Does education increase political participation? Evidence from Indonesia

Parinduri, Rasyad

Nottingham University Business School, the University of Nottingham Malaysia Campus

March 2016

Does education increase political participation? Evidence from Indonesia

Rasyad A. Parinduri*

Abstract

I examine whether education increases voter turnout and makes better voters using an exogenous variation in education induced by an extension of Indonesia's school term length, which fits a fuzzy regression discontinuity design. The longer school year increases education, but I do not find evidence that education makes people more likely to vote in elections or changes whether they consider political candidates' religion, ethnicity, or gender important when they vote. If anything, education seems to make voters more likely to think candidates' development programs are important.

Keywords: education, political participation, regression discontinuity design, Asia, Indonesia

JEL classification: D72, I26

*Nottingham University Business School, the University of Nottingham Malaysia Campus, Jalan Broga, Semenyih, 43500, Selangor, Malaysia. Tel: +60-3-89248287. E-mail: rasyad.parinduri@nottingham.edu.my.

1. Introduction

Educated citizens are more likely to vote in elections, many studies show (Campbell et al., 1960; Persson, 2015; Wolfinger and Rosenstone, 1980), but few papers look at the relationship in developing countries.[1] What happens when people in developing countries, whose democracies are typically young and average educational attainment is low, become more educated? Are they more likely to engage in politics and vote in elections? Do they become better voters?

The correlation is well established but it remains a question whether the relationship is causal.[2] Theoretically, education increases political participation if education endows citizens with knowledge about political systems, means to communicate with politicians and to voice their interests, beliefs to influence policy making, and skills to evaluate political candidates' characters and campaign promises (Jackson, 1995; Rosenstone and Hansen, 1993; Verba et al, 1995).[3] But, they may also positively correlate if education captures the effects of parental characteristics, socio-economic status, intelligence, and personal preferences—if some observed- and unobserved

[1] In the U.S., for example, the relationship that voter turnout increases in education holds for white or black Americans, local or national elections, and self-reported or public recoded votes (see Sondheimer and Green (2010) and the papers cited herein).

[2] In the literature on voter turnout, education is considered one of the determinants (see, for example, Fumagalli and Narciso (2012)). See Persson (2015) for a review of the literature.

[3] Another theory is education increases social status and expands social network in society, which increase political participation (Nie, Junn and Stehlik-Barry, 1996).

factors change both education and voter turnout (Jennings and Niemi, 1974; Langton and Jennings, 1968; Luskin, 1990; Mondak and Halperin, 2008). For example, if parents who discuss the importance of civic duties at home when their children grow up are also parents who value the education of their children, the parents' idiosyncrasies cause political participation, not the education of the children.

Recent empirical papers, which use better research designs and exploit natural experiments to generate exogenous changes in education, find mixed evidence on whether education increases voter turnout. Using the Perry Preschool and the Student Teacher Achievement Ratio randomized experiments in the U.S., Sondheimer and Green (2010) find education increases voter turnout; but Solis (2013), using eligibility criteria for student loans in Chile that fit a regression discontinuity design, do not (he does not find education makes better voters either). Papers that use instrumental variable techniques also find mixed results: Education increases voter turnout in the U.S. (Dee, 2004; Milligan, Moretti, and Oreopoulos, 2004) and Nigeria (Larreguy and Marshall, 2015), but it does not in the U.K. (Milligan, Moretti, and Oreopoulos, 2004) and Germany (Siedler, 2010).[4] One of the few papers

[4] However, Berinsky and Lenz (2011), using the Vietnam draft as an instrumental variable, do not find education increases voter turnout in the U.S. Using compulsory schooling laws in 15 European countries as instrumental variables, Borgonovi, d'Hombres, Hoskins (2010) do not find education increases voter turnout either, but it makes better-informed voters. The other papers use compulsory schooling laws, child labor laws, or school expansions as instrumental variables. Papers that use matching

that look at the relationship between education and political participation in developing countries is Larreguy and Marshall (2015): Using school expansion in Nigeria as an instrument for education, they find education increases voter turnout, community participation, and people's interest in politics.

Even if the relationship in developed countries is not causal, it may be in developing countries if the effects of education are heterogeneous. One, people in developing countries are on average less educated than people in developed countries; two, developing countries' democracies are younger and more fragile; three, institutions and law enforcement in developing countries are weak. Returns to education in developed countries may be low, but they are high in developing countries; returns to political reforms in developing countries may be also high—education, therefore, may have heterogeneous effects on political participation.

In this paper, I look at the case of Indonesia: I examine the effects of education on political participation using an exogenous variation in education induced by a longer school year in the late 1970s. In the middle of the 1978 school year, the Government of Indonesia announced that the ongoing school year was extended by six months, a change that caught everyone by surprised and stirred a controversy among representatives in the lower house and officials of the parents association. Children who were born in 1971 or earlier,

---

strategies also find mixed results (Kam and Palmer, 2008; Mayer, 2011; Persson, 2014).

entered primary school in 1978 or earlier, and did not drop out of school before 1978 experienced the longer school year (most children in Indonesia entered primary school the year they turned seven years old); children who were born in 1972 or later did not (they had yet to enter primary school). The probability of experiencing the longer school year therefore discontinues between the 1971 and 1972 birth cohorts, which fits a fuzzy regression discontinuity design. I use this discontinuity to generate an exogenous variation in education, whose relationship with political participation I then examine to identify its effects on political participation.

I find education positively correlates with political participation, but I do not find evidence that the relationship is causal. I do not find evidence that education makes people more likely to vote in elections; moreover, I find little evidence that education affects how they vote: Education does not seem to change whether voters consider political candidates' religion, ethnicity, look, or gender important when they vote. If anything, education makes voters more likely to think that political candidates' development programs are important.

This paper contributes to the literature in three ways. One, I provide estimates of the causal effects of education on political participation using a regression discontinuity design, an empirical strategy that resembles randomized experiments. Two, I examine the relationship in a developing country, which complements papers in the literature that have focused on the relationship in developed countries. Three, I use data that have various measures of political participation and behavior, which allow me to examine

the effects of education on not only voter turnout but also factors voters consider when they vote.

This paper proceeds as follows: Section 2 describes the longer school year, empirical strategy, and data; Section 3 discusses the results; Section 4 concludes.

2. The longer school year, empirical strategy, and data

2.1. The longer school year in Indonesia

In the late 1970s, Daoed Yusuf, the then Minister of Education and Culture under Suharto's administration, changed the start of school years from the month of January to the month of July that led to a one-time longer school year.[5] (School years in Indonesia used to start in January and end in December the same year.) In mid-1978, in the middle of the 1978 school year, he announced that, to synchronize school years with government-budget years, school years would start in July and end in June the following year, and that the change would be effective immediately starting the following school year. He did this by requiring schools to extend the 1978 school year for six months so that the 1978 school year that would have ended in December 1978 was extended until June 1979. He announced the change without much planning: He did not issue major directives on what schools needed to do during the extension; he did not require teachers to deliver new materials either; he just

[5] See Tempo (1978), Government of Indonesia (1985), and MPKRI (1978).

asked them to revise lessons covered in 1978 during the six-month extension, which made the change of the start of school years a one-time longer school year. (From then on, school years have started in July and ended in June the following year.) Children who were in school in 1978 remained in the same grade until June 1979—they experienced the longer school year; children who entered primary school in 1979 or later did not.

