

On the Effect of Business and Economic University Education on Political Ideology: An Empirical Note

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Abstract We empirically test the hypothesis that a major in economics, management, business administration or accounting (for simplicity referred to as Business/Economics) leads to more-conservative (right-wing) political views. We use a panel dataset of individuals (repeated observations for the same individuals over time) living in the Netherlands, drawing data from the Longitudinal Internet Studies for the Social Sciences from 2008 through 2013. Our results show that when using a simple fixed effects model, which fully controls for individuals' time-invariant traits, any statistically and quantitatively significant effect of a major in Business/Economics on the Political Ideology of these individuals disappears. We posit that, at least in our sample, there is no evidence for a causal effect of a major in Business/Economics on individuals' Political Ideology.

Keywords University education · Political Ideology · Business and economics studies

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Does a major (pursuing a degree) in business or economics at the university level determine individuals' Political Ideology? Business and economic studies are at the heart of the social sciences, with a potential direct bearing on how students formulate their political views. Business/economic studies have been theoretically linked to conservative (right-wing) Political Ideology, raising ethical issues on the role and the curriculum of education in both independent thinking of individuals and societal outcomes. In this paper, we define Political Ideology from the self-reported placement of individuals in the left-to-right spectrum and examine whether a major in economics, management, business administration, and accounting (for simplicity henceforth referred to as Business/Economics) changes this placement for the specific individuals.

The mechanisms theoretically linking a degree in business or economics with Political Ideology are multifaceted. Proponents of the view that Business/Economics education leads to more-conservative Political Ideology argue that in delivering relevant university modules, lecturers many times need to make direct or indirect subjective normative statements (Meighan and Harber 2007). In line with the premise that business schools and economics departments are completely aligned with neoliberal capitalist ideas, such as individualism, profit maximization, and self-interest (Fotaki and Prasad 2015; Stigler 1959), students might receive a strong message affecting their value judgment on political issues, including the shaping of their sociopolitical attitudes (Campbell and Horowitz 2016). Also, continuous interaction with fellow students in the same field over the years of the studies potentially further enhances the effect of business studies on political attitudes.

Additionally, in the political science debate and in actual politics, neoliberal capitalism is mostly identified with conservative political practice (at least since the writings of

Milton Friedman and the Reagan and Thatcher administrations). Although the political science literature offers many definitions of conservatism (e.g., Alford et al. 2005), in the nexus between economics and politics, which is of main interest here due to the nature of studies, a conservative bears a remarkable resemblance to an advocate of capitalism (Stigler 1959; Jackstadt et al. 1985). Thus, according to these theories, business and economics students are more likely to be exposed to, and perhaps eventually adopt, more-conservative political ideologies.

We briefly review two strands of the literature. The first empirically examines the potential effect of general university education in any field on individuals' sociopolitical attitudes (Campbell and Horowitz 2016; references therein). The findings of this literature are conflicting, with some studies suggesting that university education enhances liberal ideas (e.g., Kingston et al. 2003) and others suggesting that political attitudes mostly stem from individuals' backgrounds, such as family sociopolitical class and ideology, religiosity, and so on (e.g., Schnittker and Behrman 2012). The second strand of the literature relates more closely to our study because (1) it theoretically examines the avenues through which economic or business studies might affect Political Ideology and (2) empirically examines whether economics education affects individuals' Political Ideology. Most studies in this area (e.g., Luker and Proctor 1981) suggest that even a single economics course increases individuals' political conservatism. The samples and empirical methodologies are rather dated, however, yielding questions about whether the identified effects can be interpreted as causal. Concerning the effect of business studies more generally on Political Ideology, we are unaware of any empirical studies, even though the theoretical arguments, especially concerning principles of efficiency, profit and value maximization (Fotaki and Prasad 2015; references therein) are essentially the same as those for economic studies.

