EDUCATION ECONOMICS
https://doi.org/10.1080/09645292.2018.1554101

Routledge
Taylor & Francis Group

Quasi-experimental evidence on the political impacts of education in Vietnam

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ABSTRACT

This paper estimates the causal effects of education on political concern and political participation in Vietnam by employing the 1991 compulsory schooling reform to instrument for plausibly exogenous changes in education. The paper finds that, in general, education does cause favorable impacts on political outcomes. In particular, one more year of schooling, on average, results in increases in the probabilities of political concern and political participation by about 6–12 percentage points and 6–8 percentage points, respectively. This paper significantly provides suggestive evidence on the role of education in explaining political behaviors using the developing country context.

ARTICLE HISTORY
Received 12 January 2018
Accepted 23 November 2018

KEYWORDS
Education; political outcomes; Vietnam

JEL CLASSIFICATIONS
D72; I21

1. Introduction

The study of the relationship between schooling and political outcomes such as political knowledge, concern, ideology or political participation has been long interest among political scientists and economists alike. The literature shows that schooling is positively associated with political outcomes. Almost previous studies particularly conclude that people with higher educational attainment tend to have more political concern, deeper understanding of political issues, or larger likelihoods of political participation (Weil 1985; Verba, Schlozman, and Brady 1995; Nie, Junn, and Stehlik-Barry 1996; Weakliem 2002; Dunn 2011; Schlozman, Verba, and Brady 2012). Nevertheless, the academic controversy on whether education is really a cause or it is merely a proxy of political outcomes has remained over the past decades (Kam and Palmer 2008; Berinsky and Lenz 2011). This is because few studies implemented provide reliable causal effects of education on political outcomes (Persson 2015).

A pivotal challenge facing researchers in estimating credible causal effects of schooling on political outcomes is the endogeneity of education (Kam and Palmer 2008; Berinsky and Lenz 2011; Meyer, 2017). The endogeneity problem probably comes from the existence of omitted variables that determine both education and political outcomes (Bauer et al. 2015; Meyer, 2017). These omitted variables could be latent socioeconomic status (Jennings and Niemi 1968), innate ability (Spence 1973) and parental resources (Nie, Junn, and Stehlik-Barry 1996). To overcome this problem, the quasi-experimental design by utilizing natural experiments has been increasingly employed to make a causal inference of the link between education and political outcomes, especially in the absence of experimental data (Mayer 2011; Keele 2015; Samii 2016). Using observational data, recent studies have exploited compulsory schooling reforms to instrument for exogenous changes in education with a regression discontinuity design (RDD) to estimate the causal link of interest (Persson, Lindgren, and Oskarsson 2016; Meyer, 2017).

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The current study employs an RDD to evaluate the causal association between education and political outcomes in Vietnam[1] by exploiting a compulsory schooling reform in Vietnam, which was promulgated in 1991, to instrument for exogenous shifts in educational attainment. Induced by the reform, all Vietnamese children aged less than 15 in 1991 had to complete primary education. Hence, children who were fully exposed to the reform are more likely to acquire primary school and thus have higher schooling years compared to those aged 15 or over in 1991, who were not affected by the reform. This paper, therefore, restricts individuals aged 14 and less than 14 in 1991 to the treatment group and children aged equal to 15 and over in 1991 to the control group.

The paper finds that education generally does cause favorable impacts on political concern and political participation in Vietnam. In particular, individuals who have one more year of schooling are more likely to pay their attention to political topics or to treat political issues as daily concerns by about 6–12 percentage points. In addition, having an additional schooling year results in an increase in the likelihood to participate in political activities or to be a member of a political organization by about 6–8 percentage points.

This paper contributes to the literature by some ways. First, it provides additional evidence on the causal relationship between education and political outcomes. Especially, there is so far no quantitative research on the association between education and political concern and political participation in Vietnam. There is because there is extremely limited information on political outcomes although information about schooling is mostly available in many Vietnamese datasets. Fortunately, the World Values Survey (WVS) containing information on political concern and political participation allows this study to show that well-educated individuals pay more attention to political themes and have a higher probability of taking part in political activities as well in Vietnam.

Second, while numerous studies in the same topic have conducted in the countries having strongly institutionalized democracies, there have been limited studies devoted to explore the same research question in the countries with non-consolidated democracies or even autocracies (Levitsky and Murillo 2009; Croke et al. 2016; Larreguy and Marshall 2017). This study provides evidence on the causal impact of education on political outcomes in a Marxist-Leninist regime relying on a singular political system, a very different political institution in the world.

Moreover, this paper speaks to another body of literature in economics that are related to the role of education in explaining an individual's outcomes. The related literature in economics has well-documented the causal effects of education in multiple outcomes widely spanning from labor market outcomes, health outcomes, criminal activities to the corresponding outcomes of the next generation (see Holmlund, Lindahl, and Plug 2011; Oreopoulos and Salvanes 2011 for related reviews). This paper significantly highlights the role of education in explaining the variation in political outcomes.

The remainder of this paper is structured as follows. Section 2 presents the institutional background and the related literature review for the current study. Next, section 3 describes data source and the sample while section 4 provides an empirical strategy for estimating the causal effects of interest. Section 5 reports the main empirical results while section 6 provides the results of some robustness checks using various sub-samples and other different specifications. Section 7 provides the further analysis with heterogeneity and the alternative results using a different estimation approach. Finally, discussion and conclusion are made in section 8.

