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Rockefellers and Goldwaters: The effect of compulsory schooling on voting preferences

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ABSTRACT

Research into the causal impact of formal education on political beliefs and ultimate voting behavior arrives at contradictory results. While some early work, e.g. Dee (2004) finds education induces more socially-liberal views, more recent works suggests that education makes individuals more fiscally conservative. We use quasi-experimental variation in schooling created by compulsory schooling laws (CSLs) to reconcile these results. Following Marshall (2019), we first examine a pooled sample of voter and find that policy-induced increases in education lead to voters being more likely to identify as, and vote for, Republican candidates, largely due to concerns regarding taxes. Delving further into this result, however, we find highly heterogeneous impacts of education, which depend on the efficacy of CSLs. In particular, in states where CSLs significantly increased educational attainment, impacted individuals become more fiscally conservative, but also exhibit greater support for traditional Democratic social issues like abortion rights and environmental protection, creating so-called “Rockefeller” Republicans. By contrast, voters educated in states where CSLs have no measured impact on educational attainment exhibit generally more conservative attitudes toward non-economics and social issues, which are traits that are consistent with so-called “Goldwater” Republicans.

1. Introduction

While much has been written about the causal impact of education on earnings and other socioeconomic outcomes, relatively little is known about its impact on political preferences and voting behavior. And the question of the causal impact of education on political outcomes is much more complex than is often portrayed. Generally speaking, education’s influence on one’s political viewpoints, and thus voting behavior, may operate through two main pathways. First, and most directly, if additional education raises wages, it may bolster traditionally conservative views such as the desire for lower taxes, smaller government and a sense of personal responsibility (c.f., Marshall, 2019; Bullock, 2021). But a second pathway may stem from education’s socializing effects that broaden one’s perspectives, perhaps creating more enlightened individuals who become aware of otherwise unknown or unexplored issues. In turn, such awareness may lead one to be more open-minded, a characteristic often thought to be associated with more liberal positions, such as those on the environment and civil rights.

These two opposing influences imply that the causal impact of education is an empirical question.

In a recent paper, Marshall (2019) provides an important contribution to our understanding of the effects of education on political preferences and voting behavior. Using quasi-experimental variation in schooling generated by compulsory schooling laws (CSLs) and multiple waves of the National Annenberg Election Surveys (NAES) and American Community Survey (ACS), Marshall (2019) finds that higher education levels increase both intended votes and reported votes for Republican candidates. Marshall finds that this increased support for Republican candidates is driven by concerns about economic issues such as lower taxes rather than by socially conservative issues like abortion, gun control, and environmental protection. Marshall (2019) is similar to other recent work that documents how higher levels of education induce more support for conservative candidates, largely due to increased conservative fiscal concerns (e.g. Marshall, 2016; Bullock, 2021).

In this paper, we expand on what little is known on the effects of education on political preferences and voting behavior. Building on the

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design introduced by [Marshall \(2019\)](#), we use the NAES and ACS to measure voting behavior, political preferences, and educational attainment, and we exploit quasi-experimental variation in schooling created by CSLs. We implement an important innovation to provide additional clarity and nuance to the effects of education of political views. Recent work by [DeCicca and Krashinsky \(2020\)](#) suggests that CSLs only increase reported educational attainment and earnings in states that paid comparatively higher relative teacher salaries. By contrast, students who were educated in states with comparatively lower relative teacher salaries did not exhibit meaningful changes in educational attainment in response to CSLs and thus no meaningful changes in the returns to education. Thus, while we first examine the relationship between CSL-induced education, voting, and political attitudes for all states together, we subsequently bifurcate states into two groups by above and below median relative teacher salaries.

We find that CSLs increase support for Republican candidates more so in states with relatively lower teacher salaries where CSLs were ineffectual. However, we find significant heterogeneity in the effect of CSLs on support for Republican issues between the two groups of states. Additional policy-induced education leads impacted individuals to systematically favor lower taxation when they were educated in states that paid high relative wages to teachers, which is broadly consistent with [Marshall \(2019\)](#) and [Bullock \(2021\)](#); these same individuals, however, hold more liberal non-economic beliefs, broadly consistent with [Dee \(2004\)](#). In particular, we find evidence of a reduction in an index of Republican non-economic issues, a reduction in the fraction who want to ban abortion, as well as an increase in individuals' interest in environmental issues and trust in government, each of which is consistent with education having the sort of socializing effect on political beliefs we describe above. Jointly, these competing effects create only a minimal change in an overall measure of conservative ideology among individuals educated in states with higher-than-median teacher salaries. Moreover, they likely explain why we do not observe impacted individuals becoming statistically significantly more likely to actually vote for Republican candidates.

By comparison, we find that individuals educated in states with lower-than-median relative teacher salaries, who, on average, do not benefit monetarily from compulsory schooling, do not favor tax reductions. However, perhaps due to having been exposed to ineffectual government interventions through CSL increases that failed to increase their earnings, these voters show signs of becoming significantly more conservative overall, especially in regards to environmental issues, which drive a strong increase in overall conservative ideology amongst this group.

Taken together, our findings suggest that instead of creating left-leaning and voting individuals, policy-induced increases in education created liberal, or "Rockefeller", Republicans in states with effectual CSLs, and more generally conservative "Goldwater" Republicans in states with ineffectual CSLs. These findings are robust to a number of sensitivity analyses including several different functional forms as well as the inclusion of variables that capture state-specific political environments over time, which helps to rule out the possibility that our findings are driven by changes in state-level politics, rather than differences in induced educational attainment.

The paper proceeds as follows: [Section 2](#) reviews the relevant literature and our contribution to it. [Section 3](#) describes our data, which involves three sources: the National Annenberg Election Surveys (NAES), the American Community Surveys (ACS) and Census data from various years, as well as our empirical strategies which include a two-sample two stage least squares (TS2SLS) approach to estimate the causal effect of additional schooling on political beliefs and voting behaviors. [Section 4](#) presents our findings, much of which we have previewed above, while [Section 5](#) relates our findings to the larger relevant literature. [Section 6](#) briefly concludes the paper.

2. Literature review

One of the first papers to address the possible effect of education on political preferences is [Meltzer and Richard \(1981\)](#). This seminal paper addresses the impact of income on preferences towards redistribution by formalizing a model that shows how an increase in personal income would cause a self-interested voter to be less inclined towards redistributive tax policies. Since educational attainment has been shown to be positively correlated with income, it has also been argued within the literature that additional education should induce an individual to become less inclined towards redistribution as well. Indeed, in a recent paper, [Marshall \(2019\)](#) finds that changes in CSLs lead to voters becoming more favorable towards Republican politicians, and argues that the income channel is the most likely one to account for this fact. [Marshall \(2019\)](#) is consistent with other recent evidence using CSLs, including [Marshall \(2016\)](#) which examines how political preferences in Great Britain evolved after a reform which compelled many adolescents to attend an additional year or more of high school. [Bullock \(2021\)](#) also uses CSLs in the United States to measure various attitudes regarding government intervention to "...help low income individuals, including income redistribution, ensuring employment and standards of living, providing health insurance, provide welfare, and do everything possible to improve the standard of living of all poor Americans." Across the majority of these measures, [Bullock \(2021\)](#) finds that CSL induced education tilted individuals toward more conservative views.

By contrast, other papers document more liberal impacts of education on political preferences, arguing that a "socialization" effect is evident with increases in education. [Dee \(2004\)](#), for instance, uses college proximity as an instrument for educational attainment to document a plausibly causal link between educational attainment and both civic engagement as well as support for more liberal views, such as freedom of expression. [Milligan et al \(2004\)](#) use CSLs in the U.S. and the U.K. to show a causal link between educational attainment and various measures of civic engagement, such as the intention to vote, and also find that policy-induced education enhances an individual's trust in the federal government. [Hainmuller and Hiscox \(2010\)](#) use a random experiment that exploits the phrasing of a survey question to show that increased education makes voters more supportive of immigration.¹ Finally, [Cavaillé and Marshall \(2019\)](#) use compulsory schooling reforms across Europe to document how increased education affects sentiment towards immigration. Here they find that increased educational attainment increases positive views toward many aspects of immigration.

In addition, another strand of literature is particularly important for our examination of how education impacts political preferences. A recent study by [Alesina, Stantcheva and Teso \(2018\)](#) (hereafter AST) uses novel surveys and experimental evidence to explore the origins of political preferences, and the way in which they relate to views on the government's ability to address income differentials within the economy. AST survey respondents in five different countries (the U.S., France, Germany, Italy and Sweden) to examine their views on redistributive policies by exploring "optimism" and "pessimism". An "optimistic" individual is defined as one who overestimates the likelihood of a child of a family in the lowest income quintile exhibiting earnings as an adult in a higher income quintile, whereas a "pessimistic" individual underestimates this likelihood. In general, the survey finds that left-wing individuals are relatively more "pessimistic" but also more likely to believe that the government has both the tools and the capacity to address unequal opportunities, whereas right-wing respondents are less likely to believe either of these ideas.

