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Educated to be Trusting? Evidence from Europe

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Abstract

Using data from the European Values Study and exploiting the compulsory schooling reforms in 13 European countries for identification, we find education to enhance generalized trust. We also find that this effect partly arises from the fact that people learn to form social capital through cooperating and interacting with others in school.

Keywords: Education; Generalized Trust; Compulsory Schooling Reforms; European Values Study

JEL Classifications: I20; O52; Z10.

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1. Introduction

Economists have recognized the importance of trust a long time ago. [Arrow \(1972\)](#) argues that: “Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” Existing studies have documented that interpersonal trust is associated with a variety of desirable socioeconomic outcomes; understanding the determinants of trust is thus very important.¹

Our focus in this paper is education. Conceptually, it is *ex ante* unclear whether there is a positive or a negative relationship between education and trust. For instance, the analysis of [Algan, Cahuc, and Shleifer \(2013\)](#) suggests that the “quality” (not just the “quantity”) of education can affect how students build up their social capital. Empirically, while some studies document positive associations (e.g., [Borgonovi 2012](#)), it is also unclear about the causal effect because of omitted variables and reverse causality (see, e.g., [Bjørnskov 2009](#)).

We fill this gap by using survey data on generalized trust and educational attainment from various waves of the European Values Study (EVS) and by exploiting the exogenous variation in educational attainment due to compulsory schooling reforms in 13 European countries. The identification strategy has been used by prior studies such as [Brunello, Fort, and Weber \(2009\)](#) and [Brunello, Fabbri, and Fort \(2013\)](#). Our 2SLS regression results show that individuals with more years of schooling have higher levels of generalized trust. We also provide suggestive evidence that the effect can arise from individuals’ experience of working in groups in school and this experience can foster trust in others.

Our paper contributes to the recently growing literature on the non-economic benefits of education (see, e.g., [Lochner 2011](#)). To the extent that generalized trust is associated with a variety of desirable socioeconomic outcomes, our results imply that there is an external return to education through enhancing people’s trust.

2. Data and empirical specification

We use 4 cross-sections of EVS (1981, 1990, 1999, and 2008); each survey covers a number of core questions, including trust and some other socio-economic variables of the respondents.² The key outcome variable is a dummy indicating the individual’s “generalized trust,” based on the survey question: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” A value of 1 indicates that the individual trusts others and 0 otherwise. The key independent variable is the individual’s educational

¹See, e.g., [Algan and Cahuc \(2014\)](#) for a survey of related studies.

²The raw data and other documentations can be found at <http://www.europeanvaluesstudy.eu/>.

attainment, measured by the years of full-time education completed by the individual.³

Table 1: Compulsory school reforms in Europe

Country (Region)	Reform year	First cohort affected by the reform	Age of school entry	Change in min. school leaving age	Change in years of compulsory education
Austria	1962	1947	6	14 to 15	8 to 9
Belgium	1983	1969	6	14 to 18	8 to 12
Denmark	1971	1957	7	14 to 16	7 to 9
France	1959	1953	6	14 to 16	8 to 10
Germany (Schleswig-Holstein)	1956	1941	6	14 to 15	8 to 9
Germany (Hamburg)	1949	1934	6	14 to 15	8 to 9
Germany (Niedersachsen)	1962	1947	6	14 to 15	8 to 9
Germany (Bremen)	1958	1943	6	14 to 15	8 to 9
Germany (Nordrhein-Westphalia)	1967	1953	6	14 to 15	8 to 9
Germany (Hessen)	1967	1953	6	14 to 15	8 to 9
Germany (Rheinland-Pfalz)	1967	1953	6	14 to 15	8 to 9
Germany (Baden-Württemberg)	1967	1953	6	14 to 15	8 to 9
Germany (Bayern)	1969	1955	6	14 to 15	8 to 9
Germany (Saarland)	1964	1949	6	14 to 15	8 to 9
Greece	1975	1963	6	12 to 15	6 to 9
Ireland	1972	1958	6	14 to 15	8 to 9
Italy	1963	1949	6	11 to 14	5 to 9
Netherlands	1975	1959	6	15 to 16	9 to 10
Portugal	1964	1956	8	12 to 14	4 to 6
Spain	1970	1957	6	12 to 14	6 to 8
Sweden	1962	1950	6/7	14/15 to 15/16	8 to 9
U.K. (Scotland)	1976	1961	5	15 to 16	10 to 11
U.K. (England/Wales/N. Ireland)	1972	1957	5	15 to 16	10 to 11

Source: Brunello, Fort, and Weber (2009) and Brunello, Fabbri, and Fort (2013).