2. Institutional background and related literature

2.1. Institutional background

Providing sufficient access to education for the citizens has been a consistent policy priority in Vietnam since the reunification of the country in 1975. However, during the period between 1975 and 1986, Vietnam experienced the difficulty with an extreme lack of resources for developing its economy, including its educational system due to a main reason that the economy was relied on

a closed and extremely limited market-functional system. Therefore, Vietnam launched its economic reform plan in 1986, which mainly redirected the economy from a centrally planned economy to a market-oriented system under a common name of the *Doi Moi* ('renovation'). This reform has been regarded as the 'turning' point for the Vietnamese economy's taking off in the post-war era. The renovation has changed the economy and many aspects of the society through the adoption of open policies and the enhanced integration into the international economy. Furthermore, the introduction of a market-based economy induced active economic and labor market activities in Vietnam.

Initiated by the *D. Moi*, the reform of Vietnam's educational system also took place as a consequence during the same period. Importantly, the government of Vietnam introduced the *Law on Universal Primary Education* (LUPE) in 1991 as an effort to boost access to general education, especially primary education for all Vietnamese children. The LUPE was a legal framework for the compulsory schooling reform in Vietnam in this period. According to the LUPE, primary education with a 5-year length was compulsory for Vietnamese children aged less than 15. In other words, Vietnamese children aged under 15 years old had to complete primary school before making their decision for acquiring further education or dropping out of school since 1991. Before the 1991 reform, there had been no compulsory education in Vietnam and children had not been forced to go to school. The key feature of the 1991 schooling reform was to increase the compulsory length of schooling from 0 years to 5 years in Vietnam.

An important feature of this reform is that it was implemented randomly across regions of the country. Children aged under 15 years old from all various regions in Vietnam were affected by the reform. To guarantee the achievable goal of universal primary education, the Vietnamese government had spent numerous resources on the educational system, especially for primary education (Dang 2017, 2018). In addition to increasing public investments, the educational system had received considerable investments from the private sector and significant supports from international governments and non-governmental organizations such as the World Bank.

It is also crucial to note that the introduction of a 5-year compulsory schooling driven by the reform was accompanied with the modification of the academic curriculum for primary education. The new curriculum provided students with fundamental knowledge about human, nature and the life around them in addition to the essential skills of reading, writing, reading and mathematics as being contained in the old curriculum. The aim of such a curriculum was to stimulate students to pursue their long-life learning after completing primary school. Therefore, the changes in the curriculum of primary school significantly promote further education that may lead to achieving more years of schooling for individuals who were exposed to the reform (Kamibeppu 2009).

This schooling reform has created a sizable expansion of primary educational enrollment in Vietnam (Dang 2017, 2018). Figure 1 shows the differences in the gross primary schooling attainment ratios between the before and after 1991 periods. Demonstratively, the ratios are 104–109% during 1983–1990 while the post-reform period has the corresponding rates of 110–114% (World Bank 2016).[2]

2.2. Related literature

Most available studies on the causal relationship between education and political outcomes have been implemented in the democratic regime setting. Importantly, the results of the positive causal effects of schooling on political outcomes have been well-established from developed countries such as the United States (Dee 2004; Milligan, Moretti, and Oreopoulos 2004; Sondheimer and Green 2010; Dinesen et al. 2016), the United Kingdom (Persson 2014), Norway (Persson, Lindgren, and Oskarsson 2016), Denmark (Andersen and Hoff 2001; Dinesen et al. 2016), Sweden (Persson 2011; Persson, Lindgren, and Oskarsson 2016) and European countries (Borgonovi, d'Hombres, and Hoskins 2010).[3] Meanwhile, there has been few studies on the same topic conducted in the setting of weakly institutionalized democracies or authoritarian regimes. This section provides the

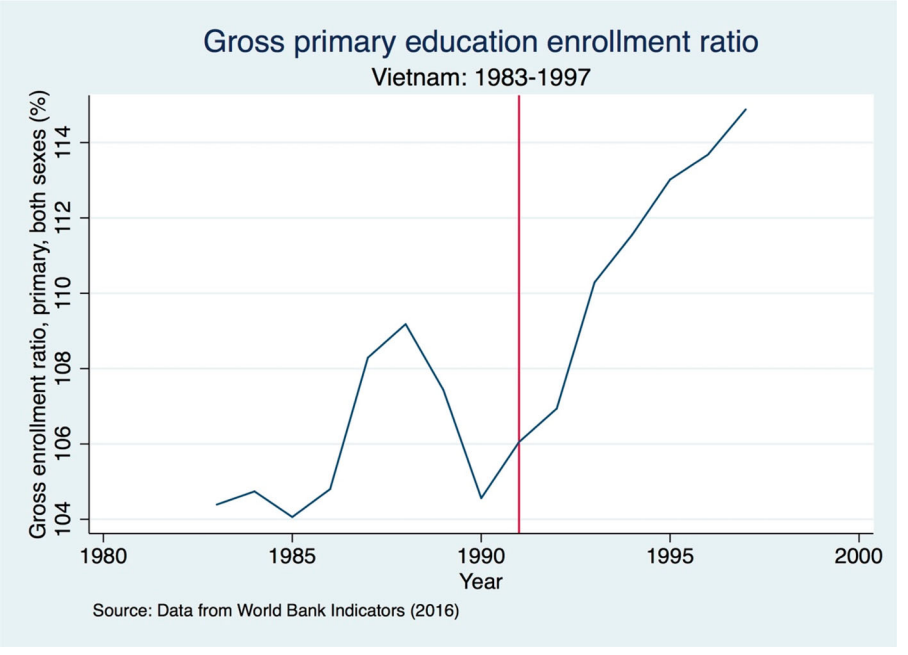

Figure 1. The gross primary education enrollment ratios in Vietnam, 1983–1997.