This result is highly relevant for our examination of how policy-induced schooling affects political preferences, since we will consider

¹ There are a series of papers that seek to explain why these socialization effects may be evident. For a review of these theories, please refer to papers such as [Kam and Palmer \(2008\)](#) or [Green et al \(2011\)](#).

Table 1
Summary statistics from the U.S. Census and NAES data.

	ACS				NAES		
	Pooled sample	Higher than median	Lower than median		Pooled sample	Higher than median	Lower than median
Log Weekly Earnings	6.458 (0.894)	6.500 (0.904)	6.405 (0.880)	Registered Republican	0.337 (0.473)	0.324 (0.468)	0.354 (0.478)
Education	11.68 (1.231)	11.75 (1.073)	11.60 (1.393)	Conservative Scale	0.041 (0.989)	-0.040 (0.989)	0.142 (0.980)
Age	51.27 (15.18)	51.19 (15.07)	51.36 (15.30)	Reduce Taxes	0.351 (0.477)	0.343 (0.474)	0.361 (0.480)
Never Married	0.110 (0.313)	0.121 (0.326)	0.098 (0.297)	Republican Non-Economic Issues	0.014 (1.006)	-0.064 (0.964)	0.112 (1.048)
Worked Last Year	0.819 (0.385)	0.821 (0.383)	0.817 (0.387)	Ban Abortion	0.205 (0.404)	0.176 (0.381)	0.242 (0.428)
Percent Born in Southern State	0.312 (0.463)	0.140 (0.347)	0.519 (0.500)	Protect Environment	0.129 (0.335)	0.131 (0.337)	0.126 (0.331)
				Trust Government	0.247 (0.432)	0.246 (0.431)	0.249 (0.432)
Number of States of Birth	49	21	28	Number of States of Birth	49	21	28
Observations	333,043	182,222	150,821	Observations	140,718	78,329	62,389

Notes: The data in the first three columns are drawn from the ACS extracts from 2000, 2001, 2003, 2004, 2007 and 2008 for white respondents at least 25 years old; information on weekly earnings and work in the last year is restricted to individuals no older than 65 years old. Data in the last three columns are drawn from the National Annenberg Election Studies for white respondents at least 25 years old. Columns entitled “pooled sample” include all observations in the sample; columns entitled “Higher than Median” use individuals born in states with relative average teacher salaries above the population-weighted median; columns entitled “Lower than Median” use individuals born in states with relative average teacher salaries below the population-weighted median. Specific states in the “Higher than Median” and “Lower than Median” subsamples (and the relative average teacher salaries paid in each state) are specified in Appendix Table 2.

whether or not the efficacy of CSLs for addressing income differentials will induce individuals to become more or less liberal. In the United States, compulsory schooling dates as far back as the Massachusetts Bay Colony in 1642, which passed what may be the first law related to compulsory schooling (Katz 1976). The state of Massachusetts was also the first state to pass a CSL in 1852, requiring 12 weeks of schooling, although the initial law was not regularly enforced until much later. By 1890, more than half of states had CSLs, and by 1918, all states had laws requiring some level of schooling (Katz 1976). During the 1900s, there has been significant variation in the amount of schooling required by CSLs, both between states and within states. According to Katz (1976), motivations for changing CSLs varied, from changing views regarding the efficacy of education, concerns regarding child labor, and assimilating immigrants into American culture. Some states have even repealed their CSLs, as Mississippi did in 1956 in response to the Brown v. Board of Education of Topeka ruling (Dixon 2020).²

In this paper, we will leverage recent evidence from DeCicca and Krashinsky (2020) regarding the effects of CSLs both on schooling and labor market outcomes. DeCicca and Krashinsky (2020) find that there are distinct effects of compulsory schooling in two sets of states. In states where teachers were paid a relative salary that is higher than the median value in the U.S., students receiving additional compulsory schooling exhibited higher earnings as a result. However, in states where teachers were paid a relative salary that is lower than the median value in the U.S., higher CSLs did not cause increases in education or income, on average.

This gross difference provides an opportunity to test theories about political preferences. Because CSLs are representative of the government’s attempt to improve the standard of living of less-educated individuals, the success or failure of these policies within a given state may influence individuals in that state to become more or less conservative. In particular:

- (a) Individuals born in the higher-than-median-teacher-salary states have experienced an efficacious government policy – compulsory

schooling was increased, and some monetary benefit resulted from this change. This is an example of an efficacious government policy to raise income, which AST would deem as positive evidence toward the notion that government has the capability to “...reduce the inequality of opportunities between children born in poor and rich families”. Treated cohorts in these states were exposed to evidence that may, in part, push them towards more liberal views.

- (b) By contrast, individuals in lower-than-median-teacher-salary states were exposed to an inefficacious government policy. Although CSLs were raised in these states, they did not result in a measurable monetary benefit. Individuals in treated cohorts in these states may rationally conclude that the government did not possess the capability to “...reduce the inequality of opportunities between children born in poor and rich families”, and may adopt more right-wing preferences for government, and the way in which it should involve (or not involve) itself in various facets of society.

This underscores how the tendency towards more right-wing views inspired solely by the income-driven effects of Meltzer and Richard (1981) may be: (i) mitigated in the states with higher relative teacher salaries by the liberalizing impact of CSLs that reduce inequality and (ii) absent in states with lower relative teacher salaries because income is unchanged by CSLs. Furthermore, the evidence from AST suggests that individuals in the second group of states may adopt more socially “conservative” values which we measure using the specific policy-related questions our respondents are asked. The overriding idea is that belief in the *overall* efficacy of government, which may be formed by one’s own experience with CSLs, will influence opinions about support for the government to regulate any given policy issue.

3. Data and empirical strategy

3.1. General information

We use two data sets in our empirical analysis. First, we use the American Communities Survey (ACS) from 2000, 2001, 2003, 2004, 2007 and 2008, along with the National Annenberg Election Survey (NAES) from 2000, 2004 and 2008; this data was used in the study by Marshall (2019). The ACS is a nationally representative survey that collects

² We direct readers to Katz (1976) for a detailed review of compulsory schooling in the United States. For more discussion of the variation of CSLs across geography and time, we refer readers to Lleras-Muney (2002), Stephens and Yang (2014), and Marshall (2019).

information on different demographic characteristics, including the formal education of respondents, while the NAES is a recurring survey that contains detailed information on political preferences in regards to parties and their candidates, as well as preferences about general political and social issues. These two data sets form the basis for our main models, which employ both reduced form and two sample two stage least squares (TS2SLS) estimators which we describe below. We make a departure from the sample in Marshall (2019) in that we focus on white individuals, rather than all individuals. We choose to focus on white individuals as previous research suggests that many CSLs did not affect educational attainment for African Americans (Lleras-Muney 2002).

3.2. Key variables and summary statistics

Table 1 displays summary statistics of variables from both the ACS and NAES data sets. The first three columns of the table provide summary statistics on variables drawn from the 2000, 2001, 2003, 2004, 2007 and 2008 ACS supplements for white respondents who are at least 25 years of age. The first column of the table reports average log weekly earnings and the average years of educational attainment for the entire sample, along with some other descriptive variables. The second and third columns present summary statistics for these same variables for two different subsamples examined in DeCicca and Krashinsky (2020), which were divided based upon the relative salaries paid to the teachers in their states of birth. Specifically: within each state-of-birth, information on the average teacher salary was collected for each birth cohort and used to create a ratio to the average manufacturing wages paid in the same state-of-birth.³ An average ratio was computed for all birth cohorts in a particular state of birth, and the states of birth were then ranked on the basis of this state-specific ratio from highest to lowest, and then divided into roughly two equal subsamples: states in the lower half of this distribution (which were categorized as “Lower than Median” states) and states in the upper half of this distribution (which were categorized as “Higher than Median” states). The key result from this division is to document how individuals born in “Higher than Median” states exhibited higher average levels of education and earnings compared to those in “Lower than Median” states, and this was not related to differences in divorce rates or unemployment rates. DeCicca and Krashinsky (2020) demonstrate that this result was primarily due to differing impacts of compulsory school laws between the two groups: only individuals exposed to CSLs in the “Higher than Median” states exhibited significant IV returns to education; this result will be discussed in further detail later in this paper, along with its connection to differences in voting patterns for the two subsamples.

For the NAES data, we focus on three key voting outcomes along with six variables measuring different dimensions of political affiliation and views which are available in Marshall (2019), and summary statistics for these variables are reported in the final three columns in Table 1. We examine three outcomes regarding voting in presidential elections, whether individuals identify as Republicans or Democrats, whether individuals report that they intend to vote for the Democratic or Republican presidential candidate in the next election, and whether individuals report voting for the Democratic or Republican presidential candidate in the previous election. For a general sense of the Republican leanings of voters in our data, the first row of the table shows the proportion of registered Republican respondents in the pooled sample, as well as the two subsamples we analyze. The results in this first row already show divergence between the two groups: the “Higher than Median” subsample tends to be slightly less likely to contain registered Republicans than the “Lower than Median” sample.

