneity test (chi2) ¹	13.907 (0.00)	7.126 (0.00)	7.329 (0.00)	11.978 (0.00)
Endogeneity test (F) ¹	18.999 (0.00)	7.797 (0.00)	8.097 (0.01)	15.041 (0.00)
Instrument validity test (chi2) ²	0.162 (0.68)	0.066 (0.79)	0.065 (0.79)	0.579 (0.44)

[†] t-statistics based on robust standard errors are reported in parentheses.

^{††} z-statistics based on robust standard errors are reported in parentheses.

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

¹ Ho: variables are exogenous.

² Ho: instruments are valid.

Table 7: Instrumental variable estimates (additional explanatory variables)

<i>First stage regression, Dependent variable: Average years of schooling</i>					
	(1)	(2)	(3)	(4)	(5)
Constant	1.286*** (6.67) [†]	-5.109*** (-2.81)	-4.676** (-2.44)	-4.137** (-2.14)	6.128*** (11.25)
Primary Enrollment Ratio in 1930	0.038*** (4.75)	0.038*** (4.75)	0.041*** (5.40)	0.037*** (5.09)	0.064*** (7.01)
F test	207.38 (0.00)	137.63 (0.00)	81.15 (0.00)	53.55 (0.00)	27.90 (0.00)
Adj. R ²	0.776	0.774	0.780	0.791	0.525
Observations	102	102	102	102	39
<i>Second stage regression, Dependent variable: Economic freedom</i>					
Constant	3.915*** (3.16) ^{††}	4.239*** (3.28)	3.917*** (2.99)	3.989*** (3.02)	4.683*** (11.81)
Average years of schooling	0.271*** (2.58)	0.265*** (2.52)	0.260*** (2.60)	0.280** (2.41)	0.215*** (4.47)
GDP per capita (in log)	0.070 (0.32)	0.051 (0.23)	0.119 (0.53)	0.098 (0.44)	
Ethnic fractionalization		-0.237 (-0.83)	-0.407 (-1.31)	-0.432 (-1.27)	
Longitude			-0.0002 (-0.16)	-0.0008 (-0.26)	
Latitude			-0.006 (-1.33)	-0.003 (-0.54)	
Continent Europe				-0.241 (-0.58)	
Continent America				-0.068 (-0.20)	
Continent Asia-Oceania				-0.036 (-0.11)	
Trust					0.013* (1.79)
Wald test	157.76 (0.00)	159.72 (0.00)	161.79 (0.00)	164.17 (0.00)	36.48 (0.00)
R ²	0.491	0.498	0.510	0.499	0.439
Observations	102	102	102	102	39

[†] t-statistics based on robust standard errors are reported in parentheses.

^{††} z-statistics based on robust standard errors are reported in parentheses.

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Table 8: Instrumental variable estimates (two instruments)

<i>First stage regression, Dependent variable: Average years of schooling</i>				
Constant	0.699 (0.19) [†]	-5.882*** (-2.86)	-5.905*** (-2.85)	-3.459 (-1.62)
Primary Enrollment	0.034***	0.038***	0.036***	0.036***
Ratio in 1930	(3.39)	(5.01)	(4.99)	(4.95)
Pizza score	0.007 (1.37)			
Weighted genet distance to Canada		0.0007*** (2.53)		
Weighted genet distance to the USA			0.0009*** (2.59)	
Blood distance from the USA				-0.014 (-0.06)
F test	96.66 (0.00)	46.87 (0.00)	46.63 (0.00)	45.07 (0.00)
Adj. R ²	0.642	0.792	0.790	0.797
Observations	55	100	100	97
<i>Second stage regression, Dependent variable: Economic freedom</i>				
Constant	0.112 (0.07) ^{††}	4.017*** (3.03)	3.963*** (2.99)	4.806*** (3.60)
Average years of schooling	0.193** (1.96)	0.254** (2.21)	0.261** (2.16)	0.351*** (2.93)
GDP per capita (in log)	0.557*** (2.64)	0.117 (0.54)	0.114 (0.52)	-0.053 (-0.24)
Ethnic fractionalization	-0.220 (-0.71)	-0.447 (-1.28)	-0.402 (-1.19)	-0.339 (-0.96)
Longitude	-0.002 (-0.89)	-0.007 (-0.23)	-0.0005 (-0.18)	-0.004 (-1.18)
Latitude	-0.17** (-1.96)	-0.004 (-0.67)	-0.004 (-0.58)	-0.002 (-0.27)
Continent Europe	0.468 (0.86)	-0.152 (-0.36)	-0.186 (-0.42)	-0.299 (-0.65)
Continent America	0.282 (0.45)	-0.057 (-0.16)	-0.047 (-0.13)	-0.089 (-0.25)
Continent Asia-Oceania	0.819 (1.30)	-0.001 (-0.01)	-0.030 (-0.09)	0.094 (0.25)
Wald test	96.50 (0.00)	159.05 (0.00)	153.44 (0.00)	151.30 (0.00)
R ²	0.567	0.487	0.478	0.427
Observations	55	100	100	97