summary of findings from previous studies that were implemented in some countries that are relatively different from strong democracies in terms of their institutional quality.

Generally, previous studies from countries with weakly institutionalized democracies or authoritarian regimes show that education has a positive effect on political outcomes. For instance, Wantchekon, Klašnja, and Novta (2015) utilize the first establishment of schools during the colonial era as a source of plausibly exogenous shifts in educational attainment and find a positive and enormous impact of education on political participation in Benin. In particular, Beninese citizens who were fully exposed to this formal schooling establishment, and their next generations as well, are significantly more likely to become political activists or members of political parties compared to those who were not affected by the colonial educational establishment. Meanwhile, Larreguy and Marshall (2017) exploit the 1976 universal primary education policy as a source of exogenous changes in schooling attainment to estimate the causal effect of education on political outcomes in Nigeria, a tenuously institutionalized democracy in Africa. They find that education causes increases in citizens' political concern, voting as well as the interaction with local authorities and the participation in community activities as well.

Friedman et al. (2016) provide causal evidence on the effect of education in Kenya using an experiment which employs a randomized merit scholarship competition that lifted school performance and secondary school attainment for ethnically disadvantaged adolescent girls to instrument for exogenous variations in experimentees' schooling. Friedman et al. show that completing secondary education increases women's political information and knowledge while it decreases gender-based violence. Yet, Friedman et al. find no evidence on the favorable impact of schooling on other outcomes such as political effectiveness, public involvement or voting premeditation.

However, the literature also demonstrates a negative effect of education on political outcomes. For example, Croke et al. (2016) remarkably find that education is negatively linked to citizens' voting activities, active connection to local authorities and participations in public congress in Zimbabwe. Using the 1980 Zimbabwean educational reform as an instrument for exogenous changes in access to secondary schooling, Croke et al. critically argue that in an electoral authoritarian regime such as that in Zimbabwe well-educated citizens tend to deliberately disengage from political

participation as a way to show their refusal of supporting the authoritarian regime, which is harmful to social development in their perspective. This finding substantially challenges the conventional wisdom that education positively affects political outcomes.

3. Data and the sample

The current study uses data from the WVS.[4] The WVS is one of the biggest surveys collecting information on changes in human attitudes, values, and beliefs and its impacts on social and political behaviors. The WVS, which was started in 1981, includes nationally representative surveys for almost 100 countries, which are made up of about 90% of the world population. This study uses two waves of the Vietnam WVS: 2001 and 2006. The 2001 WVS includes 1000 respondents while the 2006 WVS consists of 1495 respondents. These WVS waves are combined to create a pooled cross-sectional sample of 2495 individuals.

The dependent variables include political concern and political participation. The political concern is a dummy variable that equals 1 if the respondent stated that political topics are central to her or his life, and 0 otherwise. If a respondent has the political concern, she or he spends time to follow political news and information. Meanwhile, the political participation is a dummy that takes a value of 1 if a respondent participates in a political organization or political activities at the time of the survey, and 0 otherwise. There are 2495 observations containing information on the political concern and the political participation, which are equivalent to 100% of the pooled sample. Meanwhile, the independent variable of interest is education measured by schooling years. There are 2475 individuals who have education information making up of about 99.20% of the pooled sample. By combining both information on education and political outcomes, there are 2475 individuals.

The analysis is limited to individuals who were born around the timing of the reform, which was legally based on the LUPE. According to the LUPE, all children aged 6–14 had to complete primary education since 1991, and 1991 become the timing of the reform. In other words, all children aged less than 15 in 1991 are much more likely to have higher schooling years. As a result, this paper chooses the age of 15 years old in 1991 as the pivot age for creating the affected and unaffected groups. To be clear, let $d_i = (a_i - 15)$, which is measured by the difference in years between the age of a respondent in 1991 (a_i) and the pivot age in 1991 (15 years old), is the distance to the reform for the individual i. The value of $d_i < 0$ indicates that the individual i's age is less than 15 in 1991, and thus he or she was fully exposed to the reform while the individual with $d_i > 0$ was apparently not affected by the reform. The cut-off point is $d_i = 0$. The paper uses a bandwidth of $d_i = \pm 15$ to establish the final sample for the analysis, which includes 1450 individuals aged 0–30 in 1991 equivalent to 58.59% of the total respondents containing both information on education and political outcomes. Specifically, the treatment group includes 594 individuals (40.97%) having $d_i \in [-15, -1]$ while the control group has 856 individuals (59.03%) having $d_i \in [0, 15]$.