We then examine a set of variables which examine different aspects of political views, and these are displayed in the remaining rows of

³ This information was collected by Card and Kruger (1992) for the study on teacher quality and earnings.

Table 1 in the last three columns. First, we use a “Conservative Scale”, which is based on a question which asks respondents to rank themselves on a five-point scale indicating their general political preferences, where 1 is “most liberal” and 5 is “most conservative.” Second, we create an indicator variable that equals one if the respondent supports lower income taxes and zero otherwise. Third, we use an index for support of “Republican Non-Economic Issues.” This variable sums responses regarding four policy questions not directly related to income and/or taxation – whether the government should: (i) ban abortion, (ii) ease gun controls, (iii) reduce health care spending, or (iv) have higher levels of military spending. We standardize the two non-indicator variables (Conservative Scale and Republican Non-Economic Issues) so that coefficients in these models can be interpreted as standard deviation changes. Fourth, we measure views on whether the government should ban abortion, created by amalgamating responses across three waves of the survey.⁴ Fifth, we also use an indicator variable equal to one if the respondent believes that the government should do more to protect the environment. Finally, we examine a variable titled “Trust in Government”, which is a dummy variable equal to one if the respondent trusts that the government will “always” or “most of the time” do the “right thing”; the dummy is equal to zero if the respondent believes that the government will do the “right thing” only “some of the time” or “never”. For all six of the variables representing an individual’s view on specific policy issues (or an amalgam of these issues), the averages represent relatively more liberal views in the “Higher than Median” sample, but relatively more conservative views in the “Lower than Median” sample. Although this represents only a simple comparison of means, these findings are suggestive of the kind of effects discussed in Section 2. In the following section, we outline our formal strategy for exploring how compulsory schooling may influence political attitudes.

3.3. Empirical strategy

As noted, we use two data sets to estimate the impact of education on political preferences and voting behavior. We use the NAES because it contains a large amount of data on political preferences and voting behaviors during the presidential election years of 2000, 2004 and 2008. One limitation of this data set is that it contains only a coarse measure of educational attainment – in particular, it contains only information about whether or not respondents have completed high school. Since a finer measure of education is standard in the broader literature, we use the ACS, which is collected coincidentally with the NAES and contains information on respondents’ actual years of completed education.⁵ Since both data sets contain information regarding year of birth, we use them together, in the context of a two-sample two-stage least squares approach (TS2SLS), to obtain plausibly causal estimates of the effect of educational attainment on political preferences and voting behaviors.

We start, however, by estimating the reduced form effect of CSLs on political preferences and voting behaviors that is specified the same way as in Marshall (2019), with the following equation:

$$Political\ Measure_{st,i} = \beta CSL_{st} + \delta_s + \theta_t + \delta_s * trend_t + \varpi X_{st,i} + v_{st,i}. \quad (1)$$

In this model, $Political\ Measure_{st,i}$ represents the political views or voting behaviors of individual i born in state s in year t . CSL_{st} represents the CSLs that apply to individual i born in state s in year t . The variables used to capture these laws for this data set include a dummy variable equal to one if the law prevented an individual in state s in birth cohort t from dropping out before age 16, and a second dummy equal to one if

⁴ This variable is equal to one if the respondent: (i) agrees that the federal government should ban all abortions (in wave 1), “strongly” or “somewhat” favor banning abortions (in wave 2), or state that abortion should not be permitted “under any circumstances” (in wave 3) and zero otherwise.

⁵ The ACS supplements from 2000, 2001, 2003, 2004, 2007 and 2008 were used in order to match the years in which the NAES data were collected.

Table 2
The party affiliation of the governor and compulsory schooling laws.

	Number of required Years of schooling	Change in the required Years of schooling
Governor is a Democrat	0.118 (0.074)	0.005 (0.009)
N	2,401	2,352

Notes: This estimates in this table are from two regressions. The first column reports a regression that uses a dependent variable equal to the total number of required years of schooling (according to state compulsory schooling laws), and an independent variable which is an indicator equal to one if the governor is a democrat during that year, and zero otherwise. The second column reports a regression whose dependent variable is equal to one if total number of required years of schooling changed from the prior year, and zero otherwise, and the key independent variable is an indicator equal to one if the governor is a democrat in that year, and zero otherwise. All regressions include state and year fixed effects, as well as region-specific trends, and all standard errors are clustered at the state level.

the law prevented an individual in state s in birth cohort t from dropping out before age 17 or higher.⁶ δ_s and θ_t represent fixed effects for each state-of-birth s and birth-cohort t , respectively; $trend_t$ represents birth-cohort-specific time trends, and $X_{st,i}$ represent a set of characteristics for each individual i born in year t in state s .

To implement our goal of estimating the causal effect of education on political views and voting behaviors, we employ a TS2SLS estimator as Marshall (2019) did, which also builds on the large literature on CSLs in labor economics (e.g. Acemoglu and Angrist (2000)) and the work of (Inoue and Solon (2010) on the TS2SLS estimator. In this context, our first stage regression, which is applied to ACS data, is as follows:

$$Educ_{st,i} = \alpha CSL_{st} + \zeta_s + \theta_t + \zeta_s * trend_t + \rho X_{st,i} + \epsilon_{st,i}. \tag{2}$$

Here, $Educ_{st,i}$ represents years of formal schooling, for individual i born in year t in state s , and the state-of-birth and cohort-of-birth fixed effects are represented by ζ_s and θ_t , respectively. The variables $trend_t$ and $X_{st,i}$ are the same as in Equation (1). We estimate the second stage of the TS2SLS model, which is applied to NAES data (with statistical moments from both the NAES and ACS), via the following equation:

$$Political\ Measure_{st,i} = \gamma Educ_{st,i} + \eta_s + \lambda_t + \eta_s * trend_t + \varphi X_{st,i} + \epsilon_{st,i}. \tag{3}$$

Note that all of the fixed effects and variables in Equation (3) are defined in the same way as Equation (2), while $Political\ Measure_{st,i}$ remains the same as it did for equation (1) – it will measure various political preferences, which may include voting intention, party affiliation, or opinions about a particular policy or issue.

After estimating Equations (1), (2), and (3) on the full sample of all states, we introduce an innovation in this literature (beyond Marshall (2019) and Bullock (2021)) by examining two groups of states based on their relative teacher salaries. DeCicca and Krashinsky (2020) show that both the impact of CSLs on education as well as the monetary returns to CSL-induced education vary substantially by the ratio of teacher salaries relative to the median salary in their state. Thus, allowing for variation between states that pay teachers higher and lower than median relative salaries can help us understand if schooling-induced increases in earnings are driving our main finding that CSL-induced education leads those impacted to become more Republican in voting behavior—both intended and actual. We use data on relative teacher salaries from Card and Krueger (1992) spanning the same years of birth for individuals in this study. We first calculate the average relative teacher salary for each state across these years, and then we separate states into those with above median relative teacher salaries and those with below median relative teacher salaries. Appendix Table 1 shows which states fall into each

⁶ The difference in the specification for the CSL variable is due to the fact that the ACS data includes birth cohort years when the compulsory schooling laws were comparatively less binding with lower dropout ages.

category. As we show later, states with below median relative teacher salaries do not show large increases in educational attainment following CSL reforms. Thus, we focus on reduced form specifications outlined in Equation (1) for these results rather than the TS2SLS strategy outlined in Equations (2) and (3).⁷

One concern with the bifurcation is that other factors may influence relative teachers salaries that are also correlated with political outcomes. We confront this issue in a few ways. First, in Section 4.3 we provide evidence that the bifurcation of states by relative teacher salaries is plausibly exogenous. Relative teacher salaries are largely uncorrelated with state political leanings, and relative teacher salaries do not change much within states and across time. Second, we include additional state-level political and education variables in our models to address potential confounding variables. We collect data from Burham (1992) on the political leanings of each state as measured by (1) an indicator for whether the State Governor is a Democrat, (2) the percent of seats held by Democrats in the State House, and (3) the percent of seats held by Democrats in the State Senate. We also include other measures of educational quality examined by Card and Krueger (1992), namely pupil-teacher ratios and school term length. We match these political and education variables to individuals in the ACS and NAES when they were 14 years old. Third, we also include interactions between the political variables and the CSLs to control for other ways in which the political environment may impact political beliefs.