[†] t-statistics based on robust standard errors are reported in parentheses.

^{††} z-statistics based on robust standard errors are reported in parentheses.

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Table 9: GMM estimates

<i>Dependent variable: Economic freedom</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	1.251 (0.46) †	1.606 (0.44)	0.648 (0.18)	-1.306 (-0.29)	1.617 (0.51)	0.690 (0.20)
Economic freedom (lagged once)	0.352 (0.86)	0.386 (1.09)	0.349 (0.80)	0.216 (0.55)	0.244 (0.63)	0.329 (0.79)
Average years of schooling (instrument)	0.156*** (3.18)	0.132* (1.80)	0.148* (1.66)	0.071 (0.50)	0.136*** (2.49)	0.153*** (2.91)
GDP per capita (in log, lagged once)	0.057 (0.11)	0.042 (0.08)	0.097 (0.15)	0.491 (0.63)	0.042 (0.08)	0.106 (0.18)
GDP per capita growth (lagged once)	-0.573 (-0.23)	0.327 (0.10)	-0.657 (-0.21)	-2.003 (-0.61)	-0.422 (-0.16)	-0.635 (-0.24)
Age 65+ (% of population, lagged once)	0.015 (0.55)	-0.002 (-0.07)	0.017 (0.42)	-0.039 (-0.38)	0.014 (0.49)	0.011 (0.38)
Public sector corruption (lagged once)	0.591 (0.98)	-0.083 (-0.06)	0.684 (0.67)	0.419 (0.42)	0.511 (0.80)	0.612 (0.94)
Level of democracy (lagged once)	0.135* (1.62)	0.126* (1.73)	0.133* (1.66)	0.148** (2.03)	0.149* (1.83)	0.143* (1.87)
Legal tradition (UK)		-0.466 (-0.70)				
Legal tradition (France)			0.009 (0.02)			
Legal tradition (Social.)				0.599 (0.59)		
Legal tradition (German)					0.572 (0.90)	
Legal tradition (Scand.)						-0.534 (-0.45)
Time effects	included	included	included	included	included	included
Country effects	included	included	included	included	included	included
Wald	798.37	1.106.49	880.77	674.02	734.09	733.40
Observations	762	754	754	754	754	754
Sargan test (p-value) ††	11.31 (0.41)	10.79 (0.37)	11.20 (0.34)	11.02 (0.35)	11.48 (0.32)	11.28 (0.33)
AR (2) test (p-value) †††	-1.02 (0.30)	-0.99 (0.32)	-1.08 (0.28)	-1.10 (0.27)	-1.15 (0.25)	-1.08 (0.28)

† The z-statistics are reported in parentheses.

†† The null hypothesis that the instruments used in the regression are valid.

††† The null hypothesis is that the errors in the first-differenced regression do not exhibit second order serial correlation.

***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Figure 2: Impact of education on economic freedom across quartiles of schooling