There is therefore a discontinuity in the probability of whether children in the 1978-1979 school cohorts experienced the longer school year. Because most children in Indonesia entered primary school the year they turned seven years old, this discontinuity corresponds with a discontinuity between the 1971 and 1972 birth cohorts. If a person was born in 1971 or earlier, entered primary school in 1978 or earlier, and did not drop out of school before 1978, she experienced the longer school year in 1978-1979; if she was born in 1972 or later so that she entered primary school in 1979 or later, she did not experience the longer school year.

Papers in the literature find mixed evidence on whether longer school years increase student performance and educational attainment (see, for example, Pischke (2007), Hansen (2008), and Fitzpatrick, Grissmer, and Hastedt (2011)), but Parinduri (2014) show that the longer school year in Indonesia increased educational attainment by 0.7 of a year and the probability of completion of high school by more than 20 percent. Parinduri (2014) does not formally explore the mechanisms how the longer school year increases education but suggested possibilities include (1) teachers had more time to

teach weak students, which lowered grade repetition; (2) because children, especially those who lived in rural areas, did better in school, the parents raised their valuation of their children's education; (3) the longer school year gave more opportunities to girls, which lowered grade repetition among girls and increased their educational attainment.

2.2. Empirical strategy

I use the discontinuity in the probability of experiencing the longer school year between the 1971 and 1972 birth cohorts (conditional on year of birth) as an instrumental variable in a fuzzy regression discontinuity (RD) design. I implement the fuzzy RD design to estimate the effects of education on political participation using equation-by-equation two-stage least-square regressions as follows:

$$D_i = \alpha + \beta OlderCohort_i + f(yob_i) + \varepsilon_{1i} \quad (1)$$

$$edu_i = \gamma + \delta \widehat{D}_i + f(yob_i) + \varepsilon_{2i} \quad (2)$$

$$y_i = \gamma + \theta \widehat{edu}_i + f(yob_i) + \varepsilon_{3i} \quad (3)$$

where D_i is an indicator equals one if person *i* experienced the longer school year and zero otherwise; $OlderCohort_i$ equals one if she is a member of the older cohorts, i.e., she was born in 1971 or earlier; edu_i is her educational outcome such as her educational attainment or an indicator of whether she completed high-school; y_i is a measure of her political participation; and $f(yob_i)$ is a polynomial function of , yob_i, her year of birth. The first-stage

regression, Equation (1), generates $\widehat{D}_i$, an exogenous variation in the probability of experiencing the longer school year; the second-stage regression of edu_i on $\widehat{D}_i$ predicts $\widehat{edu}_i$, an exogenous variation in education induced by the longer school year; the third-stage regression of y_i on $\widehat{edu}_i$ identifies θ, the effects of education on political participation.

Identification using this RD design relies on the assumption that nobody could precisely control which side of the discontinuity she is on (Lee and Lemeriux, 2010) (i.e., parents could not precisely determine the years their children entered primary schools, in particular whether the children entered in 1978 or 1979), which, I shall argue, a plausible assumption. One, the government announced the policy in the middle of the 1978 school year when most children in the 1971 birth cohort had entered primary school—an announcement that caught parents and lawmakers by surprise and caused a controversy—which ruled out any attempts by parents to send their children to primary school at a younger age if they thought the longer school year was good for their children (children who were born in 1972 had yet to enter primary school). Two, the longer school year was immediately implemented, during the ongoing school year, which decreased the likelihood that parents changed their decision on, for example, whether to send their children to pre-school. Three, the children were born six or seven years earlier; the parents, therefore, had no way to plan when to conceive their children just to exploit the policy change to their children's advantage whatever it might be.

The RD design also meets the requirement (for the identification of the effects of the longer school year on education and political participation) that the government implemented no other education policies or political reforms when it extended the longer school year in 1978-1979. The *SD Inpres*, Suharto's school construction program that built primary schools throughout the country, was initiated in 1973 (Duflo, 2004) and slowed down in mid-1980s: The trend lines of the number of schools built and enrollment rates are continuous in 1978-1979 and, hence, the *SD Inpres* program did not compromise the identification of the the effects of the longer school year on education.[6] The government announced two policies on compulsory schooling, the six- and nine-year compulsory schooling programs, but both were announced long after the longer school year in, respectively, 1984 and 1994. The government did not do any political reforms in the late 1970s either; besides, the people in the sample were still children at the time so that political reforms were unlikely to affect their political preferences or attitudes much.

Some falsification tests I do—two-stage least-square estimations of the effects of the longer school year on some educational inputs—show that, if the longer school year increases educational attainment, the increase was not caused by other policies (see Table 1). Using age as the dependent variable in Equation (2), I find the estimates of the effects of the longer school year on

[6] *Inpres* stands for *Instruksi Presiden* or Presidential Instruction. Using this decree, the then President Suharto expanded access to primary schools in Indonesia by building schools across the Indonesian archipelago.

age are small economically and insignificant statistically. I do not find evidence that the longer school year induced more parents to migrate to urban areas in 1978-1979 (for example, to ensure their children attending better schools) or reduced the time it took for a one-way trip to schools on average (which might happened if, for example, roads were improved or more people moved to neighborhood where schools were located); I do not find evidence schools changed the number of school-hours per day or the number of students per classroom (say, to help children that did not experience the longer school year) either.[7] If $\hat{\delta}$ in Equation (2) is positive and significant statistically, most likely it is the longer school year that increased educational attainment, not school starting age, proximity to schools, quality of schools, transportation costs, or class size.

<Insert Table 1 here>

The coefficient of interest is θ in Equation (3), which is the effects of education on political participation. If education increases political participation, we expect θ to be positive. If education makes voters vote better, we expect θ to be positive in regressions in which y_i is whether voters consider political candidates' quality of development programs important when they vote; θ is negative in regressions in which y_i is whether voters consider candidates' religion or gender important.

[7] See Parinduri (2014) for the details of the falsification tests.

2.3. Data

I use the Indonesia Family Life Survey (IFLS), a Rand Corporation's longitudinal survey of a representative sample of the Indonesian population.[8] To have the largest number of people who completed high school (twelve years of education), I use IFLS-4, the fourth wave of the survey. I include the 1960-1987 birth cohorts: I exclude the 1959 and earlier cohorts because they had completed high school in 1978 (if they did not drop out of school earlier); I exclude the 1988 or later birth cohorts because they were still in school when they were interviewed in 2007. I have about 18 thousands people in the sample.

In the basic specifications, I define D_i, whether person i experienced the *longer school year*, using information on year of birth and education history of people in the sample. To find out whether they were in school in the 1978 school year, I follow the year they were born, the number of times they repeated grades, and their educational attainment. The *longer school year* equals one for people who were born in 1971 (so that they entered primary school in 1978) if their educational attainment was at least one year of education; the same applies for those who were born earlier and they did not drop out of school before 1978. The *longer school year* equals zero for those who were born in 1972 or later and those who were born earlier but dropped out of school before 1978.

[8] See Frankenberg and Thomas (2000) and Strauss et al. (2009a) for the details of the survey.