Instead of bifurcating states, another strategy could be to modify the reduced form specification in Equation (1) to include interaction terms between the CSLs and whether the state-of-birth is above the median relative teacher salary,

$$Political\ Measure_{st,i} = \beta CSL_{st} + \beta_{int} CSL_{st} \times High_s + \gamma_q Qual_{st} + \gamma_p Pol_{st} + \gamma_{cp} CSL_{st} \times Pol_{st} + \delta_s + \theta_t + \delta_s * trend_t + \varpi X_{st,i} + v_{st,i}. \tag{4}$$

In equation (4), the reduced form effects of CSLs on political measures is given by β for below median states, and is $\beta + \beta_{int}$ for above median states. The coefficient on the interaction then represents the impact of CSLs in above median relative teacher salary states relative to below median relative teacher salary states. We also include the school quality measures and political measures to control for other ways in which institutional characteristics of the school system and the political environment may impact political beliefs, and as in the bifurcation specification, we interact the compulsory schooling indicators with the political variables, given in $CSL_{st} \times Pol_{st}$. This is an equivalent approach to running a completely bifurcated model.

4. Results

4.1. Political economy concerns about the compulsory schooling laws

Prior to analyzing the impact of CSLs on political preferences, we establish the internal validity of this instrument within the model. Our models rely on a parallel trends assumption: trends in support for Republican presidential candidates and general political issues are unaffected by exposure to changes in CSLs. Marshall (2019) employs many

⁷ TS2SLS results for the above-median and below-median relative teacher salary states are shown in Appendix Tables 4A and 4B. The results for the above-median states closely follow the reduced form results, while the results for the below-median states display an insufficiently strong first stage and thus do not provide meaningful estimates.

Table 3
OLS and TS2SLS Effect of CSLs and education on partisanship and voting behaviour for white voters.

	Partisan for republican party		Intend to vote for republican pres. candidate			Voted for presidential candidate	
	OLS	TS2SLS	OLS	TS2SLS	OLS	TS2SLS	
(A) Dropout age = 16	0.008 (0.015)	...	0.040** (0.017)	...	0.031* (0.018)	...	
(B) Dropout age ≥ 17	0.026 (0.020)	...	0.056*** (0.019)	...	0.045** (0.018)	...	
Completed Grades	...	0.171 (0.152)	...	0.327** (0.160)	...	0.279* (0.146)	
ACS Obs		333,043		327,491		333,043	
NAES Obs	144,066	144,066	117,668	117,668	104,034	104,034	
Outcome Mean	0.34	0.34	0.50	0.50	0.51	0.51	
First Stage							
(A) Dropout age = 16	...	0.124** (0.050)	...	0.133** (0.050)	...	0.124** (0.050)	
(B) Dropout age ≥ 17	...	0.162*** (0.056)	...	0.170*** (0.056)	...	0.162*** (0.056)	
Outcome Mean	...	11.68	...	11.68	...	11.68	
F-stat	...	4.4	...	4.6	...	4.4	

Notes: All specifications include an indicator for being male, state-of-birth, year-of-birth, and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. The First-stage results from the two-sample IV approach are derived from the ACS and are reported in the final four rows; the second-stage coefficient on education is reported in the first row, and is derived from a sample from the NAES.

Table 4
The effect of an additional completed grade of high school on different mechanisms for white voters.

	Conservative scale	Reduce taxes	Republican non-economic issues	Ban abortion	Protect environment	Trust government
	Reduced form	Reduced form	Reduced form	Reduced form	Reduced form	Reduced form
(A) Dropout age = 16	0.063** (0.025)	0.040** (0.016)	-0.026 (0.028)	-0.012 (0.017)	-0.014 (0.012)	0.127 (0.050)
(B) Dropout age ≥ 17	0.080*** (0.029)	0.051*** (0.017)	-0.041 (0.032)	-0.017 (0.017)	-0.015 (0.014)	0.166 (0.056)
Completed Grades	TS2SLS 0.488** (0.243)	TS2SLS 0.308** (0.144)	TS2SLS -0.254 (0.204)	TS2SLS -0.105 (0.102)	TS2SLS -0.086 (0.083)	TS2SLS -0.036 (0.114)
NAES Obs.	140,718	111,375	133,014	108,332	101,097	43,845
ACS Obs.	333,043	331,078	331,078	331,078	234,728	329,456
Outcome Mean	-0.00	0.35	0.01	0.21	0.13	0.25
F Statistic	4.4	4.5	4.5	4.5	4.6	4.6

Notes: All specifications include an indicator for being male, state-of-birth, year-of-birth, and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. The F-statistic from the first-stage of the two-sample IV approach is derived from the ACS and is reported in the final row; the second-stage coefficient on education is reported in the first row, and is derived from a sample from the NAES.

robustness checks regarding the exogeneity of CSLs.⁸ We replicate one specific concern here: if CSLs are predominantly changed by one party – potentially, to strategically alter political views – then this would imply that political economy concerns may undercut any subsequent analysis of CSLs and voting tendencies. To examine this issue, Table 2 presents estimates from regressions that use the following specification:

$$CSL_{j,t} = \kappa(Democrat\ Governor) + \phi_j + \chi_t + \phi_j * trend_t + \omega_{j,t}. \tag{5}$$

In this model, two different variables are used as dependent variables: (i) the number of years of compulsory schooling for state *j* in year *t*, and (ii) a dummy variable equal to one if there has been a change in the number of CSLs for state *j* in year *t* (and zero otherwise). By testing the coefficient κ from these regressions, it is possible to determine whether or not it is more likely that the laws change when the governor is a Democrat, and whether or not the number of required years of schooling is different when the governor is a Democrat.

The results from both regressions in Table 2 reveal that there is no systematic pattern in either case. The first column shows that the

⁸ For example, Marshall (2019) demonstrates that migration in response to schooling reforms is likely not an issue, shows that changes in state political environment does not predict changes in compulsory schooling laws, and demonstrates that his results are robust to other specification changes. We direct the reader to the excellent appendix in Marshall (2019) for additional robustness checks.

presence of a governor who is a Democrat has no statistically significant impact on the number of required laws of schooling in a state, and the second column demonstrates that the laws are not significantly more likely to change if the governor is a Democrat. Both coefficient estimates are not only statistically insignificant, but also small in magnitude, suggesting that neither party is strategically altering the required laws of schooling.

4.2. Main estimates

Our first main estimates are presented in Table 3, and we show that Marshall’s findings continue to hold when we restrict his sample to only white respondents. Table 3 presents reduced form and TS2SLS estimates for the effect of CSLs on three political behaviors: Partisan Identification, Intentions to Vote for the Presidential Candidate of a Particular Party in the Next Election, and Actually Voted for the Presidential Candidate of a Particular Party in the Last Election. Under each of these outcomes, there are two columns: the first represents estimates from a reduced form regression of the outcome in question. Coefficients in this column represent the effect of having the CSL listed, relative to having either no CSL or a CSL that compelled school attendance only up until age 15 or even younger, on the outcome in question. The second column under each outcome reports the structural impact of an extra year of schooling on the outcome in question, which we estimate via TS2SLS, as described in Section 3.3. As noted above, we restrict our sample to white voters because previous work finds that CSLs were not effective in raising

education levels for African Americans (Lleras-Muney 2002).

Our reduced form estimates, which are reported in the first two columns under each outcome, suggest that having a high school dropout age of at least 17 years old has no statistically significant effect on identifying as a Republican. However, we see statistically significant increases in intentions and actual voting for a Republican presidential candidate associated with having a CSL of at least 17 years of age. In Columns 4 and 6, we find systematic evidence that an extra year of CSL-induced schooling increases the probability of intending to vote for a Republican presidential candidate and the corresponding probability of actually voting for the Republican presidential candidate. While the two statistically significant coefficients (i.e., 0.327 and 0.279) may seem large, CSLs only increased education by about 0.3 years, on average, as can be seen in the first stage estimates in the lower rows of Table 3. As a result, the coefficient, which ostensibly represents a one-year increase in education, more accurately implies between a (0.3×0.279) and $(0.3 \times 0.327 =)$ 0.084 and 0.098 increase in the fraction of those who intend to vote Republican and the fraction who actually do so. Given that the mean of each of these outcomes is around fifty percent, our estimates represent increases of roughly seventeen to twenty percent in these two fractions. While these may still seem large, it is important to remember that they represent local average treatment effects. That is, they represent the response of those individuals induced by CSLs to increase their level of schooling.

In Table 4, we examine six different outcomes regarding support for conservative issues described above, “Conservative Scale”, “Reduce Taxes”, “Republican Non-Economic Issues”, “Ban Abortion”, “Protect Environment”, and “Trust Government”. We again reproduce Marshall’s findings that the increase in Republican support is driven by economic issues, namely concerns about reducing taxes. In particular, the first column, conservative scale, shows that an additional year of education statistically significantly increases the respondents’ reporting of how conservatively they are on a scale of 1 to 5 by roughly 0.5 points. However, none of the other Republican non-economic issues are statistically significantly affected by CSL-induced education, and many of the signs are negative. The exception and that CSL-induced education increases the probability that respondents say taxes should be lowered by nearly 31 percentage points. As with the TS2SLS estimates in Table 3, these estimates represent local average treatment effects from the individuals compelled to increase education after the expansion of CSLs.