We test the hypothesis of a causal positive effect of a pursuing a degree in Business/Economics on right-wing Political Ideology using annual survey data from the Longitudinal Internet Studies for the Social Sciences (LISS) for the years 2008 through 2013. The advantages of the LISS panel are that it (1) tracks the same individuals over time and (2) has unique information at the individual level about the main variables required to test our hypothesis. We measure Political Ideology mainly (but not solely) with individuals' self-reported positioning on a left-to-right scale of the political spectrum, and we measure Business/Economics education mainly (but not solely) using the number of years of university education as part of a business or economics degree (majors in business or economics).

We first show that a major in business or economics is highly (and positively) correlated with right-wing Political

Ideology. We then use a fixed effects model to explore a potential causal effect. Specifically, repeated observations on the same individuals across years allow us to use individual fixed effects that fully control for any time-invariant individual characteristics and limit the effect of selection bias. Thus, we can isolate the effect of a major in business/economic studies, as these take place for specific individuals in our sample, from other time-invariant traits of these individuals, such as their family and cultural backgrounds. In this respect, identification is achieved only through those individuals in our panel that pursue business or economics degrees at some point during our sample period (i.e., for the same individual before and after business university education).

We find that the effect of a major in Business/Economics on Political Ideology is statistically and quantitatively insignificant. In fact, the specific time-invariant (cross-sectional) characteristics of individuals explain most of the variation (more than 70%) in Political Ideology between individuals. Thus, in line with a relevant political science literature (e.g., Sears and Funk 1998), we contend that most of the political orientation of individuals is persistent. Our results are robust to the implementation of an instrumental variable (IV) model, where we include the use of internet banking services as instrument.

The paper proceeds as follows. The following section briefly discusses the existing literature and formulates our testable hypothesis. Subsequently, we discuss the data and variables used, as well as our analytical methodology. Next, we present and discuss our empirical results. We conclude by summarizing our findings, discussing the potential impact of our research as well as its limitations, and providing direction for future research.

Brief Literature Review and Testable Hypothesis

University Education and Political Attitudes

The literature exploring the general relationship between any form of education and Political Ideology is interdisciplinary, covering the fields of sociology, economics, and political science. The earliest empirical study we found is that of Newcomb (1943), who used primary data collected from questionnaires. This study became the benchmark for related literature, showing that (1) students become less conservative as they approach their senior year in college and (2) this attitude change is correlated only slightly with their specific course of study.

The reasons behind these potentially changing student attitudes are multifaceted. Social interaction, multiculturalism, a carefree way of life, and the courses of education themselves provide college students with a new synthesis

of viewpoints and new avenues of thinking, which are in general in line with libertarian political attitudes (Bowman 2013). A positive effect of general university education on Political Ideology may also have its sources on the deep bearing of education on social capital and trust (e.g., OECD 2015). Social capital, trust, and solution of social dilemmas might produce sensitivity to left political orientation, especially in regard to economic equality, equal initial opportunities, and preferences for redistribution.

In addition, the literature points out that the average university lecturer has left-libertarian views, which stress both individual freedom and social equality (e.g., Gross and Fosse 2012). When lecturers unavoidably make normative statements, they stimulate cognitive sophistication (Bobo and Licari 1989) and more open-minded ideas. More-recent empirical research (e.g., Dey 1996; Kingston et al. 2003) corroborates these propositions and argues that general university education makes students lean left in issues such as economic equality and income redistribution. Recent studies analyzing the general determinants of Political Ideology as defined through a number of social and economic dimensions but not through political orientation (e.g., Feldman and Johnston 2014) also find a positive correlation between education and Political Ideology.

The evidence on the nexus between college attendance and political attitudes, however, is far from conclusive. Jacob (1957) and Altbach (1967) are among the first critiques of Newcomb, suggesting that the findings are self-driven as a result of either the 1930s' New Deal government programs or the students' family and societal backgrounds. For example, Lipset et al. (1954), Hyman (1959), Campbell et al. (1960), and Weissberg (1974) all suggest that it is their family's ideological orientation, not university education that significantly influences the political development of children and adolescents. More recently, Sieben and de Graaf (2004), Green et al. (2011), and Schnittker and Behrman (2012) provide empirical evidence that no relation exists between educational attainment and political orientation.