The descriptive statistics of the sample is present in Table 1. Among 1450 respondents, about 41% of the respondents are fully exposed to the reform, roughly 68% have a political concern, and approximately 18% participate in political activities. The average value of schooling years is roughly 8.1 years and the mean current age of the respondents is nearly 30.5 years old. Moreover, nearly 48% are male. The sample also shows its representative across the country with a highly balanced distribution of respondents among geographical regions, in which the rates of respondents from North, Central, and South are 36%, 29%, and 35%, respectively.

4. Empirical strategy

To investigate the association between schooling years and political outcomes, one desires to estimate the following regression equation:

$$P_i = \alpha + \beta S_i + \varphi \boldsymbol{X}_i' + \varepsilon_i \quad (1)$$

Table 1. Descriptive statistics of the sample.

		Full sample ($n = 1450$)		Treatment ($n = 594$)		Control ($n = 856$)	
Variable	Definition	Mean	SD	Mean	SD	Mean	SD
Political concern	The respondent regards politics as an important topic in her or his life (=1 if yes, =0 otherwise)	0.68	0.46	0.71	0.47	0.65	0.46
Political participation	The respondent voluntarily participates in a political organization or the member of party (=1 if yes, =0 otherwise)	0.18	0.39	0.24	0.42	0.13	0.36
Schooling years	The number of completed schooling years corresponding to the educational level achieved (years)	8.14	3.21	8.78	3.23	7.67	3.15
Reform	The exposure to the educational reform, respondent's age in 1991 is less than 15 (=1 if yes, =0 otherwise)	0.41	0.49	1.00	0.00	0.00	0.00
Age	The age of respondent at the time of survey (years)	30.49	7.76	22.69	3.34	35.95	4.74
Age in 1991	The age of respondent in 1991 (years)	17.17	7.90	8.98	3.34	22.85	4.39
Male	The respondent is male (=1 if yes, =0 otherwise)	0.48	0.50	0.48	0.50	0.48	0.50
Married	The respondent is married (=1 if yes, =0 otherwise)	0.66	0.47	0.33	0.47	0.88	0.32
Children number	The respondent's number of children (numbers)	1.45	1.35	0.64	1.24	2.01	1.13
North	The location is in North of Vietnam, including Red River Delta, Northeast, and Northwest (=1 if yes, =0 otherwise)	0.36	0.48	0.37	0.48	0.35	0.48
Central	The location is in Central of Vietnam, including North Central, Central Coast and Central Highlands (=1 if yes, =0 otherwise)	0.29	0.45	0.28	0.45	0.30	0.46
South	The location is in South of Vietnam, including Southeast and Mekong River Delta (=1 if yes, =0 otherwise)	0.35	0.48	0.35	0.48	0.36	0.48

where P_i indicates a political outcome including political concern and political participation for the individual i; S_i is schooling years; and $\boldsymbol{X}_i'$ is a vector of characteristics of the respondent such as age in 1991, age in the survey time, a dummy for male and survey year-fixed effects. The coefficient of interest from Equation (1) is β that indicates the impact of schooling years on the political outcome. However, the OLS estimator using (1) likely produces a biased estimate of β due to the endogeneity problem due to the existence of unobserved characteristics determining both educational attainment and the political outcome.

This study overcomes the endogeneity problem by exploiting exogenous variations in schooling induced by the reform. In particular, the paper uses an RDD (Lee and Lemieux 2010) to establish the impact of schooling on political concern and political participation using a two-stage least square (2SLS) estimation procedure. In the first stage, the papers estimate the following regression equation:

$$S_i = \alpha + \alpha_1 D_i + \gamma_1 d_i + \gamma_2 D_i{}^* d_i + \alpha_2 \boldsymbol{X}_i' + \varepsilon_i \tag{2}$$

where d_i is the distance to the reform; D_i is a dummy variable for being whether the age of respondent in 1991 (a_i) was less than 15, mathematically $D_i = \begin{cases} 1 & \text{if } a_i < 15 \\ 0 & \text{if } a_i \geq 15 \end{cases}$. The Equation (2) is used to achieve the predicted value of schooling, denoted by $\widehat{S_i}$, which is then used for the second stage regression using the following linear probability form:

$$P_i = \beta + \beta_1 \widehat{S_i} + \lambda_1 d_i + \lambda_2 D_i{}^* d_i + \beta_2 \boldsymbol{X}_i' + \epsilon_i \tag{3}$$

where the coefficient of interest (β_1) from (3) is inferred as the causal impact of schooling on political outcomes.

Arguably, the slope of the regression equation may change at two sides around the pivot age of the respondent in 1991. Therefore, the paper additionally employs the quadratic form to control for this potential change. Equations (2) and (3), respectively, become the following equations:

$$S_i = \alpha + \alpha_1 D_i + \gamma_1 d_i + \gamma_2 D_i{}^* d_i + \gamma_3 d_i^2 + \gamma_4 D_i{}^* d_i^2 + \alpha_2 \boldsymbol{X}_i' + \varepsilon_i \tag{4}$$

and

$$P_i = \beta + \beta_1 \widehat{S_i} + \lambda_1 d_i + \lambda_2 D_i{}^* d_i + \lambda_3 d_i^2 + \lambda_4 D_i{}^* d_i^2 + \beta_2 \boldsymbol{X}_i' + \epsilon_i \quad (5)$$

The paper reports the estimated results for both the linear specification using Equations (2) and (3), and the polynomial specification using Equations (4) and (5). Notably, the coefficients are $\gamma_3 = \gamma_4 = 0$ and $\lambda_3 = \lambda_4 = 0$ in the case of using the linear specification.