4.3. Results for states by relative teacher salary

Marshall (2019) hypothesizes that the mechanism for the finding that education increases partisan lean toward Republicans is increased earnings, and indeed several of his results support this mechanism. In particular, as we also find above, increased partisan leaning does not appear to be driven by non-economic issues but rather by increased concern for economic issues. Similarly, Bullock (2021) finds that CSLs makes individuals less open to redistributive programs. Underlying this mechanism is also the long-running finding that education increases individuals’ incomes (DeCicca and Krashinsky, 2020).

However, recent research calls into question the relationship between education, as instrumented for by CSLs, and educational attainment and income. Stephens and Yang (2014) find that including year of birth by region fixed effects eliminates the statistical significance of education on a number of human capital outcomes, including wages and unemployment. Stephens and Yang note that these additional fixed effects may control for different trends in regions regarding school quality improvements. Our results in Tables 3 and 4 suggest that these issues may be present here. Notably, the F-Statistics on the first stage regressions in the TS2SLS models are under five, suggesting that in our specifications with state-specific linear trends, CSLs may not have a strong enough relationship on educational attainment to reliably identify a second stage relationship.

To explore further, we adopt an innovation from DeCicca and

Krashinsky (2020), who find that CSL-induced schooling only raises education and earnings in states that pay their teachers reasonably well relative to the median worker in that state. The authors argue that this is due to the fact that states with lower *relative* teacher salaries also tend to have more lucrative labor market opportunities for those most likely to have their educational attainment be impacted by changes in CSLs. Specifically, because a state’s relative teacher salary is the ratio of the average teacher salary to the average manufacturing wage in a state for a given year, then a lower value of this ratio can indicate both lower absolute teacher salaries as well as higher absolute manufacturing salaries. Indeed, these higher non-teacher salaries increase the opportunity costs of remaining in school for individuals who would like to cease their educational training as soon as possible, which may hamper compliance with increases in CSLs. By contrast, individuals educated in states with higher relative teacher salaries will not have access to similarly lucrative labor market opportunities, which may increase compliance with increases in CSLs in these states.⁹

We leverage this finding to investigate the extent to which the financial returns from CSL-induced schooling drive our estimated shift towards Republican voting. To begin, we examine the instrumental variable estimates of the effect of education on earnings using the two dummy variables discussed in equation (2) to represent CSLs in our first stage. Our results, shown in Appendix Table 2A, utilize two data sources. First, we use the same waves of the ACS used above to examine the incomes of all whites in the first three columns. Second, we use data from the 1960 to 1980 U.S. Censuses to examine results for the subset of all White respondents in these Censuses between the ages of 25 and 54 in the second three columns and then White Males in the same age range in the final three columns.¹⁰ The results confirm the earlier discussion: for the ACS sample, there is no relationship between education and earnings for the pooled sample, although there is a meaningful return to education for respondents born in states with “Higher than Median” relative teacher salaries. In the two Census samples, the increased earnings from educational attainment in the pooled sample of respondents in columns 4 and 7 are also limited to respondents born in states with “Higher than Median” relative teacher salaries. In these states, the first stage relationship between education and the compulsory schooling dummies is strong, with F-statistics above 10, and coefficients on the two dummy variables are monotonically increasing.

However, the results in columns 3, 6 and 9 are much different. The first stage is comparatively weaker, with F statistics below 10, and the coefficients are negative in the ACS sample and non-monotonic in the two Census samples. Perhaps not surprisingly, the IV returns to education are not statistically significant for the subsamples of respondents in states with “Lower than Median” relative teacher salaries. All together, these results suggest that it is only possible for respondents in the “Higher than Median” subset of states to exhibit an impact of education on political preferences through the income channel, assuming a constant effect of education on income. Furthermore, a proper analysis of this effect necessitates these two subsamples to be treated separately within this context.

A logical concern with bifurcating states by relative teacher salaries is that if a state’s political climate affects relative teacher salaries, then any differences in the effects of CSLs on political views between groups of states might reflect unobservable changes in state partisanship rather than effects of CSLs. We provide evidence below that this is unlikely to be the case. Appendix Table 2B examines whether state political

⁹ These results are available upon request from the authors. Furthermore, other studies have found that the degree of compliance with CSLs is dependent upon local labor market opportunities. Recent work on this issue includes: Black et al (2005), Cascio and Narayan (2022), Zuo et. al. (2019), and Marchand and Weber (2019).

¹⁰ This age range was chosen in order to focus upon the years in which labor market participation is strongest for all respondents.

Table 5
Reduced-form estimates of the compulsory schooling laws on political preferences for higher vs lower states for white voters.

	Higher than median sample Partisan for republican party	Intend to vote for republican pres. Candidate	Voted for republican presidential candidate
(A) Dropout age = 16	-0.143 (0.160)	0.267* (0.139)	0.199 (0.421)
(B) Dropout age ≥ 17	-0.177 (0.161)	0.218** (0.060)	0.160 (0.420)
Observations	80,094	65,400	58,209
F-Test (A) = 0 and (B) = 0	2.32 [0.124]	3.37 [0.055]	1.19 [0.326]

	Lower than median sample Partisan for Republican Party	Intend to Vote for Republican Pres. Candidate	Voted for Republican Presidential Candidate
(C) Dropout age = 16	-0.008 (0.021)	0.036* (0.019)	0.045** (0.021)
(D) Dropout age ≥ 17	0.013 (0.026)	0.052** (0.022)	0.058** (0.022)
Observations	63,972	52,268	45,825
F-Stat (C) = 0 and (D) = 0	2.66 [0.088]	2.64 [0.090]	3.43 [0.047]
F-Stat (A) = (C) and (B) = (D)	0.68 [0.513]	2.42 [0.100]	0.11 [0.895]

Notes: All specifications include an indicator for being male, pupil-teacher ratios, school term length, an indicator for whether the state governor is a democrat, the % of the state house that is democrat, the % of the state senate that is democrat, and interactions between the compulsory schooling indicators with the Governor’s political party and the percent of seats held by democrats in the state House of Representatives and the state Senate. All continuous variables used in these interactions are centered at zero. Regressions also include state-of-birth, year-of-birth and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. P-values are listed in brackets to the right of the F-statistics in the table.

Table 6
Reduced-form estimates of the compulsory schooling laws on political preferences for higher vs lower states for white voters.

Higher than median sample						
	Conservative scale	Reduce taxes	Republican non-economic issues	Protect environment	Ban abortion	Trust government
(A) Dropout age = 16	0.033 (0.068)	0.281*** (0.033)	-0.116** (0.047)	0.063** (0.022)	-0.184*** (0.025)	0.277*** (0.084)
(B) Dropout age ≥ 17	0.049 (0.065)	0.280*** (0.032)	-0.168*** (0.050)	0.068*** (0.021)	-0.195*** (0.027)	0.259** (0.092)
Observations	78,329	61,855	73,904	55,926	60,305	24,150
F-Test (A) = 0 and (B) = 0	0.49 [0.622]	38.7 [<0.001]	5.93 [0.010]	5.23 [0.015]	27.9 [<0.001]	6.78 [0.006]

Lower than median sample						
	Conservative scale	Reduce taxes	Republican non-economic issues	Protect environment	Ban abortion	Trust government
(C) Dropout age = 16	0.076* (0.045)	0.022 (0.032)	-0.006 (0.020)	-0.043** (0.018)	0.012 (0.026)	0.012 (0.038)
(D) Dropout age ≥ 17	0.102** (0.049)	0.030 (0.033)	-0.022 (0.026)	-0.047** (0.019)	0.006 (0.026)	0.017 (0.036)
Observations	62,389	49,520	59,110	45,171	48,027	19,695
F-Stat (C) = 0 and (D) = 0	2.23 [0.127]	0.90 [0.419]	0.57 [0.573]	3.02 [0.065]	0.82 [0.450]	0.23 [0.796]
F-Stat (A) = (C) and (B) = (D)	2.15 [0.128]	3.72 [0.031]	12.5 [<0.0001]	5.90 [0.005]	12.0 [<0.001]	4.07 [0.024]

Notes: All specifications include an indicator for being male, pupil-teacher ratios, school term length, an indicator for whether the state governor is a democrat, the % of the state house that is democrat, the % of the state senate that is democrat, and interactions between the compulsory schooling indicators with the Governor’s political party and the percent of seats held by democrats in the state House of Representatives and the state Senate. All continuous variables used in these interactions are centered at zero. Regressions also include state-of-birth, year-of-birth and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. P-values are listed in brackets to the right of the F-statistics in the table.

variables predict relative teacher salaries. To examine this, we use the relative teacher salary variable collected by [Card and Krueger \(1992\)](#) and match that to the three political climate variables: whether the State Governor is a Democrat, the percent of seats held by Democrats in the State House, and the percent of seats held by Democrats in the State Senate. We estimate straightforward two-way fixed effects models to estimate whether changes in a state’s political landscape predict changes in relative teacher salaries. Our results suggest that none of the political variables are related to changes in relative teacher salaries.¹¹ Appendix Table 2C demonstrates that the relative teacher salary of a state does not vary over time. Neither the actual state-specific relative salary nor the rank of the state’s relative salary (compared to other states) changes meaningfully over time. The relative constancy of these measures

¹¹ In addition, we also run equivalent, separate regressions of relative teacher salary on pupil-teacher ratio and then on term length. Neither regression yields a significant relationship.

establishes that this exercise is a simple bifurcation of our sample of states; the states are not changing relative teacher salaries in response to changes in CSLs.