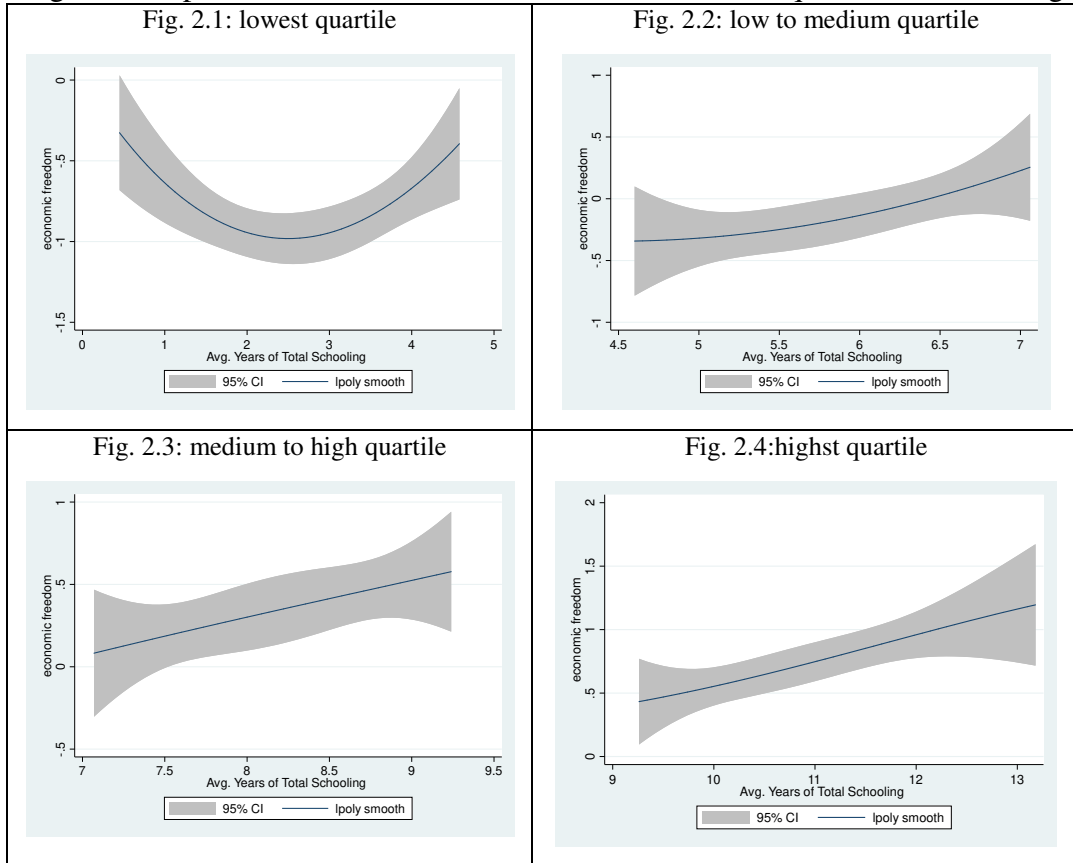


Figure 3: Impact of education on economic freedom across quartiles of internet use

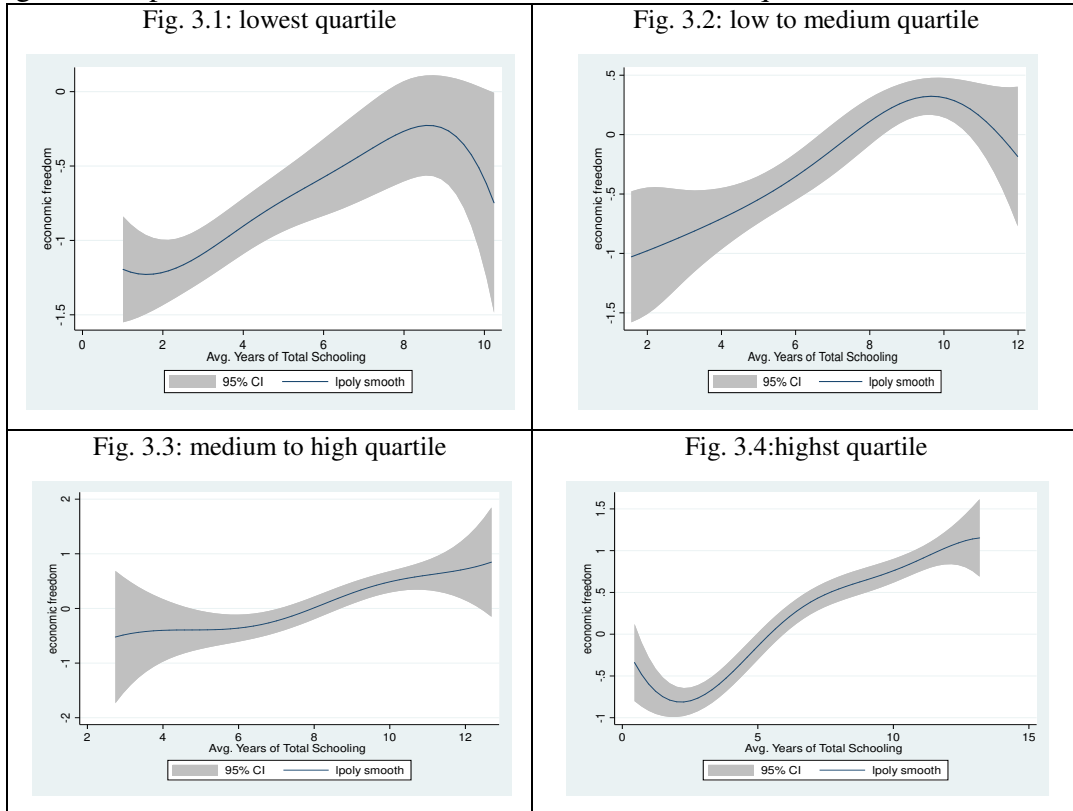


Figure 4: Impact of education on economic freedom across quartiles of media freedom