5. Empirical results

5.1. First stage results: impacts of compulsory schooling reform on education

Figure 2 demonstrates the effect of the compulsory schooling reform on schooling years with the distance to the reform (d_i) presented along with the horizontal axis and a vertical line at the point $d_i = 0$ dividing the sample into the treatment and control groups. The respondents immediately on the left-hand side of the vertical line are regarded as the treated, and those on the opposite side of the vertical line are reckoned as the control. Moreover, Figure 2 indicates a discontinuity on schooling years, in particular, those aged less than 15 in 1991 ($d_i < 0$) encountered a significant leap in education compared to the respondents aged 15 and over in 1991 ($d_i \geq 0$).

Table 2 summarizes the first stage regression results. The estimated coefficients indicate the positive impacts of the reform on schooling years using both linear and quadratic functional forms for both samples with ±15 and ±10 bandwidths. The estimated coefficients are almost statistically significant at traditional levels. Columns 1–2 of Table 2 show that the reform, on average, increases about 1.27 or 1.12 schooling years using samples with ±15 or ±10 bandwidths, respectively, and the linear functional form. When using the quadratic regression form, the impacts are, respectively, 0.77 and 0.26 years of schooling as indicated in columns 3–4 although the estimated coefficient in column 4 loses its statistical significance.

5.2. Second stage results: impacts of education on political outcomes

Table 3 presents the main results of the causal effects of education on political outcomes in the second stage. To address a potential problem that error terms are probably correlated with the

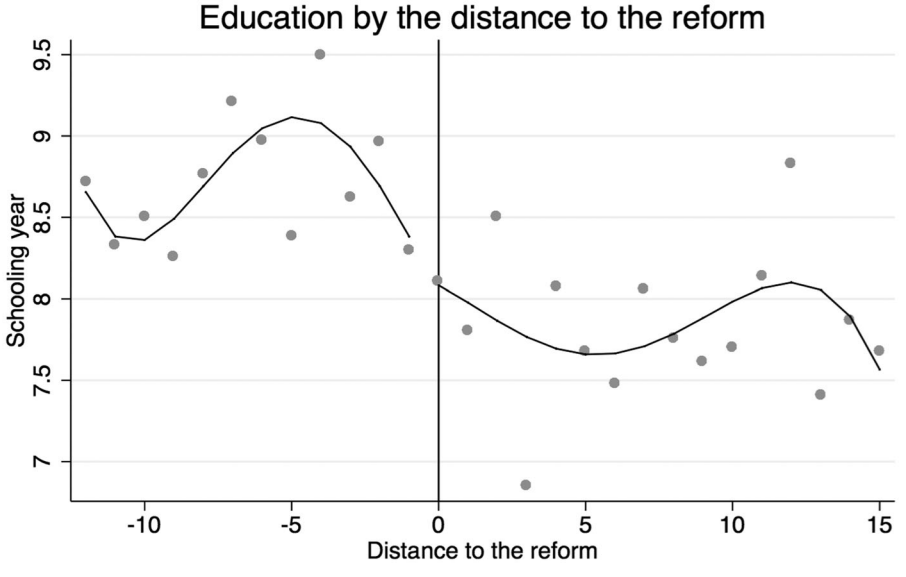

Figure 2. The impact of compulsory primary education on schooling year.

Table 2. Impacts of compulsory schooling reform on schooling years: first stage results.

	Dependent variable: schooling years			
	(1)	(2)	(3)	(4)
Reform	1.27*** (0.32)	1.12*** (0.35)	0.77* (0.44)	0.26 (0.48)
R squared	0.06	0.07	0.06	0.07
Functional form	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10
N	1450	1081	1450	1081

Notes: The two way clustered (age and age in 1991) standard errors are reported in parenthesis. Controls consist of age, age squared, age in 1991, married status, male, children number, and dummies for location (north, central and south) and survey year-fixed effects.
***$p < .01$.
**$p < .05$.
*$p < .1$.

respondents' age and age in 1991, the paper clusters standard errors at age and age in 1991. The paper finds statistically significant local average treatment effects (LATE) of schooling years on political outcomes.

In particular, Panel A of Table 3 demonstrates the positive effect of schooling years on the political concern. The estimated coefficients are statistically significant at 1% and 5% levels. The respondents tend to treat political issues as meaningful topics in their daily lives when they have more schooling years. On average, having one more year of schooling increases the probability of focusing on political topics by about 11–12 percentage points and 6–7 percentage points using the linear and quadratic functional forms, respectively. The probabilities are relatively higher for using the linear functional form than using the quadratic form.

The estimated coefficients in Panel B of Table 3 show that the respondent having schooling causes an increase in the political participation. These coefficients are statistically significant at 1%, 5% and 10% and strongly robust to various functional forms. On average, one extra year of education is, respectively, linked to 8-percentage point and 6-percentage point increases in the probability of political participation using the samples with bandwidths of ±15 (columns 1 and 3) and ±10 (columns 2 and 4).