Consequently, we use these disparate findings to better understand whether increases in earnings are driving our finding of a movement toward Republican voting as the result of greater CSL-induced schooling. First, we examine whether the separate samples generate differential results for Republican candidates. To this end, we bifurcate the sample in [Table 3](#) into the states with “Higher than Median” and “Lower than Median” relative teacher salaries and display these results in [Table 5](#). As the “Lower than Median” states do not have a strong first stage, we focus on the reduced form results. [Table 5](#) suggests that individuals exposed to more-strict CSLs in below median relative teacher salary states are more likely to actually vote for Republican presidential candidates. Although we find a large and statistically significant effect of CSLs on intentions to vote for Republican presidential candidates in above-median teacher salary states, we cannot reject the null hypothesis that there is no effect of CSLs on actual votes for Republican presidential

candidates in these states (it should be noted, however, that this result is not evident in different specifications, as is shown in Appendix Table 3A). This result is especially surprising because individuals in lower than median states do not see appreciable changes in educational attainment following increases in required schooling. However, we also cannot reject the null hypothesis that the effect of CSLs in the above-median relative teacher wage states is different than the below-median relative teacher salary states.

To explore further the mechanisms behind the shift in views toward Republican candidates, we reexamine the six outcomes in Table 4. Again, we focus on the reduced form specifications because of the weak first stage for the below median states. Table 6 shows results from these specifications. Changes in CSLs do not significantly alter the position on the “Conservative Scale” for those schooled in “Higher than Median” states, whereas the laws have a significant effect for individuals schooled in “Lower than Median” states. Large differences are also evident for the effect of CSLs on other measures: as described earlier, there is a significant effect on the desire for lower taxes among individuals schooled in “Higher-than-Median” states, but a smaller and non-statistically significant effect for those schooled in “Lower-than-Median” states.

Most starkly, the laws have different signed effects for the two samples for the dependent variables related to “Republican Non-Economic Issues.” Individuals born in below-median states are less likely to want more environmental protection, while individuals born in above-median states score lower on the “Republican Non-Economic Issues” index, are more likely to support environmental issues, and are less likely to favor banning abortion, all while being more likely to oppose tax increases. In essence, those in the “Higher than Median” states appear to become more socially liberal in their beliefs, but perhaps more fiscally conservative. In other words, while increases in CSL-induced schooling appear to have created more liberal, or what are known as “Rockefeller” Republicans in the “Higher than Median” states, they may have increased the fraction of more generally conservative or “Goldwater” Republicans in the “Lower than Median” ones.

The increased support for lower income taxes in the “Higher than Median” sample is consistent with the theory of Meltzer and Richard (1981) and findings in Marshall (2016), Marshall (2019), and Bullock (2021) that the increased earnings experienced by these individuals has led them to become more self-interested and favor lower income taxes. However, we also find a corresponding reduction in support for “Republican Non-Economic Issues” in the Higher than Median States, which is at odds with a more general movement to conservative beliefs that is driven by greater levels of CSL-induced education. An explanation for these results may lie in other literature examining the effects of government policies, and their relationship with the results in the final column of Table 6.

The final column of Table 6 shows an analysis of the “Trust in Government” variable. The results suggest that individuals born in “lower-than-median” states have, in relative terms, significantly less trust in the government, which is consistent with key theoretical notions in related literatures. Individuals born in the higher-than-median-teacher-salary states experienced an efficacious government policy – compulsory schooling was increased, and some monetary benefit resulted from this change. This is an example of an efficacious government policy to raise income, which AST would deem as positive evidence toward the notion that government has the capability to “...reduce the inequality of opportunities between children born in poor and rich families”. Treated cohorts in these states were exposed to evidence that may, in part, push them towards more liberal views. Additionally, Dee (2004) estimates that CSL-induced education increased views towards supporting freedom of speech and civic engagement. Interestingly, the 2SLS results in Dee (2004) suggest that increased support for freedom of speech is most pronounced for groups supporting traditional liberal causes like anti-religionists, communists, and gay-rights group while support for the free speech rights of militarists and racists are not consistently affected by education. Dee (2004) is also consistent with recent work examining

the effects of education on attitudes toward immigration. Using data on compulsory schooling reforms in Europe, Cavaillé and Marshall (2019) find that increased educational attainment reduces anti-immigrant sentiment.

By contrast, individuals in lower-than-median-teacher-salary states were exposed to an inefficacious government policy. Although CSLs were raised in these states, they did not result in a measurable increase in educational attainment or monetary benefit. Individuals in treated cohorts in these states may rationally conclude that the government did not possess the capability to “...reduce the inequality of opportunities between children born in poor and rich families”, and may adopt more right-wing preferences for government, and the way in which it should involve (or not involve) itself in various facets of society. F-Tests reject the null hypotheses that the reduced form CSL coefficients between the two groups of states are equal for the Republican non-economic issues, environmental issues, and abortion questions at the one percent level.

This underscores how the tendency towards more right-wing views inspired solely by the income-driven effects of Meltzer and Richard (1981) may be: (i) mitigated in the states with higher relative teacher salaries by the liberalizing impact of CSLs that reduce inequality and (ii) absent in states with lower relative teacher salaries because income is unchanged by CSLs. Furthermore, the evidence from AST suggests that individuals in the second group of states may adopt more socially “conservative” values which we measure using the specific policy-related questions our respondents are asked. The overriding idea is that belief in the overall efficacy of government, which may be formed by one’s own experience with CSLs, will influence opinions about support for the government to regulate any given policy issue.

As mentioned previously, a concern with the bifurcation is that other state-level factors may be correlated with average relative teacher salaries and also affect individuals’ political views. Although we present evidence previously that the bifurcation of states is likely uncorrelated with these other state-level factors, we discuss one additional robustness check here. In Section 3.3, we mention that instead of bifurcating states, we could interact the CSLs with an indicator for whether the state is above the median relative teacher salary. This interaction specification also allows interactions between the CSLs and other political climate and educational quality variables. We show results from these specifications in Appendix Tables 3A and 3B. The results paint a very similar picture to Tables 5 and 6. In Appendix Table 3A, intentions to and actual votes for Republican presidential candidates are more concentrated in states with below median relative teacher salaries. In Appendix Table 3B, individuals in above median relative teacher salary states, compared to individuals in below median states, are less likely to score highly on the Conservative Scale, more likely to want lower taxes, less likely to score highly on the Republican Non-Economic Issues, more likely to care about environmental issues, less likely to want to ban abortion, and more likely to trust in government.

5. Discussion

In this paper, we provide new evidence regarding the effects of CSL induced education on political views, building on previous work including Dee (2004), Bullock (2021), and especially Marshall (2019). Using data provided by Marshall (2019) along with additional data on states’ relative teacher salaries from Card and Krueger (1992) and other political variables, we first confirm recent work in Bullock (2021) and Marshall (2019) that additional educational training precipitated by changes in CSLs tend to make voters more likely to both intend to vote for a Republican presidential candidate and to actually vote for this type of candidate. The primary mechanism for voting in this manner appears to be through the income channel. The TS2SLS results in Table 4 demonstrate that voters also become more likely to support lowering tax rates after receiving more CSL-induced education while views on non-economic issues are not statistically significantly affected. This seems entirely consistent with the theory of Meltzer and Richard (1981)

(hereafter MR), since voters would be behaving rationally in response to a CSL-induced change in income.

However, we then show that the picture is more nuanced. Applying an innovation from DeCicca and Krashinsky (2020), we allow the effects of CSLs on political outcomes to vary by relative teacher salaries. Like DeCicca and Krashinsky (2020), we find that the effects of CSLs on both education and earnings, the primary mechanism hypothesized in Marshall (2019) and Bullock (2021), are only found in the states with above median relative teacher salaries. Applying this analysis to voting intentions, we find that CSLs increase intentions to vote and actual votes for Republicans in the below median teacher salary states, or those states without large changes in educational attainment or income. While CSLs increase intentions to vote for Republicans in above median teacher salary states, we do not find that these intentions lead to statistically significant changes in actual votes.

Turning then to the mechanisms behind Republican partisanship, we find that CSLs do induce individuals to be more fiscally conservative, but only in the states with increased education and earnings. However, the null effects of CSL-induced educational attainment on non-economic Republican issues hide significant heterogeneity between the two groups of states. In above-median relative teacher salary states, although CSLs do not affect respondents' views on the conservative scale index of issues, they reduce overall views of republican non-economic issues and reduce desires to ban abortions. However, in below-median relative teacher salary states, CSLs increase respondents' views on the conservative scale, do not statistically significantly affect respondents' views of taxes, and reduce concerns for the environment.