Most of the critical stance for a negative empirical nexus between university attendance and conservatism brings forward the issue of omitted-variable bias, the idea that selection (choosing Business/Economics) and other factors besides education are Political Ideology's main determinants (e.g., Campbell and Horowitz 2016). A solution to the omitted-variable bias can be found in recent statistical advances that use instrumental variables for education or semi-natural experiments. Most recently, Campbell and Horowitz (2016) use sibling fixed effects to assess the effect of college on (1) political orientation, (2) support for civil liberties, and (3) beliefs about gender egalitarianism. They show that earning a four-year college degree has a significant effect on individuals' support for civil liberties

and beliefs about gender egalitarianism, but the effect on political orientation is indeed confounded by family background.¹

Business/Economic Education and Political Attitudes

A considerably smaller branch of literature examines the cognitive effects of studying economics on individuals' Political Ideology.² Stigler (1959) was among the first to theoretically assert that a major in economics influences students' beliefs toward political conservatism. Since then, the context of this debate has been linked mostly with neoliberal economic arguments that, in turn, have been largely articulated in actual politics by right-wing political parties. We note here that the theoretical arguments linking business school education to right-wing Political Ideology are very similar to those concerning economic education.

Specifically, Fotaki and Prasad (2015) thoroughly, but strictly theoretically, discuss a positive relation between *business studies* and right-wing Political Ideology in the context of the relation between business school education and rising economic inequality. The main argument in this paper is that the study of management has developed hand in hand with the principles of managerialism and profit maximization (and the underlying notions of rationality, efficiency, and performativity) which is the predominant view of neoclassical economic theory and managerialism (Marens 2010; Adler and Harzing 2009). According to Fotaki and Prasad, this led to a way of thinking postulating that if managers pursue other goals besides firms' profit or value maximization, the outcomes (firm outputs) would be inefficient (Crouch 2006; Emiliani 2004). In addition to suboptimal firm performance, this dynamic would yield a decrease in overall economic welfare (Jensen 2002). On the same line, business education is argued to place less emphasis on the collective production of public goods, business ethics, and corporate social responsibility.

A number of related studies analyze residual relationships that can describe additional channels through which Business/Economics education affects Political Ideology. Frank et al. (1993) show that economists are less likely to cooperate and more likely to promote their self-interest, and this is in part due to their studies. Ghoshal (2005) goes a step further to suggest that by propagating ideologically inspired amoral theories, business schools free the students from any sense of moral responsibility, the end result being

¹ Similar debates and contradicting findings exist in related studies on the effect of education on political participation, with the most recent literature, based on modern statistical methods, raising doubts on whether there is indeed a causal effect (Persson 2015).

² Instead, we are unaware of any empirical studies directly linking business studies to Political Ideology.

purely result-driven behavior of managers. Godos-Díez et al. (2015) and Wang et al. (2011) empirically corroborate these arguments by reporting a negative effect of business education on idealism and economic greed, respectively.

In contrast to the above studies, two important empirical papers facilitate that not only there is limited evidence to suggest that students in business majors are not different than non-business students in their moral philosophies (Neubaum et al. 2009), but in fact economics students are more cooperative than other students (Yezer et al. 1996). Thus, in social attributes that are indirectly related to Political Ideology, like cooperation and social responsibility, the effect of Business/Economics education can be at best described as inconclusive.

Is there any empirical evidence in the literature that studying business or economics *does* alter students' political attitudes? Riddle (1978) examines a cross section of 450 college students before and after taking an introductory economics course and finds that after taking the course, students adopt more-conservative opinions on economic issues. Other empirical studies that use some measure of conservatism as a dependent variable find that an introductory course in microeconomics increases students' conservatism in many different groups, but the effect is more pronounced among students majoring in economics (Luker 1972; Scott and Rothman 1975; Luker and Proctor 1981; Jackstadt et al. 1985). Sosin and McConnell (1979) find that a one-semester course in macroeconomics on the issue of income inequality makes college students' political views more egalitarian.