IFLS has information on the *year of entry to primary school*, which I also use to define the *longer school year* in some specifications. I prefer to use *year of birth*, not *year of entry to primary school*, to define the *longer school year*, however, because *year of birth* is more reliable. People in developing countries like Indonesia may not always remember the year they were born, not to mention the year they entered primary schools. Enumerators of surveys in developing countries can check respondents' birth certificates to verify the year of birth, something that they cannot do for year of entry to primary school. As Strauss et al. (2009b) explain, their respondents may give different birthdates in different books of IFLS so that they have to use an algorithm to increase the accuracy of year of birth in IFLS.

I use two groups of outcomes: whether eligible voters voted in elections and factors they considered important when they voted for district heads.[9] I examine participation in presidential and parliamentary (DPD, DPR, DPRD I, and DPRD II) elections.[10] For factors that voters considered important when they voted, I examine whether they considered candidates' look, popularity, quality of development programs, political affiliation,

[9] Administratively, Indonesia is divided into provinces; each province is then divided into districts. The heads of provinces are governors; the heads of districts are called *bupati* or *walikota* (mayors).

[10] DPD stands for *Dewan Perwakilan Daerah* (Regional Representative Council), the upper house of the People's Consultative Assembly; DPR *Dewan Perwakilan Rakyat* (People's Representative Council), the lower house. DPRD I and II are the local representative councils at the provincial- and district levels.

religion, ethnicity, experience in governance, gender, and gifts ("transport money") given to voters important when they voted for district heads.[11] Each variable is a dummy variable; for example, for participation in presidential elections, it equals one if an eligible voter voted and zero otherwise.

The summary statistics in Table 2 does not show the expected effects of education on political participation. People in the younger cohorts were less likely to participate in elections though it may be driven by observations far away from the 1971 and 1972 birth cohorts. They were also more likely to consider political candidates' quality of development programs or experiences in government important when they voted for district heads and less likely to consider candidates' religion, look, or ethnicity. The RD design will, however, picks up differences in how educated people around the discontinuity between the 1971 and 1972 birth cohorts were, whether they participated in elections, and how they voted.

<Insert Table 2 here>

[11] It was customary for political candidates to give money to voters; the gifts were called "transport money" though voters did not necessarily use it to pay transportation costs to attend political rallies.

3. Results

First, I discuss the effects of the longer school year on education (the first-stage, second-stage, and reduced-form regressions). Then, I discuss the effects of education on political participation (the third-stage regressions). To conclude, I discuss some robustness checks.

3.1. The effects of the longer school year on education

The top graphs of Figure 1, which illustrate the first-stage regression, show a discontinuous relationship between the proportion of people who experienced the longer school year and *year of birth*: I can therefore use *older cohorts* (an indicator equals one for people who were born in 1971 or earlier) as an instrumental variable for *longer school year* in a fuzzy RD design.[12] (It fits a fuzzy, not sharp, RD design because the discontinuity is in the probability of experiencing the longer school year conditional on *year of birth*.) Using *year of birth* to define *longer school year* (the top-left graph), the proportion drops from 100% for the 1971 birth cohort to zero for the 1972 cohort (and remains zero for the younger cohorts), but it smoothly decreases as we move from the 1971 to 1960 cohorts (from 100% to about 0.2). (The 1972 and younger cohorts did not experienced the longer school year because they had yet to enter primary school when the government extended the longer school year;

[12] The graphs in Figures 1 and 2 and the estimates in Table 3 are similar to those in Parinduri (2014) who examines the effects of the longer school year on educational attainment and employment outcomes later in life

more people in the early 1960s cohorts did not experience the longer school year because the earlier the birth cohort a person was in, the more likely he was to drop out of school before 1978.) Using *year of entry to primary school* to define *longer school year* (the top-right graph), the proportion also drops between the 1971 and 1972 cohorts, from about 0.8 to 0.2; it smoothly decreases as we move from the 1971 to the1960 cohorts.

<Insert Figure 1 here>

The bottom graphs of Figure 1, which illustrate the reduced-form regression of the effects of the longer school year on education, show children that experienced the longer school year are better educated. Average educational attainment smoothly increases as we move from the 1960 birth cohort to the younger ones, but it drops between the 1971 and 1972 cohorts (the bottom-left graph), which correspond with the drop in the proportion of people who experienced the longer school year in the top graphs. (The trend line of the average educational attainment declines only for the 1980s cohorts.) The proportion of people who completed senior high school smoothly increases from 0.2 for the 1960 cohort to 0.5 for the 1980s cohorts (the bottom-left graph) but it also drops between the 1971 and 1972 cohorts.

Panel A of Table 3 shows the estimates of β in Equation (1) or the drop in the proportion of people who experienced the longer school year in the top-graphs of Figure 1: The 1971-1972 cut-off is a strong predictor of whether somebody experienced the longer school year. Using *year of birth* to define

longer school year, people who were in the 1971 birth cohort were 100% more likely than people in the1972 cohort to experience the longer school year. Using *year of entry to primary school* to define *longer school year*, people in the 1971 cohort were 88% more likely to experience the longer school year (the sample size is smaller because some people did not report the year they entered primary school). The estimates are similar regardless of whether I control for year-of-birth cubic-polynomial function, age cubic-polynomial function, or gender and ethnicity dummies; all estimates are statistically significant.

<Insert Table 3 here>

The reduced-form estimates in Panel B, which are the estimates of the drop in the average educational attainment and the probability of completion of high school in the bottom graph of Figure 1, confirm people that experienced the longer school year are better educated. Average educational attainment drops by about 0.7 of a year between the 1971 and 1972 birth cohorts; the probability of completion of high schools drops by nine percentage points. (All estimates are statistically significant.)

The second-stage estimates in Panel C show the economically large and statistically significant effects of the longer school year on education. The longer school year increased educational attainment by 0.7 of a year, a large increase, about eight percent (at the time the average educational attainment was nine years). It increased the probability of completion of high schools by

nine percentage points, also a large increase, about 21% (42% of people at the time completed high schools). This is the exogenous variation in education, induced by the longer school year, that I will use in the third-stage regressions to identify the effects of education on political participation.

3.2. The effects of education on political participation

Figure 2, which illustrates the reduced form estimates of the effects of the longer school year on political participation, does not seem to show that education matters. The trend lines are downward sloping for all types of elections (close to 100% for the 1960 birth cohorts and lower than 80% for the 1987 birth cohorts), but they do not truncate between the 1971 and 1972 cohorts. The older cohorts were more likely to vote than the younger cohorts (they were more likely to vote in presidential and parliamentary elections), but in all cases people in 1971 and 1972 birth cohorts, on both sides of the threshold, seem to be equally likely to vote—about 95% in presidential elections and 90% in DPR members elections.

<Insert Figure 2 here>

Table 4 confirms the trends in Figure 2: Education positively correlates with political participation, but there is no evidence that education increased political participation. The reduced form estimates in column (1) are about one percentage point (except for presidential elections), which may be large in magnitude, but they are statistically insignificant. The effects of educational

attainment in column (2) are similar: The estimates are about 0.01 in most cases but the standard errors are bigger than the estimates. (An exception is the estimates of the effects education on presidential election, which are virtually zero.) The estimates of the effects of completing high school are about 5-10 percentage points (except for presidential elections), but they are statistically insignificant with standard errors that are bigger than the estimates (column (3)).