Thus, the bifurcation between "Lower than Median" and "Higher than Median" states uncovers significant heterogeneity in the effect of CSLs on voting behaviour that cannot only be explained solely by the theory of MR. Specifically, if MR was the only relevant theory within this context, then it should be the case that individuals in the states with higher-than-median teacher salaries would be the only ones to exhibit a significant effect of education on political preferences, since these are the only states where CSL-induced changes in education caused income to increase. But since this is not the case, and since individuals in "Lower than Median" states also reacted to changes in CSLs, it implies that MR is not the only theory that explains the impact of increased education on political preferences.

To that end, we note that our findings are most consistent with the work of AST, which would suggest that the impact – or lack of impact – from CSLs could have a bearing on political beliefs. Since the changes in CSLs increased income for individuals in the states with higher-than-median relative teacher salaries, they represented evidence of efficacious government involvement in the economy for this subsample, and the work of AST (2018) would suggest that this would have a liberalizing effect on the affected group. The evidence from Tables 4 through 6 suggests that education increased by the CSLs led individuals in this subsample to become more liberal on a series of non-economic issues, and the changes in the CSLs themselves were correlated with more liberal attitudes. Overall, this would imply that political behaviour is influenced by *both* MR *and* other theories suggesting that support for greater government involvement is enhanced by evidence of efficacious policy initiatives. In our case, the CSL-inspired desire for lower taxes in the "Higher than Median" subsample (as suggested by MR) was offset by the enhanced support for issues that imply greater government involvement.

This notion was reinforced by the findings from the subsample of individuals born in the states with lower-than-median relative teacher salaries, who did not benefit from more education or higher earnings after being subject to higher CSLs. For this group, there should be no reason that they would necessarily become more conservative in their political views if the theory proposed by MR were the only one determining political preferences. Instead, this group became significantly more conservative on a number of dimensions, which is consistent with theories such as AST, which would predict a more conservative view for

this subsample, since they were exposed to generally ineffectual government interventions. This represents new evidence for the manner in which CSLs, and education in general, may impact political preferences and voting behavior in unanticipated ways; and in this case, it implies that ineffectual educational policy that has no tangible benefits to students may make them more conservative.

6. Conclusions

In 1964, there were two main candidates competing for the Republican party's nomination for President in the upcoming election: Nelson Rockefeller, who was preferred by more "liberal" and "centrist" Republicans, and Barry Goldwater, who was preferred by more "conservative" Republicans. Goldwater's victory in this contest was the first of its kind for the "conservative" wing of the Republican party, and since that race, the party's philosophical and strategic dynamics have largely been a function of the push-and-pull between its "Rockefeller" and "Goldwater" camps.

Prior research findings on the connection between education and political beliefs and voting behaviors have generally not delved into these dynamics, and instead have tended to fall into two categories. Some papers have documented a "socializing" effect of education: longer exposure to more-liberal peers and instructors induces more liberal views into adulthood. Other papers, though, have suggested that additional education may make one more conservative, primarily through an income channel: if education enhances one's earnings power, such an individual should rationally prefer to have lower tax rates to maximize the benefit of this education.

Our main findings for our pooled sample show that additional years of education induced by CSLs make individuals more conservative, and that this appears to operate through an income channel. However, the pooled results mask significant heterogeneity in states with relatively high teacher salaries versus lower teacher salaries, where states with higher relative teacher salaries see increases in both educational attainment and income result from CSLs. By allowing the effects of CSLs on political outcomes to vary over states where changes in CSLs influence education and income, we demonstrate that the income channel is not the relevant pathway to greater conservatism. Instead, we find that individuals exposed to "ineffectual" CSLs – those that do not change their education or income – exhibit a more profound movement towards conservative views in a number of ways, including becoming comparatively more generally conservative, as measured by a five-point scale. By contrast, those exposed to "effectual" CSLs – those that do improve an individual's education and income – are induced to harbor more conservative views on fiscal issues like taxation, but also more liberal positions on non-fiscal issues like abortion and environmental protection. Thus, the policy-induced increases in education influence attitudes that may offset the income effect proposed by MR and Marshall (2019), and overall, individuals exposed to effectual CSLs do not become appreciably more likely to vote for Republican presidential candidates.

We argue that our results are consistent with the theory of Meltzer and Richard (1981) augmented by that of the more recent work by Alesina, Stantcheva and Teso (2018). Ultimately, we find that CSLs were not homogeneous in the effects on political preferences, and instead created two types of Republicans: more-liberal "Rockefellers", and more-conservative "Goldwaters".

CRedit authorship contribution statement

Philip DeCicca: Conceptualization, Methodology, Software, Validation, Formal analysis, Writing – original draft, Writing – review & editing. **Harry Krashinsky:** Conceptualization, Methodology, Software, Validation, Formal analysis, Writing – original draft, Writing – review & editing. **Erik Nesson:** Conceptualization, Methodology, Software, Validation, Formal analysis, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare there is no conflict of interests.

Data availability

Data will be made available on request.

Appendix A

[Appendix Table 1](#), [Appendix Table 2A](#), [Appendix Table 2B](#), [Appendix Table 2C](#), [Appendix Table 3A](#), [Appendix Table 3B](#), [Appendix Table 4A](#), [Appendix Table 4B](#)

Appendix Table 1

State averages, ranks and cumulative frequencies of relative teacher salary.

Above-Median States			Below-Median States		
State	Average Relative Teacher Salary	Cumulative Frequency	State	Average Relative Teacher Salary	Cumulative Frequency
D.C	1.482	100	Minnesota	1.001	46.59
New York	1.360	99.67	Colorado	0.995	44.25
Massachusetts	1.270	90.51	Wisconsin	0.990	43.28
California	1.230	87.27	Nevada	0.977	40.63
Rhode Island	1.227	82.36	Wyoming	0.969	40.52
Maryland	1.214	81.82	Louisiana	0.962	40.31
New Jersey	1.172	80.56	Montana	0.956	38.79
Pennsylvania	1.142	77.68	Texas	0.933	38.33
Arizona	1.121	69.90	Michigan	0.933	32.94
New Mexico	1.110	69.46	Virginia	0.925	28.62
Connecticut	1.101	68.91	Idaho	0.924	26.65
Florida	1.092	67.63	South Carolina	0.921	26.16
Washington	1.085	66.43	Missouri	0.904	25.04
North Carolina	1.083	65.07	Iowa	0.879	22.24
Illinois	1.078	62.45	Vermont	0.876	20.12
New Hampshire	1.068	56.77	Oklahoma	0.875	19.81
Delaware	1.066	56.39	Georgia	0.874	17.86
Utah	1.052	56.20	Kansas	0.860	15.83
Indiana	1.036	55.56	Tennessee	0.859	14.33
Oregon	1.012	52.76	West Virginia	0.845	11.95
Ohio	1.003	51.94	Alabama	0.843	10.17
			South Dakota	0.840	8.26
			Nebraska	0.811	7.68
			Maine	0.809	6.53
			North Dakota	0.807	5.82
			Arkansas	0.801	5.17
			Kentucky	0.795	3.70
			Mississippi	0.732	1.09

Notes: The table displays the average relative teacher salaries, which are computed by averaging the relative teacher salary for all cohorts within each state-of-birth in the sample for all white respondents.

Appendix Table 2A

Estimates of returns to schooling for pooled and two subsamples.

	All Whites ACS			All Whites Ages 25-54 (Census)			White Males Ages 25-54 (Census)		
	Pooled Sample	Higher than Median	Lower than Median	Pooled Sample	Higher than Median	Lower than Median	Pooled Sample	Higher than Median	Lower than Median
OLS	0.057 (0.003)	0.056 (0.005)	0.058 (0.003)	0.067 (0.0003)	0.067 (0.0005)	0.067 (0.0003)	0.061 (0.0004)	0.061 (0.0008)	0.062 (0.0005)
2SLS	-0.409 [-2.053, 1.236]	0.258 [0.051, 0.465]	0.604 [-1.424, 2.632]	0.102 [0.025, 0.179]	0.321 [0.201, 0.441]	0.001 [-0.095, 0.096]	0.082 [0.006, 0.158]	0.262 [0.173, 0.352]	-0.008 [-0.130, 0.109]
First Stage									
Dropout	0.050 (0.080)	0.296 (0.053)	-0.050 (0.060)	0.092 (0.019)	0.248 (0.056)	0.067 (0.021)	0.108 (0.027)	0.338 (0.072)	0.062 (0.029)
Dropout Age = 16	0.051 (0.083)	0.335 (0.063)	-0.051 (0.061)	0.092 (0.026)	0.303 (0.066)	0.020 (0.030)	0.099 (0.034)	0.381 (0.082)	0.004 (0.039)
Dropout Age ≥ 17									
F-statistic	0.20	15.43	0.36	11.7	11.0	7.3	8.3	11.6	4.6
N	169,751	91,747	78,004	3,375,138	1,656,430	1,718,708	1,980,046	971,217	1,008,829

Notes: The data in the first three columns are drawn from the 2000, 2001, 2003, 2004, 2007 and 2008 supplements of the American Community Survey, and the data in the final six columns are drawn from the U.S. Census extracts from 1960, 1970 and 1980. Columns entitled “pooled sample” include all observations in the sample; columns entitled “Higher than Median” use individuals born in states with relative average teacher salaries above the population-weighted median; columns entitled “Lower than Median” use individuals born in states with relative average teacher salaries below the population-weighted median. OLS and 2SLS estimates of the returns to schooling are in the first two rows of the table, and the Moreira confidence interval for the 2SLS estimates are listed in brackets underneath the 2SLS estimates. The key instruments used in the first stage regression are two required schooling dummies, indicating the minimum age to cease schooling in a state for a particular birth cohort; these coefficients are listed in the rows entitled “Dropout Age = 16” and “Dropout Age ≥ 17”. All regressions include an indicator for being male (except for the last three columns), year-of-birth and state-of-birth indicator variables, as well as state-by-year linear trends.