We consider individuals coming from the following 13 countries: Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, and the U.K. For each country, we choose a compulsory education reform that took place in late 1940s and early 1980s and affected the individuals at similar education levels; see Table 1.

An individual can be “treated” (affected by the reforms) or “non-treated” (not affected by the reforms).⁴ Similar to Brunello, Fort, and Weber (2009) and Brunello, Fabbri, and Fort (2013), we define treated (non-treated) individuals as those born within 7 years after (before) the first-affected cohort in their respective country. In addition, we restrict our attention to individuals aged between 20 and 65. The baseline regression sample contains 16,935 observations. Throughout the empirical analysis, we will use the sampling weights provided in the survey.

Table 2 reports the number of observations by country and the country-level means and standard deviations of the variables used in the empirical analysis.

Similar to Brunello, Fort, and Weber (2009) and Brunello, Fabbri, and Fort (2013), we

³Specifically, EVS only provides information on the individual’s age of completing education (“What age did you complete your education”); we construct years of schooling by taking the difference between the individual’s age of completing education and the age in which the individual normally starts the compulsory education (6 in all sampled countries except 7 for Denmark and 5 for the U.K.).

⁴The assignment is based on the year of birth and the country of the individual. For Germany and the U.K. where reforms were implemented in different regions at different times, the assignment is based on the year of birth and the region of residence of the individual when the survey was conducted.

Table 2: Summary statistics

Country	<i>N</i>	Generalized trust		Years of schooling		Age		Female dummy	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Austria	1,025	0.375	0.484	11.625	4.341	51.195	7.472	0.580	0.494
Belgium	1,415	0.345	0.475	14.462	3.957	31.160	7.473	0.516	0.500
Denmark	1,387	0.692	0.462	13.030	4.329	38.260	11.089	0.491	0.500
France	1,584	0.267	0.443	12.234	3.446	40.698	11.753	0.533	0.499
Germany	1,237	0.375	0.484	11.755	3.579	39.729	11.124	0.505	0.500
Greece	652	0.253	0.488	13.544	3.395	40.514	6.655	0.589	0.492
Ireland	1,224	0.392	0.435	11.485	4.324	34.697	10.534	0.564	0.496
Italy	1,607	0.355	0.488	11.347	3.184	44.480	10.122	0.508	0.500
Netherlands	1,345	0.609	0.479	13.839	5.107	37.033	10.162	0.572	0.495
Portugal	376	0.199	0.488	8.471	4.100	42.963	8.134	0.543	0.499
Spain	1,936	0.392	0.488	11.718	4.487	33.672	9.831	0.518	0.500
Sweden	1,184	0.686	0.400	12.621	4.880	45.665	10.650	0.493	0.500
U.K.	1,963	0.390	0.464	12.572	5.684	37.289	10.920	0.545	0.498
All	16,935	0.423	0.494	12.377	4.147	39.092	11.315	0.531	0.499

estimate the following 2SLS model:

$$Y_{ict} = \beta_0 + \beta_1 E_{ict} + \beta_2 X_{ict} + \theta_c + \theta_t + \delta_{c1} q_{ct} + \delta_{c2} q_{ct}^2 + \varepsilon_{ict}, \quad (1)$$

$$E_{ict} = \alpha_0 + \alpha_1 Z_{ict} + \alpha_2 X_{ict} + \mu_c + \mu_t + \gamma_{c1} q_{ct} + \gamma_{c2} q_{ct}^2 + \nu_{ict}. \quad (2)$$

where i , c , and t index individual, country, and survey year respectively, Y_{ict} is the individual's generalized trust, E_{ict} is years of schooling, X_{ict} is a vector of other covariates, Z_{ict} is the instrument (years of compulsory schooling). We control for country fixed-effects (denoted by θ_c and μ_c), survey year fixed-effects (denoted by θ_t and μ_t), and country-specific quadratic trends in the difference between the years of birth of the individual and the first-affected cohort plus 7; this term is denoted as q (as in [Brunello, Fort, and Weber 2009](#)). Finally, ε_{ict} and ν_{ict} are the idiosyncratic error terms. In the vector of covariates, we include pre-determined characteristics of the individuals, namely, including age of the individual and its square, and the female dummy.⁵ The coefficient of interest is β_1 .

3. Empirical results

Columns (1) and (2) of Table 3 show the OLS and 2SLS results about the relationship between educational attainment and generalized trust. Focusing on the 2SLS results in Column (2), we find that the coefficient of the educational attainment variable is positive and significant. In terms of economic significance, the 2SLS results suggest that an additional year of schooling leads to an increase of 0.046 units (or about 0.09 standard deviation), which is more than 10% of the overall average of the generalized trust score (0.423).