<Insert Table 4 here>

Even though there is no evidence that education increased voter turnout, education positively correlates with voter turnout (except for participation in presidential elections) and the magnitude of the estimates is large. One more year of schooling is associated with one percentage point higher voter turnout; completion of high school, twelve years of education, is associated with 5-10 percentage point higher participation rates in DPD, DPR, and DPRD elections. Even though, using the results in Table 4, we cannot conclude that education improved voter turnout, perhaps we cannot ignore the high correlations either.

3.3. The effects of education on how voters vote

I now examine the effects of education on how voters vote—what factors that they considered important when they decided whom to vote for in elections of district heads. Figure 3 illustrates the reduced forms; Table 5 presents the

estimates of the reduced forms (column (1)), and the effects of educational attainment and completing high school (columns (2-3)).

<Insert Figure 3 here>

Figure 3 and Table 5 show little evidence that education affected how people voted. The trend lines in Figure 3 do not seem to truncate between the 1971 and 1972 birth cohorts except, perhaps, for political candidates' quality of development programs. The estimates of the reduced form are about one percentage point and statistically insignificant except for candidates' quality of programs, which is about four percentage points and statistically significant at the five percent level. Among the estimates of the effects of educational attainment and those of completing high school, only the estimates of the effects on candidates' quality of programs that are statistically significant.[13] All other estimates are statistically insignificant, many with standard errors larger than the estimates. These other estimates of the effects of educational attainment are about one percentage point; those of completing high school about ten percentage points.

<Insert Table 5 here>

The results, therefore, show little evidence that education made better voters. Completing high school decreased the relevance of political candidates' religion and ethnicity by 20 and 12 percentage points,

[13] However, they are statistically insignificant if I use the Bonferroni correction.

respectively, which are about 30 and 100 percent decrease; but it also made gender and candidates' gifts to voters eleven percentage points more important. None of the estimates is statistically significant, however, except for candidates' quality of programs whose estimate is large, 46 percentage points or about 60 percent. (One more year of educational attainment increased the importance of candidates' quality of programs by six percentage points, which is statistically significant at five percent level.)

3.4. Robustness checks

Table 6 presents some robustness checks in which I use various polynomial functions of the assignment variable and additional control variables. I add age-cubic polynomial as control (column (1)); I add gender and ethnicity dummies further (column (2)); I use quadratic polynomial function of the assignment variable instead of cubic function (column (3)); and I use quartic function instead (column (4)).

<Insert Table 6 here>

Overall, Table 6 shows similar results (I present the effects of completing high school on some outcomes only for brevity): Most of the estimates are statistically insignificant except the estimates of the effects education on whether voters considered political candidates' quality of programs is important. The magnitude of the estimates is also similar. The estimate of the effects of education on participation is statistically insignificant

when I use year of birth quadratic polynomial of the assignment variable, but that is perhaps because the quadratic polynomial function under-fits the trend line.

I also use (1) *quarter of birth* instead of *year of birth* as the assignment variable; (2) *year of entry to primary schools* to define *longer school year*; and (3) *year of entry to primary school* as the assignment variable (Figure 4 and Table 7). I use *quarter of birth* as the assignment variable to make people who were born around the discontinuity are more comparable. I use *year of entry to primary school* to define *longer school year* because some children entered primary school they year they turned six or eight years old.

<Insert Figure 4 here>

The results are also similar. All estimates are statistically insignificant except the effects on whether voters considered political candidates' quality of programs important when they voted for district heads. It is only statistically insignificant when I use *year of entry to primary school* to define the *longer school year*, perhaps because data on *year of entry to primary school* is less accurate. In any case, the magnitude of the estimate is large and similar to that of the estimates in other specifications.

<Insert Table 7 here>

4. Concluding remarks

Educational attainment does not seem to increase political participation in Indonesia. Education does not make people more likely to vote in elections; it does make them vote better either: Education does not seem to change whether voters consider political candidates' religion, ethnicity, look, or gender important when they vote for district heads. If anything, education makes voters more likely to consider the "quality" of the candidates' programs important when they vote for district heads.

These results indicate that education may not increase political participation in developing countries. The results are in line with some of the recent papers that use natural experiments to establish the causal relationship between education and political participation outside of the U.S. or Europe such as Solis (2013), who also uses an RD design. However, my results differ from Larreguy and Marshall's (2015), one of the few papers that look at the relationship in developing countries, who find education increases voter turnout and possibly makes better voters (they use instrumental variable techniques). Still, it is difficult to reconcile my findings with Sondheimer and Green's (2010) who, using randomized experiments in the U.S., show education increases voter turnout.

Even though I do not establish causal relationship between education and political participation, I find education and political participation strongly correlate even after I use the RD design to make people in the control and treated groups more comparable: Education positively correlates with both

voter turnout and some of the characteristics of good voters; in most cases, the correlations are also high. Perhaps education does not matter for political participation in Indonesia, but it is also possible that my results are statistically insignificant because the effects of education on political participation are small and that I do not have sufficient statistical power to reject the null hypothesis of no effect.

Acknowledgement

I completed some parts of this paper when I was visiting the Indonesia Project, the Arndt-Corden Department of Economics, the Australian National University, in 2015.

References

Berinsky, A.J., Lenz, G.S. 2011. Education and Political Participation: Exploring the Causal Link. *Political Behavior* 33 (3): 357-373.

Borgonovi, F., d'Hombresy, B., Hoskins, B. 2010. Voter Turnout, Information Acquisition and Education: Evidence from 15 European Countries. *B.E. Journal of Economic Analysis & Policy* 10(1): 1-34.

Campbell, A., Converse, P.E., Miller, W.E., and Stokes, D.E. 1960. *The American voter*. New York: Wiley.

Dee, T.S. 2004. Are There Civic Returns to Education? *Journal of Public Economics* 88: 1697-1720.

Duflo, E. 2004. The Medium Run Effects of Educational Expansion: Evidence from a Large School Construction Program in Indonesia. *Journal of Development Economics* 74 (1): 163-197.

Fitzpatrick, M. D., Grissmer, D., & Hastedt, S. 2011. What a Difference a Day Makes: Estimating Daily Learning Gains during Kindergarten and First Grade using a Natural Experiment. *Economics of Education Review* 30(2): 269-279.

Frankenberg, E., Thomas, D. 2000. The Indonesia Family Life Survey (IFLS): Study Design and Results from Waves 1 and 2. Santa Monica, CA: RAND. DRU-2238/1-NIA/NICHD.

Fumagalli, E., Narciso, G. 2012. Political Institutions, Voter Turnout, and Policy Outcomes. *European Journal of Political Economy* 28: 162-173.

Government of Indonesia. 1985. Pidato Kenegaraan Tahun 1985. Retrieved 2 January 2014 from Bappenas http://www.bappenas.go.id/data-dan-informasi-utama/dokumen-perencanaan-dan-pelaksanaan/dokumen-pidato-kenegaraan/

Hansen, B. 2008. School Year Length and Student Performance: Quasi Experimental Evidence. Mimeo: University of California – Santa Barbara.

Jackson, R.A. 1995. Clarifying the Relationship between Education and Turnout. *American Politics Research* 23: 279-99.

Jennings, K.M., Niemi, R.G. 1974. *The Political Character of Adolescence: The Influence of Families and Schools*. Princeton, N.J.: Princeton University Press.