Appendix Table 2B

Relationship between measures of partisanship and relative teacher salaries.

	(1)	(2)	(3)
Governor is a Democrat	0.0057 (0.0119)
% of seats held by Democrats in the State House	...	-0.00023 (0.00030)	...
% of seats held by Democrats in the State Senate	-0.000057 (0.00030)
State/Year Fixed Effects	Yes	Yes	Yes
N	2,448	2,448	2,448

Notes: The data are drawn from Card and Krueger (1992) and Burnham (1992). The dependent variable in each column the relative teacher salary for a state and year. All regressions additionally include state and year fixed effects. All regressions cluster standard errors at the state-of-birth level.

Appendix Table 2C

Dynamics of the relative teacher salary.

	Dependent variable: State-level Relative Teacher Salary		
	Actual	Rank	Rank
Linear Trend	0.000008 (0.00071)
Lagged Measure	...	0.995 (0.002)	0.984 (0.008)
State FE?	Yes	No	Yes

Notes: These regressions use Card and Krueger’s data set with one observation for each cohort of birth in each state of birth; the birth cohorts span from 1905 to 1959. The table uses a dependent variable based upon relative teacher salaries: the first column is the relative teacher salary itself, and columns two and three use the state rank (from 1 to 49) for teacher salaries for each birth cohort in each state of birth. The first row of the table displays the coefficient on a linear trend term as a key independent variable to demonstrate how each of the three measures changes over time. The second row uses “Lagged Measure”, the one-period lag of the dependent variable, as the key independent variable in the regression. All regressions cluster standard errors at the state-of-birth level.

Appendix Table 3A

OLS Effects of CSLs and education on partisanship and voting behaviour for white voters.

	Partisan for Republican Party	Intend to Vote for Republican Pres. Candidate	Voted for Republican Presidential Candidate
(A) Dropout age = 16	-0.002 (0.023)	0.043** (0.021)	0.046** (0.021)
(B) Dropout age ≥ 17	0.017 (0.029)	0.056** (0.025)	0.056** (0.023)
(C) Higher State* Dropout age = 16	0.010 (0.024)	-0.058** (0.019)	-0.010 (0.024)
(D) Higher State* Dropout age ≥ 17	-0.009 (0.035)	-0.065* (0.033)	-0.013 (0.030)
F test (C) = 0 and (D) = 0	0.68 [0.513]	2.42 [0.100]	0.11 [0.895]

Notes: All specifications include an indicator for being male, an indicator for whether the state governor is a democrat, the % of the state house that is democrat, the % of the state senate that is democrat, interactions between the compulsory schooling indicators with pupil-teacher ratios, school term length, the Governor’s political party, and the percent of seats held by democrats in the state House of Representatives and the state Senate. All continuous variables used in these interactions are centered at zero. Regressions also include state-of-birth, year-of-birth and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. The third and fourth rows display coefficients on the interactions between the compulsory schooling dummy and a dummy variable equal to one if the individual is in a state that pays relative teacher salaries that are lower than the median, and zero otherwise. The F-statistic in the last row is a test of the joint significance of the coefficients for the interaction terms (C) and (D).

Appendix Table 3B

Reduced-form estimates of compulsory schooling laws on mechanisms for higher vs lower states for white voters that includes interactions with school measures and political measures.

	Conservative Scale	Reduce Taxes	Republican Non-Economic Issues	Protect Environment	Ban Abortion	Trust Government
Dropout age = 16	0.052 (0.032)	0.036 (0.024)	-0.010 (0.024)	-0.044** (0.017)	0.007 (0.019)	-0.117 (0.116)
(B) Dropout age ≥ 17	0.073* (0.039)	0.046* (0.024)	-0.025 (0.032)	-0.047** (0.018)	0.0002 (0.019)	-0.124 (0.142)
(C) Higher State* Dropout age = 16	-0.094** (0.047)	0.072** (0.028)	-0.222*** (0.044)	0.049*** (0.015)	-0.106*** (0.0223)	0.089** (0.043)
(D) Higher State* Dropout age ≥ 17	-0.110* (0.058)	0.062* (0.032)	-0.256*** (0.057)	0.059*** (0.019)	-0.112*** (0.023)	0.003 (0.067)
Obs	140,718	111,375	133,014	101,097	108,332	29,002
Outcome Mean	0.04	0.35	0.01	0.13	0.21	0.243
F-Stat	2.15	3.72	12.51	5.90	11.96	4.07
(C) = 0 and (D) = 0	[0.128]	[0.031]	[<0.0001]	[0.0051]	[<0.001]	[0.0235]

Notes: The regression specifications in this table are identical to those used in Table 5.

Appendix Table 4A

TS2SLS effect of an additional completed grade of high school on different mechanisms for white voters.

	Conservative Scale		Reduce Taxes		Republican Non-Economic Issues	
	Higher	Lower	Higher	Lower	Higher	Lower
Completed Grades	0.055 (0.143)	1.108 (0.849)	0.178** (0.088)	0.510 (0.612)	-0.589*** (0.149)	-0.334 (0.704)
Reduced Form NAES Obs.	78,329	62,389	61,855	49,520	73,904	59,110
First Stage ACS Obs.	182,222	150,821	181,203	149,875	181,203	149,875
Outcome Range	[-2.14, 1.77]	[-2.14, 1.77]	{0,1}	{0,1}	[-1.15, 2.42]	[-1.17, 2.45]
Outcome Mean	-0.059	0.116	0.34	0.36	-0.06	0.11
First Stage F Statistic	24.7	1.9	24.5	1.7	24.5	1.7

Notes: All specifications include an indicator for being male, an indicator for whether the state governor is a democrat, the % of the state house that is democrat, the % of the state senate that is democrat, state-of-birth, year-of-birth and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. The F-statistic from the first-stage of the two-sample IV approach is derived from the ACS and is reported in the final row; the second-stage coefficient on education is reported in the first row, and is derived from a sample from the NAES. Columns 1, 4 and 7 display results from the pooled sample; columns 2, 5 and 8 display results from subsample of states whose relative teacher salaries are higher than the median; columns 3, 6 and 9 display results from subsample of states whose relative teacher salaries are lower than the median.

Appendix Table 4B

TS2SLS effect of an additional completed grade of high school on different mechanisms for white voters.

	Ban Abortion		Protect Environment		Trust Government	
	Higher	Lower	Higher	Lower	Higher	Lower
Completed Grades	-0.185*** (0.068)	-0.146 (0.167)	0.062* (0.034)	-0.457 (0.418)	-0.022 (0.185)	0.005 (0.341)
Reduced Form NAES Obs.	60,305	48,027	55,926	45,171	24,150	19,695
First Stage ACS Obs.	181,203	174,376	127,684	107,044	180,178	149,278
Outcome Range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Outcome Mean	0.18	0.24	0.13	0.13	0.25	0.25
First Stage F Statistic	24.5	1.7	22.8	1.2	23.8	1.8

Notes: All specifications include an indicator for being male, an indicator for whether the state governor is a democrat, the % of the state house that is democrat, the % of the state senate that is democrat, state-of-birth, year-of-birth and survey-year fixed effects, and state-specific linear trends, and standard errors are clustered at the state-of-birth level. The F-statistic from the first-stage of the two-sample IV approach is derived from the ACS and is reported in the final row; the second-stage coefficient on education is reported in the first row, and is derived from a sample from the NAES. Columns 1, 4 and 7 display results from the pooled sample; columns 2, 5 and 8 display results from subsample of states whose relative teacher salaries are higher than the median; columns 3, 6 and 9 display results from subsample of states whose relative teacher salaries are lower than the median.

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