(Rating from 0 to 100 with low scores implying higher press freedom)

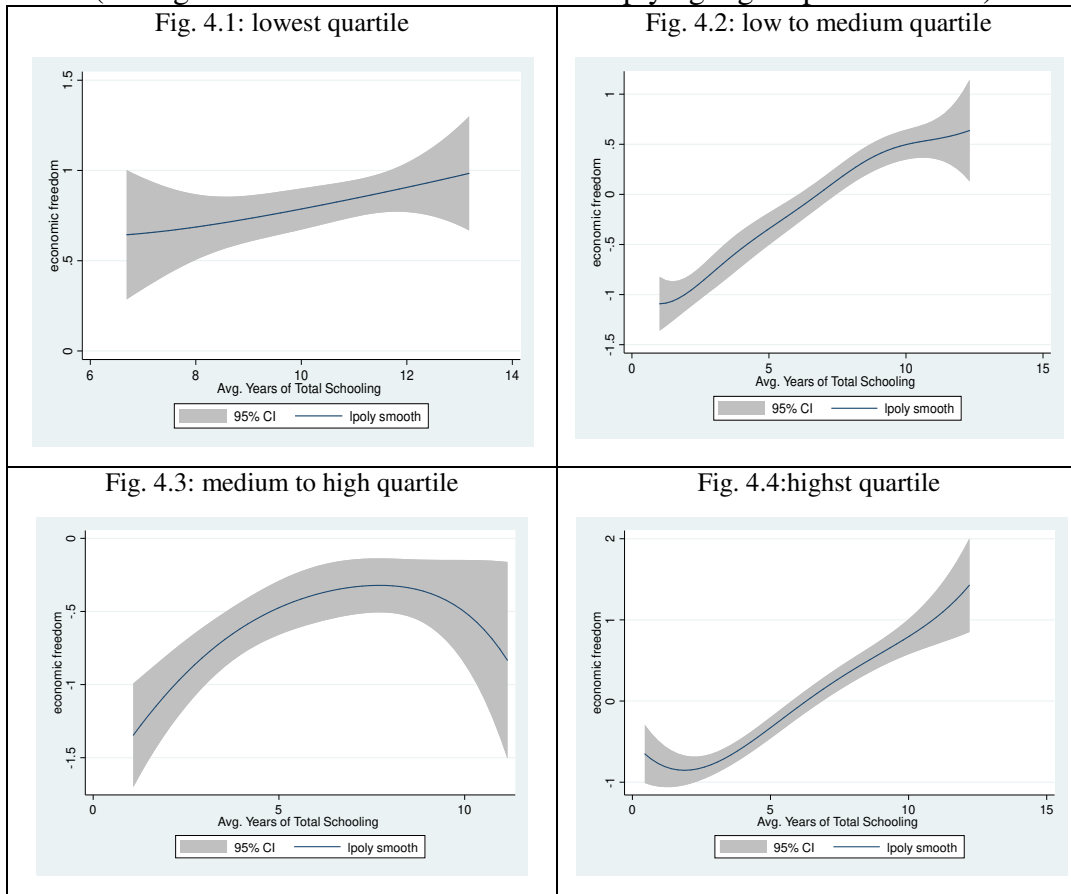


Table 10: Regression estimates based on instruments for schooling and information

<i>Dependent variable: Economic freedom</i>			
Constant	5.808*** (48.43) [†]	7.503*** (56.10)	6.624*** (18.13)
Primary Enrollment	0.023*** (11.51)		0.014*** (3.13)
Climate change ignorance		-2.680*** (-7.94)	-1.393** (-2.27)
F test	132.41 (0.00)	63.12 (0.00)	70.00 (0.00)
R ²	0.448	0.346	0.460
Observations	106	89	81

[†] t-statistics based on robust standard errors are reported in parentheses.
***, ** and * denote significance at 1%, 5% and 10% levels, respectively.