Although we found no explicit empirical analysis on the effect of business studies (as an umbrella encompassing management, economics, business administration, and accounting) on Political Ideology, the majority of the theoretical literature suggests that business school students become more conservative (right-wing). Also, the majority of the empirical literature suggests that economic studies, even in terms of a single course, have the same result. Based on this analysis, we formulate our testable hypothesis as follows:

H₀ A major in business or economics (i.e., a major in economics, management, business administration, and/or accounting) makes individuals more conservative in terms of Political Ideology.

The opposite of the null hypothesis is that a major in Business/Economics does not exert a strong effect on Political Ideology. The argument against the null could be based on the fact that the early empirical evidence in the literature on economic studies suffers from a number of shortcomings. First, these studies usually consider the effect of single courses taken by students during a single term, which is unlikely to have a strong bearing on Political

Ideology. In contrast, a degree in Business/Economics could change students' Political Ideology through systematic and in-depth study. In this sense, our study is quite different from previous studies, also because we study the effect of business and economics degrees in a unified framework, and within the premise that the relevant theoretical arguments concerning business and economics education converge (e.g., arguments in Fotaki and Prasad 2015 and those in Luker and Proctor 1981).³

Along the same line, Walstad and Soper (1981) point out that many of the attitude measures used in prior studies could be called into question by measurement error. Further, the empirical methods and samples used in this early literature are rather dated and incomplete, with endogeneity (especially through omitted-variable bias) prevailing in the estimations. In other words, it may hold that the effect of an economics course is statistically significant in the previous literature only because it captures the effect of other unobserved characteristics of students studying economics, such as a family's income, wealth, and numerous other individual behavioral characteristics or experiences that cannot be observed in available databases (for a similar discussion, see Campbell and Horowitz 2016). Our aim in this paper is first and foremost to confront these identification problems to test H₀.

Data, Variables, and Methodology

Empirical Specification and Variables

The empirical model we use to test H₀ takes the following form:

$$\text{Political Ideology}_{it} = a_0 + a_1 \text{Business/Economics}_{it} + a_2 X_{it} + u_{it} \quad (1)$$

In this equation, *Political Ideology* measures the self-reported political attitudes (left or right) of an individual *i* at time *t*. *Business/Economics* is a variable characterizing university education in the fields of economics, management, business administration, and/or accounting. *X* is a vector of control variables affecting Political Ideology. Finally, *u* is the stochastic disturbance.

To estimate Eq. (1), we draw data from the LISS panel, which is the core element of the project entitled Measurement and Experimentation in the Social Sciences, undertaken by the CentER research institute at Tilburg University in the Netherlands. It is a survey

³ However, this comes at a cost, as different degrees will produce differential levels of exposure to the principles of rationality, efficiency, performativity, and ultimately profit maximization and managerialism.

panel dataset consisting of 5000 households and 8000 individuals living in the Netherlands (both natives and immigrants). The panel includes repeated observations for the same individuals over time, which is important for our empirical identification strategy. The survey has run since 2008 on an annual basis (biannually for some income- and wealth-related variables) and comprises a true probability sample of households drawn from the population register by Statistics Netherlands. Thus, LISS is a representative panel of individuals living in the Netherlands, constructed using formal statistical methods, and backed by one of the most competent statistical agencies in the world.

We collect annual data from 2008 through 2013 for a rich number of variables pertaining to individuals' demographic, social, economic, and behavioral characteristics. We explicitly define each variable used in our empirical analysis in Table 1 and provide some further discussion in the text below. Table 2 provides basic descriptive statistics for these variables. As in most empirical studies, our panel is unbalanced (i.e., it is missing some observations for some years and specific individuals).