Kam, C.D. and Palmer, C.L. 2008. Reconsidering the Effects of Education on Political Participation. *Journal of Politics* 70(3): 612-631.

Langton, K.P., Jennings, K.M. 1968. Political Socialization and the High School Civics Curriculum in the United States. *American Political Science Review* 62: 852-867.

Larreguy, H.A., Marshall, J. 2015. The Effect of Education on Civic and Political Engagement in Non-consolidated Democracies: Evidence from Nigeria . Harvard University's Department of Government working paper.

Lee, D.S., Lemieux, T. 2010. Regression Discontinuity Designs in Economics. *Journal of Economics Literature* 48(2): 281-355.

Luskin, R.C. 1990. Explaining Political Sophistication. *Political Behavior* 12: 331-61.

Mayer, A.K. 2011. Does Education Increase Political Participation. *Journal of Politics* 93(3): 633-645.

Milligan, K., Moretti, E., and Oreopoulos, P. 2004. Does Education Improve Citizenship? Evidence from the United States and the United Kingdom. *Journal of Public Economics* 88: 1667-1695.

Mondak, J.J., Halperin, K.D. 2008. A Framework for the Study of Personality and Political Behaviour. *British Journal of Political Science* 38: 335-362.

MPKRI. 1978. Surat Keputusan Menteri Pendidikan dan Kebudayaan Republik Indonesia No. 0211/U/1978 tentang Sistem Tahun Ajaran Sekolah.

Nie, N., Junn, J., and Stehlik-Barry, K. 1996. *Education and democratic citizenship in America*. Chicago, IL: University of Chicago Press.

Parinduri, R.A. 2014. Do Children Spend Too Much Time in Schools? Evidence from a Longer School Year in Indonesia. *Economics of Education Review* 41: 89-104.

Persson, M. 2014. Testing the Relationship between Education and Political Participation using the 1970 British Cohort Study. *Political Behavior* 36: 877-897.

Persson, M. 2015. Review article: Education and political participation. *British Journal of Political Science* 45: 689-703.

Pischke, J.-S. (2007). The Impact of Length of the School Year on Student Performance and Earnings: Evidence from the German Short School Years. *Economic Journal* 117(523): 1216-1242

Rosenstone, S.J., and Hansen, J.M. 1993. *Mobilization, Participation, and Democracy in America*. New York: Macmillan Publishing Company.

Siedler, T. 2010. Schooling and Citizenship in a Young Democracy: Evidence from postwar Germany. *Scandinavian Journal of Economics* 112(2): 315-338.

Solis, A. 2013. Does Higher Education Cause Political Participation?: Evidence from a Regression Discontinuity Design. Uppsala University's Department of Economics Working paper.

Sondheimer, R.M. and Green, D.P. 2010. Using Experiments to Estimate the Effects of Education on Voter Turnout. *American Journal of Political Science* 54(1): 174-189.

Strauss, J., Witoelar, F., Sikoki, B., Wattie, A.M. 2009a. The Fourth Wave of the Indonesian Family Life Survey (IFLS4): Overview and Field Report. Santa Monica, CA: RAND. WR-675/1-NIA/NICHD.

Strauss, J., Witoelar, F., Sikoki, B., Wattie, A.M. 2009b. User's Guide for the Indonesia Family Life Survey, Wave 4. Santa Monica, CA: RAND

Tempo. 1978. Dimana Daoed Joesoef Menyandung (Pengunduran Tahun Ajaran Baru). Tempo, July 15, 1978.

Verba, S., Schlozman, K.L., Brady, H. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge, Mass.: Harvard University Press.

Wolfinger, R.E., Rosenstone, S.J. 1980. *Who Votes?* New Haven, Conn.: Yale University Press.