Importantly, a possible problem for applying the 2SLS estimator in estimating the causal effect of interest is the weak instrument. Table 3 also presents the first stage *F*-stat values that indicate the exclusion of weak instruments. In particular, the first stage *F*-stats are all larger than 10 as the rule

Table 3. Impacts of education on political outcomes: 2SLS results.

	(1)	(2)	(3)	(4)
Panel A. Dependent variable: political concern				
Schooling years	0.11*** (0.04)	0.12** (0.05)	0.07** (0.03)	0.06** (0.03)
First stage *F*-stat	14.09	12.69	13.62	13.48
Functional form	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10
N	1450	1081	1450	1081
Panel B. Dependent variable: political participation				
Schooling years	0.08*** (0.02)	0.06* (0.03)	0.08*** (0.02)	0.06** (0.02)
First stage *F*-stat	14.09	12.69	13.62	13.48
Functional form	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10
N	1450	1081	1450	1081

Notes: The two way clustered (age and age in 1991) standard errors are reported in parenthesis. Controls consist of age, age squared, age in 1991, married status, male, children number, and dummies for location (north, central and south) and survey year-fixed effects.
***$p < .01$.
**$p < .05$.
*$p < .1$.

of thumb value (Stock, Wright, and Yogo 2002) for both outcomes, political concern (Panel A) and political participation (Panel B).

6. Robustness checks

In addition to performing the main estimation results as Table 3 shows, the paper also conducts some robustness checks by (i) using various sub-samples corresponding to the use of various bandwidths, and (ii) using different specifications. The results of the robustness checks are present in Tables 4 and 5.

First, the paper estimates the sub-samples using four various bandwidths, including ±14 (columns 1–2), ±13 (columns 3–4), ±12 (columns 5–6) and ±11 (column 7–8). The results are present in Table 4. Accordingly, the estimated estimates show positive impacts of schooling on both political concern and political participation as the main estimates in Table 3 indicates. The coefficients also remain their statistical significance at conventional levels.

In particular, an additional year of schooling increases political concern by about 10–11 percentage points using the linear regression, and 5–7 percentage points using the quadratic regression, respectively, as Panel A of Table 4 shows. There are negligible changes in the impacts compared to the main estimates. Meanwhile, Panel B of Table 4 also indicates the same pattern for the impact of schooling on political participation. The impacts are about 5–8 percentage points and 5–9 percentage points using the linear regression and the quadratic regression, respectively. The results are around the main coefficients in Table 3. The first stage *F*-stats also satisfy the requirement for the exclusion of weak instruments with the values that are larger than 10.

Second, the paper estimates the whole sample using other specifications to test the sensitivity of the main estimates. The results are presented in Table 5. Firstly, the paper excludes survey year-fixed effects from the main specifications (columns 1–4). The paper finds that there are almost no differences in the impacts of an additional year of schooling on the probability of political concern (Panel A) and political participation (Panel B) in terms of both their signs and magnitudes compared to the main estimates in Table 3. On average, one more year of schooling tends to be associated with a higher probability of political concern by 11–12 percentage points (using the linear functional form) and 6–7 percentage points (using the quadratic functional form), and a higher probability of political participation by 6–8 percentage points (using both the linear and quadratic functional forms). Secondly, the paper estimates an augmented regression model, which includes birth year by survey year-fixed effects (columns 5–8). The paper also finds that the estimated coefficients are robust to the main results for both these outcomes. In particular, the possibility of political concern induced by having one more year of education is 11–12 percentage points (using the linear functional form) and 6–7 percentage points (using the quadratic functional forms). Meanwhile, an additional year of schooling causes increases of 6–8 percentage points (for both the linear and quadratic functional forms) in the likelihood of political participation.

7. Further analysis

7.1. Heterogeneity analysis

A crucial point from the literature on the causal link between education and political outcomes is that political outcomes could be negatively associated with education. Some previous studies from developed countries where strongly institutionalized democracies functions find that different schooling levels may induce different effects on political outcomes (for example Kam and Palmer 2008; Berinsky and Lenz 2011; Pelkonen 2012). In countries with non-consolidated democracies or autocracies, although the positive association between education and political outcomes is well-documented, the adverse impact has been also found from the literature (for example, Croke et al. 2016).

Table 4. Impacts of education on political outcomes: robustness checks with various bandwidths, 2SLS results.

	Bandwidth: ±14		Bandwidth: ±13		Bandwidth: ±12		Bandwidth: ±11	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Dependent variable: political concern								
Schooling years	0.11*** (0.04)	0.06** (0.03)	0.10*** (0.04)	0.05* (0.03)	0.10*** (0.04)	0.05* (0.03)	0.10** (0.04)	0.07* (0.04)
First stage *F*-stat	14.27	13.59	12.80	12.15	10.88	11.96	10.98	12.24
Functional form	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
N	1399	1399	1360	1360	1295	1295	1195	1195
Panel B. Dependent variable: political participation								
Schooling years	0.08*** (0.02)	0.09*** (0.02)	0.08*** (0.02)	0.09*** (0.02)	0.07*** (0.02)	0.09*** (0.02)	0.05* (0.02)	0.05*** (0.02)
First stage *F*-stat	14.27	13.59	12.80	12.15	10.88	11.96	10.98	12.24
Functional form	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
N	1399	1399	1360	1360	1295	1295	1195	1195

Notes: The two way clustered (age and age in 1991) standard errors are reported in parenthesis. Controls consist of age, age squared, age in 1991, married status, male, children number, and dummies for location (north, central and south) and survey year-fixed effects.
***$p < .01$.
**$p < .05$.
*$p < .1$.