The variable measuring Political Ideology (our study's main dependent variable) reflects individuals'

self-reported placement on a scale from 0 to 10, where 0 is far left and 10 is far right. The mean value in our sample is 5.24, with 623 individuals answering 0 and 822 answering 10. The variable has a lightly right-skewed distribution resulting from a relatively high concentration in the value 7 (Fig. 1). The main reason for relying on the self-reported placement on the left–right political spectrum, and not on other measures of Political Ideology (Feldman and Johnston 2014), is that our theoretical considerations and hypothesis precisely motivate an analysis specific to whether individuals more right-wing political ideologies.

However, in alternative specifications, we use a variable reflecting individuals' economic and social preferences regarding whether income differences in society should increase or decrease. We name this variable *Inequality preferences*, and it takes values from 1 to 5, where 1 means that differences in income must increase and 5 means that differences in income must decrease. The distribution of *Inequality preferences* is somewhat right-skewed and as expected has a strong negative correlation with Political Ideology (equal to 0.30 and statistically significant at the 1% level). Using *Inequality preferences* provides a more direct test of some of Fotaki and Prasad's (2015) arguments and

Table 1 Variable definitions

Variables	Definition
Political Ideology	Distinction of respondents in politics between “left” (liberal) and “right” (conservative) by their own statement, by placing themselves on a scale from 0 to 10, where 0 means left and 10 means right
Inequality preferences	Answer of respondents to the question: Where would you place yourself on a scale from 1 to 5, where 1 means that differences in income should increase and 5 means that these should decrease?
Business/Economics	The variable equals the number of completed years of university education in the fields of management, economics, business administration, or accountancy
Business/Economics dummies 1 and 2	Business/Economics dummy 1 takes the value one if an individual has obtained a university degree in the fields of management, economics, business administration, or accountancy (zero otherwise). Business/Economics dummy 2 takes the value one if an individual has at least one year of study in the fields of management, economics, business administration, or accountancy (zero otherwise)
University education	Dummy variable equal to one during the years of university education and zero otherwise
Income	Variable indicating the approximate taxable income of the respondents and takes a value equal to 1 if income is less than €2500, 2 if income is between €2500 and €5000, 3 if income is between €5000 and €10,000, 4 if income is between €10,000 and €15,000, 5 if income is between €15,000 and €20,000, 6 if income is between €20,000 and €30,000, 7 if income is between €30,000 and €40,000, 8 if income is between €40,000 and €50,000, 9 if income is between €50,000 and €75,000, and 10 if income is €75,000 or more
Assets	The natural logarithm of the sum of the total balance of current accounts, savings accounts, term deposit accounts, savings bonds or savings certificates, the total sum of the guaranteed minimum payout of single-premium or life annuity insurances (or the total savings amount of endowment insurance), total value of investments, real estate, car(s), motorcycle(s), boat(s), caravan(s) owned, money loaned to family, friends or acquaintances, value of antiques, jewelry, collections and so on, or cash money, size of equity according to the fiscal balance on the balance date minus the remaining mortgage debt, the total remaining debt of study grant(s), and total amount of the loans, credits and debts
Age	The age (in years) of the respondent
Married	Dummy variable that takes value one if the respondent is married and zero otherwise
Voted	Dummy variable that takes value one if the respondent voted in the last general election and zero otherwise
Religious	Dummy variable that takes value one if the respondent considers herself/himself a member of a certain religion or church community and zero otherwise

Table 2 Summary statistics

	Observations	Mean	SD	Min	Max
Political Ideology	30,918	5.24	2.16	0	10
Inequality preferences	31,716	3.11	1.07	1	5
Business/Economics	34,834	0.53	0.78	0	5
Business/Economics dummy 1	34,834	0.15	0.36	0	1
Business/Economics dummy 2	34,834	0.21	0.42	0	1
University education	34,834	0.33	0.47	0	1
Income	18,308	5.32	2.60	1	10
Assets	18,460	9.45	1.92	0	19.14
Age	32,406	47.53	17.74	0	97
Married	32,377	0.77	0.46	0	7
Voted	36,249	2.06	0.59	1	3
Religious	36,895	5.94	1.50	1	7