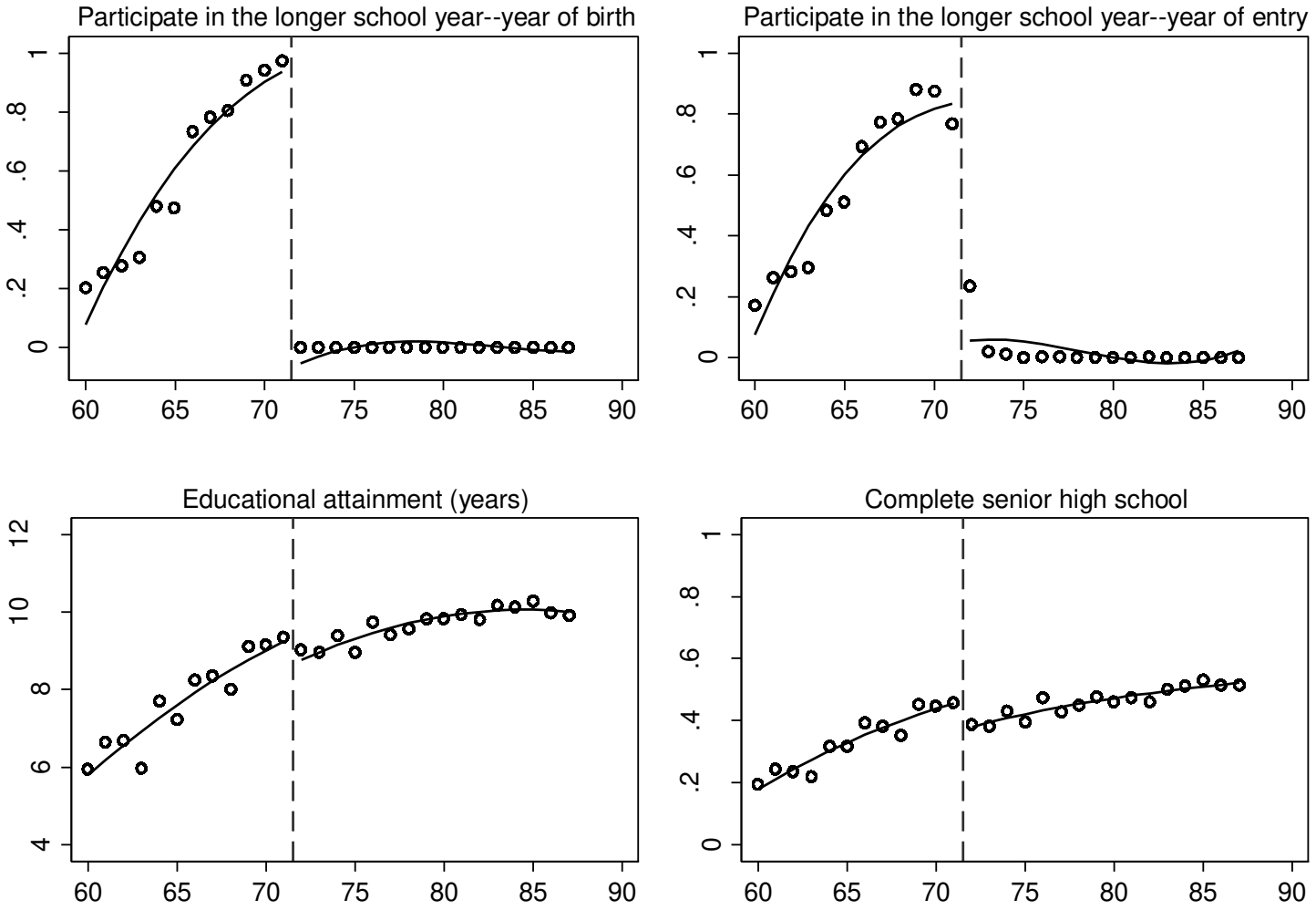

Figure 1 The longer school year and its effects on education

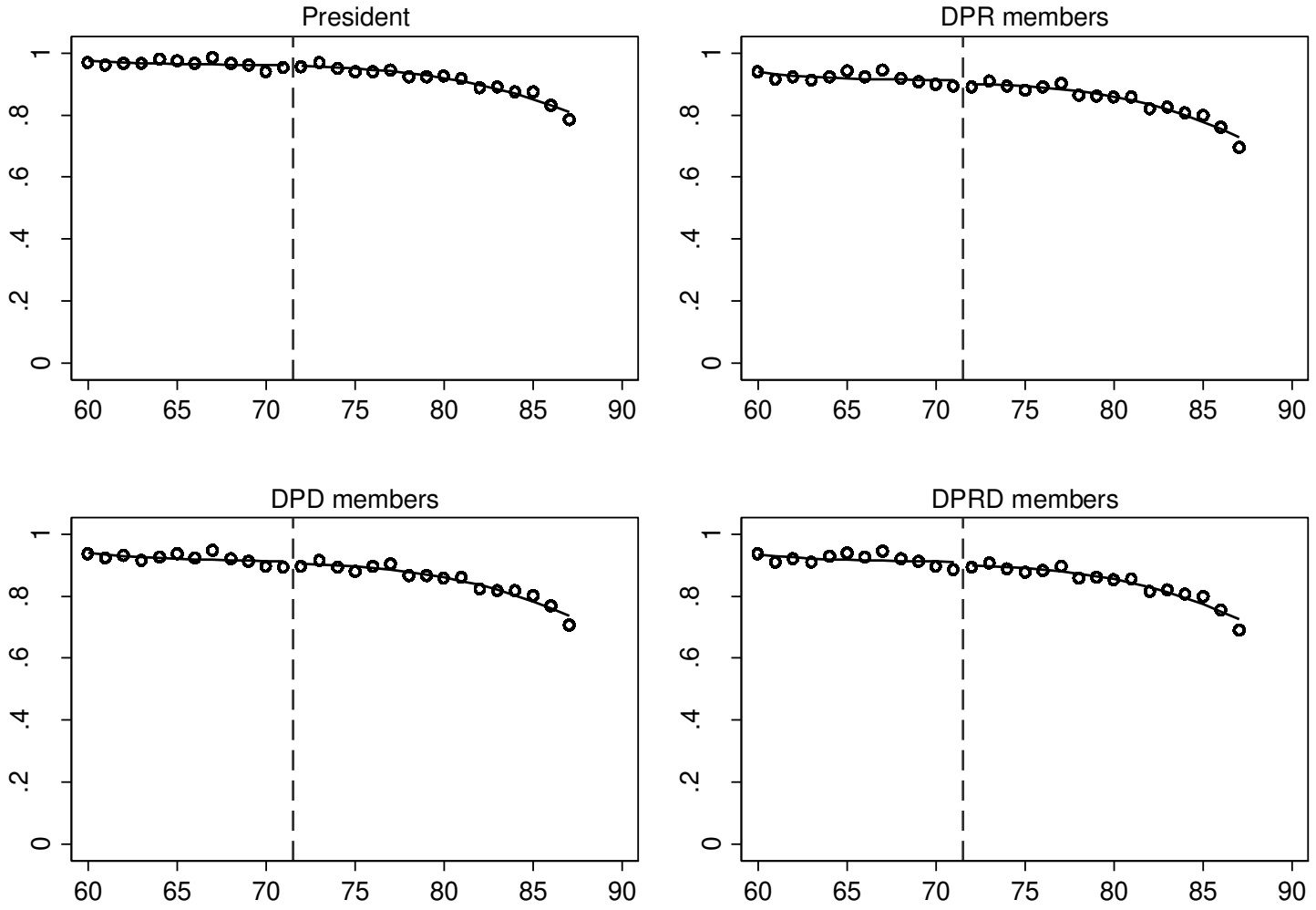

Figure 2 The effects of the longer school year on participation in the most recent elections