Table 5. Impacts of education on political outcomes: robustness checks with various fixed effects, 2SLS results.

	Excluding survey year-fixed effects				Including birth year by survey year-fixed effects			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Dependent variable: political concern								
Schooling years	0.11*** (0.04)	0.12** (0.05)	0.07** (0.03)	0.06** (0.03)	0.11*** (0.04)	0.12** (0.05)	0.07** (0.03)	0.06** (0.03)
First stage *F*-stat	14.11	12.72	13.64	13.50	14.08	12.68	13.61	13.46
Functional form	Linear	Linear	Quadratic	Quadratic	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10	±15	±10	±15	±10
N	1450	1081	1450	1081	1450	1081	1450	1081
Panel B. Dependent variable: political participation								
Schooling years	0.08*** (0.02)	0.06* (0.03)	0.08*** (0.02)	0.06** (0.02)	0.08*** (0.02)	0.06* (0.03)	0.08*** (0.02)	0.06** (0.02)
First stage *F*-stat	14.11	12.72	13.64	13.50	14.08	12.68	13.61	13.46
Functional form	Linear	Linear	Quadratic	Quadratic	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10	±15	±10	±15	±10
N	1450	1081	1450	1081	1450	1081	1450	1081

Notes: The two way clustered (age and age in 1991) standard errors are reported in parenthesis. Controls consist of age, age squared, age in 1991, married status, male, children number, and dummies for location (north, central and south) and survey year-fixed effects.
***$p < .01$.
**$p < .05$.
*$p < .1$.

The current paper further examines whether the impacts of education on political outcomes are heterogeneous with respect to different schooling levels in Vietnam. In doing this, the paper separates the whole sample into three sub-groups of different schooling levels including (i) 0–5 schooling years, (ii) 6–9 schooling years, and (iii) >10 schooling years. While the first sub-group includes the respondents who have the bottom schooling levels (no education, some primary and completed primary education), the second sub-group consists of the respondents having the medium schooling levels (some lower secondary and completed secondary education), and the third sub-group contains the individuals with the high schooling levels (some upper secondary, completed upper secondary, some college and completed college education).

Table 6 presents the results for estimating these sub-groups. Panel A shows the results for political concern. There is no significant impact of schooling years on political concern for the sub-group of 0–5 schooling years (columns 1–4). Meanwhile, for the sub-group of 6–9 schooling years (columns 5–8), there are positive and significant impacts of schooling years on political concern compared to the main estimates in Table 3. On average, one more schooling year results in increases in the probability of political concern by about 48–57 percentage points using the linear functional form and 18–28 percentage points using the quadratic functional form. However, the paper extraordinarily finds significant adverse impacts of schooling years on political concern for the sub-group of 10–16 schooling years (columns 10–11) by about 11–18 percentage points. This finding is similar to the negative association between education and political participation in Zimbabwe (Croke et al. 2016). Despite the finding of the negative effect for the sub-group of 10–16 schooling years, it is important to note that it could be premature for being highlighted because it is not highly consistent over all specifications and bandwidth choices as well.

Panel B of Table 6 presents the estimated results for political participation. The estimated coefficients for the sub-groups of 0–5 and 10–16 schooling years lose their statistical significance at any conventional levels. The paper only finds a statistically significant impact of schooling years on political participation for the sub-group of 6–9 schooling years.

7.2. Instrumental variable probit regression results

In addition to estimating the 2SLS specification, the paper also estimates the IV-Probit specification as presented in Table 7. Generally, the paper finds the positive impacts of schooling years on both political concern and political participation. The estimated coefficients are all statistically significant at 1%.

Remarkably, the effect sizes using the IV-Probit estimator for all specifications and chosen bandwidths are larger than the main estimates using the 2SLS estimator in Table 3. Panel A of Table 7 presents the results for political concern. Specifically, the impacts of an additional schooling year are increases in the likelihood of political concern by 26–28 percentage points using the linear specification (columns 1–2) and 18–19 percentage points using the quadratic specification (columns 3–4).

The results for the impact on political participation using the IV-Probit model are present in Panel B of Table 7. Having an extra schooling year increases the probability of taking part in political activities by approximately 22–28 percentage points using the linear specification (columns 1–2) and 24–28 percentage points using the quadratic specification (columns 3–4).

8. Concluding remarks

Exploiting a compulsory schooling reform as an instrument for plausibly exogenous variations in education to estimate the causal effect of schooling on political outcomes has been increasingly applied from the literature (Persson, Lindgren, and Oskarsson 2016; Meyer, 2017). Using the same approach, this study aims to quantify the causal effects of education on political concern and political participation using data from Vietnam. Generally, the paper finds that education causes favorable impacts on both political concern and political participation. In particular, one more schooling year

Table 6. Impacts of education on political outcomes: heterogeneity, 2SLS results.