The first stage results (reported in the Appendix) indicate that the instrument has a positive

⁵If we include covariates which are themselves affected by education, we will run into the “bad control” problem ([Angrist and Pischke, 2009](#)).

Table 3: Regression results

	(1)	(2)	(3)	(4)	(5)	(6)
Countries:	All		Below median <i>Gap</i>		Above median <i>Gap</i>	
Years of schooling	0.019*** (0.002)	0.046*** (0.009)	0.017*** (0.002)	0.060*** (0.012)	0.023*** (0.003)	0.006 (0.026)
Age	0.003* (0.002)	0.006* (0.003)	0.005 (0.004)	0.005 (0.007)	0.003 (0.005)	-0.000 (0.008)
Age squared/100	-0.003 (0.002)	-0.003 (0.004)	-0.005 (0.005)	-0.000 (0.008)	-0.003 (0.005)	-0.001 (0.007)
Female dummy	0.003 (0.008)	0.018 (0.013)	0.005 (0.009)	0.034** (0.014)	-0.001 (0.012)	-0.006 (0.016)
Specification	OLS	2SLS	OLS	2SLS	OLS	2SLS
Country and survey fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16935	16935	10659	10659	6276	6276
R^2	0.107		0.106		0.055	
F-stat for weak id		14.586		24.622		8.770

Note: The dependent variable is Generalized trust. Standard errors are clustered by country and cohort and are reported in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

and significant coefficient and the Kleibergen-Paap rk Wald F statistic is above 10; in other words, weak identification should not be a problem (Staiger and Stock, 1997). Taken together, we find that a positive educational effect on generalized trust.⁶

How may education affect trust? We examine one potential explanation about our baseline findings, in the context of the social capital literature. This literature argues that people acquire the beliefs underlying social capital through cooperation and interaction with others.⁷ Algan, Cahuc, and Shleifer (2013) find that horizontal teaching practices (students working in groups) help the formation of social capital rather than vertical teaching practices (students copying from the board). They also find that there is a negative association between generalized trust and *Gap* — the “gap” between teaching practices, defined as the vertical teaching practices score minus the horizontal teaching practices score.

In our context, we should expect that individuals can acquire generalized trust if they are educated in countries where more horizontal teaching practices are used; in contrast, the effect should be weaker (or even negative) when the individuals are educated in countries where more vertical teaching practices are used. Empirically, we merge the teaching practices data in Algan, Cahuc, and Shleifer (2013) and divide the sampled countries by the median of *Gap*.⁸ We then re-estimate the baseline regressions using these two subsamples. The regression results are

⁶These results are robust to several empirical specifications, including alternative sizes of window around the years of birth of the first-affected cohorts and a placebo test.

⁷Certainly, there can be other alternative explanations. For instance, more educated people can perform better in the labor market (such as getting higher wages or experiencing fewer setbacks) which may help them retain or develop higher level of generalized trust.

⁸The below-median group includes Denmark, Germany, Italy, the Netherlands, Spain, Sweden, and the U.K.; the above-median group includes Austria, Belgium, France, Greece, Ireland, and Portugal). The average trust score for the former group is 0.483 and that for the latter group is 0.321.

reported in Columns (3) to (6) of Table 3. While the OLS results (Columns (3) and (5)) show that education and generalized trust are positively correlated for individuals in both the below-median group (countries using relatively more horizontal teaching practices) and the above-median group (countries using relatively more vertical teaching practices), the 2SLS results (Columns (4) and (6)) suggest that the educational effect is only positive and significant for the individuals in the below-median group. These results are consistent with our expectation.

4. Concluding remarks

We find that individuals with higher educational attainment show higher levels of generalized trust. One plausible explanation is that more educated people acquire the belief to form social capital through cooperating and interacting with others in group activities.

For future research, our analysis may be extended in different ways. First, our analysis only covers some developed countries in Europe. One may wonder whether our results can be generalized in other less developed countries. Second, our approach to analyze the relationship between education and trust is purely empirical. A further question is about how, from a theoretical perspective, education can affect trust. Third, the evidence about the potential channel is only *suggestive* because the country-level teaching practices are treated as exogenous. A more challenging research question is to treat teaching practices as endogenous and examine how the interaction between teaching practices and the quantity of education may affect trust formation.

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Appendix

Table A: First-stage results

	(1)
Years of compulsory schooling	0.295*** (0.074)
Age	-0.040 (0.070)
Age squared/100	-0.004 (0.089)
Female dummy	-0.541*** (0.157)
Country and survey fixed-effects	Yes
Country-specific trends	Yes
Observations	16935
R^2	0.097

Note: The dependent variable is Years of schooling. Standard errors are clustered by country and cohort and are reported in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.