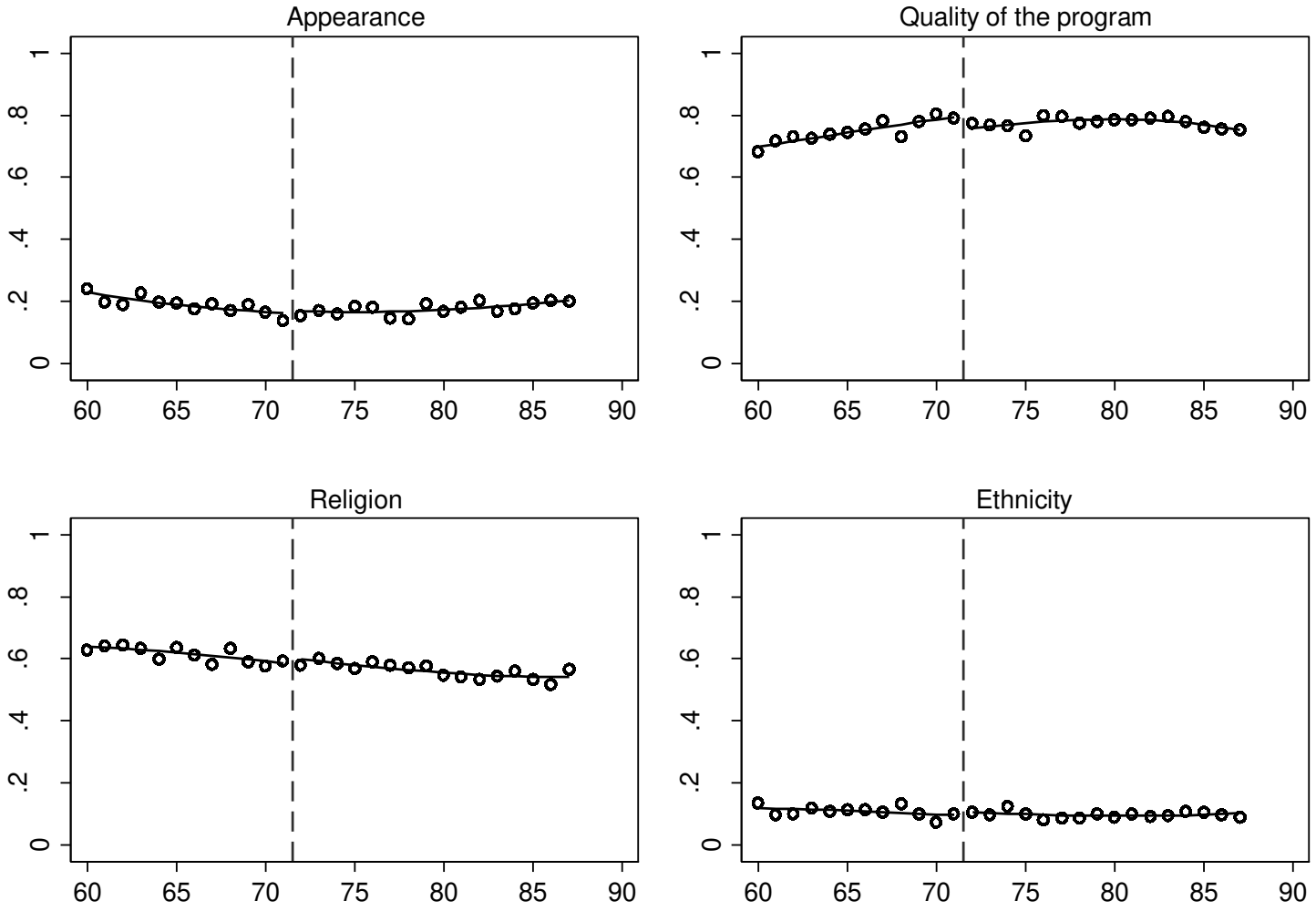

Figure 3 Factors considered in elections of district heads

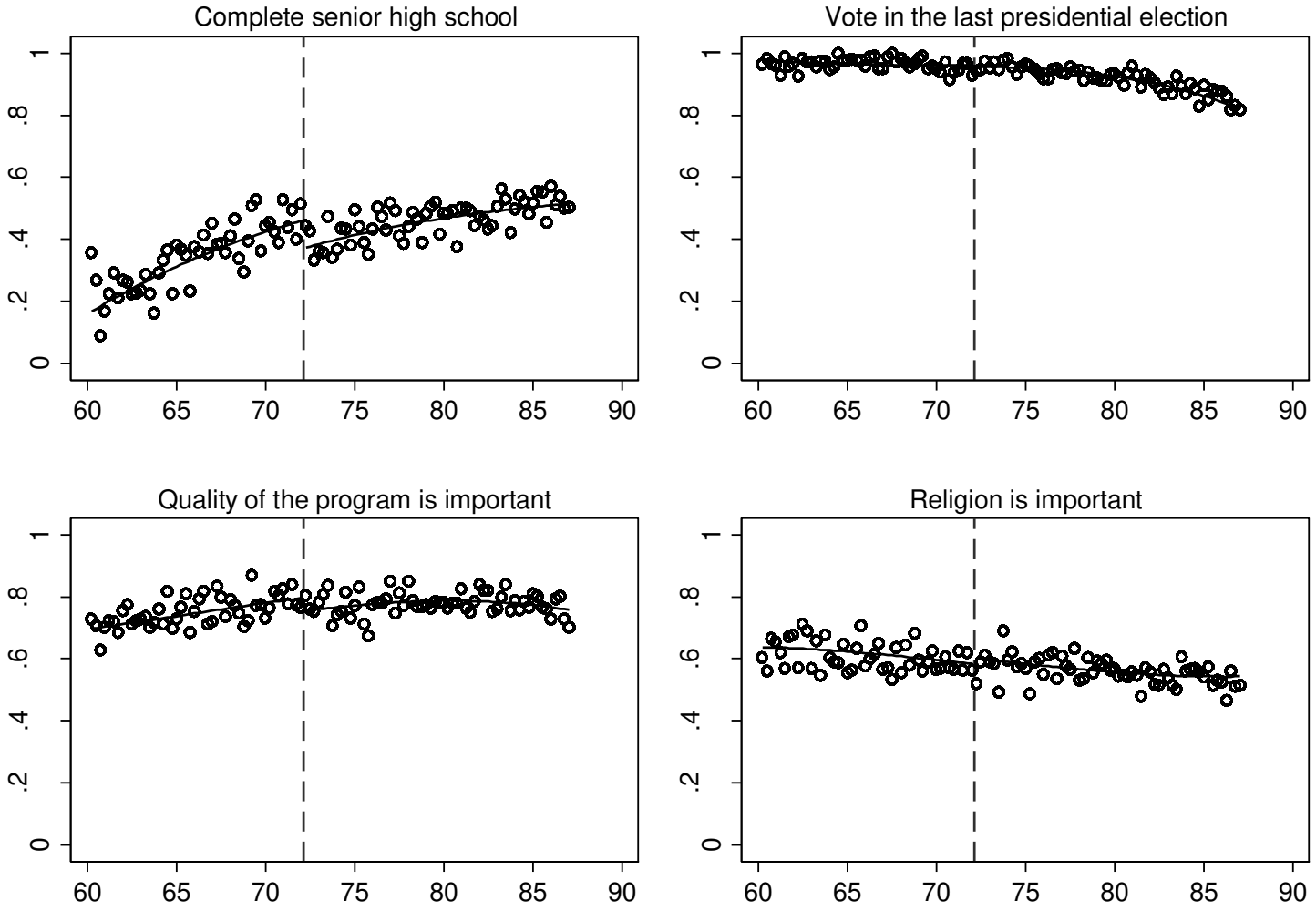

Figure 4 Using quarter of birth as the assignment variable

Table 1 Falsification tests

Dependent variable		(1)	(2)
Age	(1)	-0.01	-0.01
		(0.01)	(0.01)
Male	(2)	-0.02	-0.02
		(0.02)	(0.02)
Lived in rural areas when twelve years old	(3)	-0.02	-0.02
		(0.02)	(0.02)
Number of hours in schools per day	(4)	0.01	0.03
		(0.06)	(0.08)
Time it took for a one-way trip to schools	(5)	0.63	0.71
		(0.51)	(0.61)
Number of students in classrooms	(6)	-1.35	-1.14
		(1.05)	(1.54)
Variable used to define longer school year			
Year of birth		✓	
Year of entry			✓

Notes: The number in each cell is the two-stage least square estimate of *longer school year*, which is defined using *year of birth* or *year of entry to primary school*. Each regression includes a year-of-birth cubic polynomial function. The dependent variables are listed on the left column; the figures in parentheses are robust standard errors clustered by year of birth.

Table 2 Summary statistics

Variable	1960-1971 cohorts	1972-1987 cohorts	1960-1987 cohorts
A. Voted in the most recent election of …			
President	0.97	0.91	0.93
	(0.18)	(0.29)	(0.26)
DPD	0.92	0.85	0.88
	(0.27)	(0.36)	(0.33)
DPR	0.92	0.85	0.87
	(0.27)	(0.36)	(0.33)
DPRD I	0.92	0.84	0.87
	(0.27)	(0.36)	(0.34)
DPRD II	0.92	0.84	0.87
	(0.28)	(0.36)	(0.34)
B. One of the most important factors considered in district-heads elections			
Appearance	0.19	0.18	0.18
	(0.39)	(0.38)	(0.38)
Popularity	0.21	0.21	0.21
	(0.41)	(0.40)	(0.40)
Quality of the program	0.75	0.78	0.77
	(0.43)	(0.42)	(0.42)
Political affiliation	0.13	0.14	0.14
	(0.33)	(0.35)	(0.35)
Religion	0.61	0.56	0.58
	(0.49)	(0.50)	(0.49)
Ethnicity	0.11	0.10	0.10
	(0.31)	(0.30)	(0.30)
Experience in government	0.76	0.79	0.78
	(0.43)	(0.41)	(0.42)
Male	0.06	0.06	0.06
	(0.24)	(0.25)	(0.25)
Gifts ("transport money")	0.06	0.06	0.06
	(0.24)	(0.25)	(0.25)

Notes: The number in each cell is the mean; the figures in parentheses are the standard deviations.