	Schooling years: 0–5				Schooling years: 6–9				Schooling years: 10–16			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. Dependent variable: political concern												
Schooling years	0.11 (0.08)	0.05 (0.10)	−0.14 (0.59)	−0.11 (0.12)	0.48*** (0.15)	0.57* (0.25)	0.28*** (0.08)	0.18** (0.08)	−0.05 (0.04)	−0.11*** (0.04)	−0.18* (0.10)	−0.18 (0.18)
First stage *F*-stat	1.51	1.66	1.38	1.90	8.76	6.90	8.01	10.18	14.53	14.01	13.70	12.19
Functional form	Linear	Linear	Quadratic	Quadratic	Linear	Linear	Quadratic	Quadratic	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10	±15	±10	±15	±10	±15	±10	±15	±10
N	318	236	318	236	829	619	829	619	303	226	303	226
Panel B. Dependent variable: political participation												
Schooling years	−0.03 (0.10)	−0.12 (0.12)	0.11 (0.17)	0.01 (0.07)	0.27** (0.12)	0.27 (0. 23)	0.29* (0.15)	0.10 (0.08)	0.002 (0.05)	0.06 (0.06)	0.01 (0.09)	−0.10 (0. 21)
First stage *F*-stat	1.51	1.66	1.38	1.90	8.76	6.90	8.01	10.18	14.53	14.01	13.70	12.19
Functional form	Linear	Linear	Quadratic	Quadratic	Linear	Linear	Quadratic	Quadratic	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10	±15	±10	±15	±10	±15	±10	±15	±10
N	318	236	318	236	829	619	829	619	303	226	303	226

Notes: The two way clustered (age and age in 1991) standard errors are reported in parenthesis. Controls consist of age, age squared, age in 1991, married status, male, children number, and dummies for location (north, central and south) and survey year-fixed effects.

***$p < .01$.

**$p < .05$.

*$p < .1$.

Table 7. Impacts of education on political outcomes: IV-probit results.

	(1)	(2)	(3)	(4)
Panel A. Dependent variable: political concern				
Schooling years	0.26*** (0.04)	0.28*** (0.03)	0.19*** (0.05)	0.18*** (0.06)
Wald test of exogeneity (Prob > chi2)	11.94 (0.00)	8.96 (0.00)	6.22 (0.01)	3.82 (0.05)
Log pseudolikelihood	−4582.28	−3443.58	−4580.18	−3440.37
Functional form	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10
N	1450	1081	1450	1081
Panel B. Dependent variable: political participation				
Schooling years	0.28*** (0.04)	0.22*** (0.08)	0.28*** (0.04)	0.24*** (0.06)
Wald test of exogeneity (Prob > chi^2)	8.64 (0.00)	1.95 (0.16)	8.79 (0.00)	3.83 (0.05)
Log pseudolikelihood	−4322.52	−3237.80	−4319.46	−3235.26
Functional form	Linear	Linear	Quadratic	Quadratic
Bandwidth	±15	±10	±15	±10
N	1450	1081	1450	1081

Notes: The reported estimates show the marginal effects. The two way clustered (age and age in 1991) standard errors are reported in parenthesis. Controls consist of age, age squared, age in 1991, married status, male, children number, and dummies for location (north, central and south) and survey year-fixed effects.
***$p < .01$.
**$p < .05$.
*$p < .1$.

increases the probability of political concern by about 6–12 percentage points and the probability of political participation 6–8 percentage points. This study's findings of the positive effects of education on political concern and political participation in Vietnam advocates the findings in other countries (Sondheimer and Green 2010; Dinesen et al. 2016).

Many previous studies are implemented in developed countries where the society is functioned with a democratic political system. Therefore, there is a demand for the empirical investigation for the same research question in the countries working with alternative political systems such as the non-consolidated democracy and the autocracy. This study fills this research gap by providing evidence from Vietnam, which a country that has a singular political system with the communism-based ideology.

Notes

1. The RDD has been widely applied in applied economics as an identification strategy for causal inference (Luyten 2006; Kyriakides and Luyten 2009).
2. These rations are calculated by dividing the gross number of students enrolled in school, which may include students of late enrollment, early enrollment, or grade repetition in addition to the right school-age students, by the total population, which only includes children of the official school-age. Therefore, using such a calculating approach may lead to the ratios greater than 100% as shown.
3. However, the literature arguably finds that all educational levels are by no means causally linked to increases in political outcomes (Tenn 2007; Kam and Palmer 2008; Berinsky and Lenz 2011). In other words, whether schooling produces positive impacts on political outcomes depends on types or levels of education (Pelkonen 2012).
4. We can fully access the WVS datasets from http://www.worldvaluessurvey.org.

Acknowledgments

I would like to thank valuable comments and suggestions from Yu-Wei Luke Chu, Nghi Truong, Cuong Viet Nguyen, Pham Khanh Nam and participants at the Small Talks Big Ideas (STBI) Seminar at School of Economics, University of Economics Ho Chi Minh City (UEH). I am also grateful to the editor and two referees for useful comments and suggestions. Errors are only mine.

Disclosure statement

No potential conflict of interest was reported by the author.

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