Table 3 First-stage, reduced form, and second stage regressions

		(1)	(2)	(3)
A. First-stage regression				
1. Using year of birth to define longer school year				
Older cohorts	(1)	1.02**	1.02**	1.02**
		(0.04)	(0.04)	(0.04)
Adjusted R^2		0.67	0.67	0.67
Number of observations		18,584	18,584	18,584
2. Using year of entry to define longer school year				
Older cohorts	(2)	0.88**	0.88**	0.88**
		(0.11)	(0.11)	(0.11)
Adjusted R^2		0.65	0.65	0.65
Number of observations		16,735	16,735	16,735
B. Reduced form				
1. Educational attainment				
Older cohorts	(3)	0.69**	0.70**	0.66**
2. Completed senior high school		(0.23)	(0.23)	(0.20)
Older cohorts	(4)	0.09**	0.09**	0.09**
		(0.02)	(0.02)	(0.02)
C. 2SLS				
1. Educational attainment				
Older cohorts	(5)	0.67**	0.68**	0.65**
2. Completed senior high school		(0.21)	(0.20)	(0.18)
Older cohorts	(6)	0.09**	0.09**	0.09**
		(0.02)	(0.02)	(0.01)
Controls				
Year-of-birth cubic polynomial		✓	✓	✓
Age cubic polynomial			✓	✓
Gender and ethnicity dummies				✓

Notes: In Panel A, the number in each cell is the estimate of *older cohorts* from a regression of *longer school year* on *older cohorts* and a set of control variables. The *longer school year* equals one if an individual was born in 1971 or earlier and was still in school in 1978; it equals zero otherwise. Alternatively, the *longer school year* equals one if an individual entered a primary school in 1978 or earlier and was still in school in 1978. The number in each cell in Panel B is the reduced form estimate of *longer school year* defined using *year of birth*; that in Panel C is the corresponding 2SLS estimate. *Older cohorts* equals one if an individual was born in 1971 or earlier. The figures in parentheses are robust standard errors clustered by year of birth. One and two stars indicate statistical significance at a level of five and one percent, respectively.

Table 4 The effects of education on participation in elections

Dependent variable		Reduced form	The effects of	
			Educational attainment	Completing high school
		(1)	(2)	(3)
Voted in the most recent election of …				
President	(1)	0.001	-0.0004	-0.003
		(0.01)	(0.01)	(0.11)
DPD	(2)	0.0	0.01	0.05
		(0.01)	(0.02)	(0.14)
DPR	(3)	0.01	0.01	0.10
		(0.01)	(0.02)	(0.14)
DPRD I	(4)	0.01	0.01	0.10
		(0.01)	(0.02)	(0.14)
DPRD II	(5)	0.01	0.01	0.08
		(0.01)	(0.02)	(0.14)

Notes: The number in each cell in column (1) is the estimate of *older cohorts* in a regression of a measure of political participation on *older cohorts* and a year-of-birth cubic polynomial function. The number in each cell in columns (2-3) is the equation-by-equation 2SLS estimate of the effects of educational attainment and completing high school on political participation. The dependent variables are listed on the left column. *Older cohorts* equals one if an individual was born in 1971 or earlier. The figures in parentheses are standard errors. One and two stars indicate statistical significance at a level of five and one percent, respectively.

Table 5 The effects of education on factors voters considered when they voted

Dependent variable		Reduced form	The effects of	
			Educational attainment	Completing high school
		(1)	(2)	(3)
Appearance	(1)	-0.01	-0.01	-0.07
		(0.01)	(0.02)	(0.16)
Popularity	(2)	0.01	0.02	0.15
		(0.02)	(0.02)	(0.17)
Quality of the program	(3)	0.04*	0.06*	0.46**
		(0.02)	(0.02)	(0.18)
Political affiliation	(4)	-0.001	-0.003	-0.02
		(0.01)	(0.02)	(0.14)
Religion	(5)	-0.02	-0.03	-0.20
		(0.01)	(0.03)	(0.20)
Ethnicity	(6)	-0.01	-0.02	-0.12
		(0.01)	(0.02)	(0.12)
Experience in government	(7)	-0.01	-0.01	-0.08
		(0.02)	(0.02)	(0.17)
Male	(8)	0.01	0.01	0.11
		(0.01)	(0.01)	(0.10)
Gifts ("transport money")	(9)	0.01	0.01	0.11
		(0.01)	(0.01)	(0.10)

Notes: The number in each cell in column (1) is the estimate of *older cohorts* in a regression of a characteristic of political candidates on *older cohorts* and a year-of-birth cubic polynomial function. Each cell in columns (2-3) is the corresponding equation-by-equation 2SLS estimate of the effects of educational attainment and completing high school, respectively. The dependent variables are listed on the left column. *Older cohorts* equals one if an individual was born in 1971 or earlier. The figures in parentheses are standard errors. One and two stars indicate statistical significance at a level of five and one percent, respectively.

Table 6 Using other polynomial functions of the assignment variable and other control variables

Dependent variable		The effects of completing high school			
		(1)	(2)	(3)	(4)
A. Voted in the most recent election of …					
… President	(1)	-0.004	-0.01	-0.17*	-0.16
		(0.11)	(0.11)	(0.08)	(0.11)
… DPR	(2)	0.10	0.10	-0.14	-0.06
		(0.14)	(0.14)	(0.10)	(0.13)
B. … is one of the most important factors considered in district-heads elections					
Quality of program	(3)	0.46*	0.45*	0.31*	0.33
		(0.18)	(0.18)	(0.13)	(0.17)
Religion	(4)	-0.20	-0.15	-0.09	-0.13
		(0.20)	(0.20)	(0.15)	(0.20)
Controls					
Year-of-birth quadratic polynomial				✓	
Year-of-birth cubic polynomial		✓	✓		
Year-of-birth quartic polynomial					✓
Age cubic polynomial		✓	✓		
Gender and ethnicity dummies			✓		

Notes: The number in each cell is the the equation-by-equation 2SLS estimate of the effects of completing high school. The dependent variables in the third-stage are listed in the left column; the controls are listed in the bottom rows. The figures in parentheses are standard errors. One and two stars indicate statistical significance at a level of five and one percent, respectively.

Table 7 Using quarter of birth or year of entry to primary school as the assignment variable

Dependent variable		Voted in the most recent election of …		… is one of the most important factors considered in district-heads elections	
		… President	… DPR	Quality of the program	Religion
		(1)	(2)	(3)	(4)
1. Assignment variable: quarter of birth					
Longer school year (using year of birth)	(1)	0.02	0.14	0.46*	-0.20
		(0.11)	(0.14)	(0.18)	(0.20)
2. Assignment variable: year of birth					
Longer school year (using year of entry)	(2)	-0.01	0.14	0.55**	-0.20
		(0.11)	(0.15)	(0.19)	(0.21)
3. Assignment variable: year of entry					
Longer school year (using year of entry)	(3)	-0.21	0.15	0.59	0.06
		(0.22)	(0.28)	(0.38)	(0.41)

Notes: The number in each cell is the equation-by-equation 2SLS estimate of the effects of completing high school. The dependent variables in the third stage are listed in the top row. The figures in parentheses are standard errors. One and two stars indicate statistical significance at a level of five and one percent, respectively.