The table reports the number of observations, along with the mean, standard deviation, and minimum and maximum values for the variables used in the empirical analysis. The variables are defined in Table 1

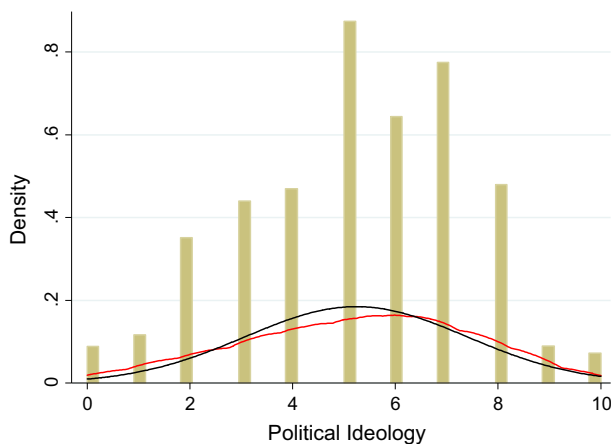


Fig. 1 Distribution of the Political Ideology variable (as defined in Table 1). The bars denote the density of each value's occurrence on the variable's 0–10 scale. The red line represents the variable's distribution, and the black line shows the normal distribution

accounts for the economic and social dimensions of Political Ideology as highlighted by Feldman and Johnston (2014).⁴

Our key explanatory variable, *Business/Economics*, is an ordinal variable that takes a value equal to the number of academic years that an individual has studied in a Business/Economics degree. For example, if an individual did not study in these degrees, *Business/Economics* takes the value of zero. For individuals that have completed a Business/

⁴ Other relevant questions in the LISS panel that can be used to measure the economic and social dimensions of Political Ideology are preferences on (1) whether the government imposes more tax on the higher incomes or that it provides the poor with more abundant provisions, (2) euthanasia, (3) immigrants retaining their own culture, etc. As these preferences are more indirectly related to Political Ideology, especially as regards the effect of business/economic education, we decided to restrict our analysis to *Political Ideology* and *inequality preferences*.

Economics degree before 2008, the variable takes a value equal to the number of years of study. The most interesting part of our sample concerns individuals undertaking Business/Economics degrees *during* our sample period. After a student completes the first year of the relevant degree, *Business/Economics* takes the value of one; after the second year, the value of two, and so on. As we further discuss later, these individuals are important for identification purposes because their values on *Business/Economics* change.

Alternatively, we use two dummy variables, *Business/Economics dummy 1* and *Business/Economics dummy 2*. The first takes the value of one if the individual has completed a university degree in Business/Economics (and zero otherwise). The second takes the value of one if the individual has completed at least one year of university education in a Business/Economics degree (and zero otherwise). From a theoretical perspective, the ordinal variable is preferred because changing Political Ideology most likely occurs during the course of study and less likely during either the year of completion or for one year of study. The dummy variables have their own merit for identification purposes, however.

Of the 27,203 individual-year observations included in our most basic specification of the bivariate regression *Business/Economics on Political Ideology*, there are 4145 observations on individuals with Business/Economics education and 374 individuals who studied in these degrees during our sample period (and thus move from a value of zero to a positive value on *Business/Economics*). Although we do not have the specific details, we can assume with certainty that individuals in our sample attended a variety of universities and business schools, and thus our findings cannot be driven by any one institution's ideological characteristics.

We use control variables that can theoretically have an effect on individuals' Political Ideology. Even though this can yield a large set of controls, at the end we use only the variables that, in

our sample, and baseline results significantly correlate with Political Ideology. In general, the control variables can be categorized into three groups. The first consists of the individuals' demographic characteristics. We use the age of individuals to control for the popular observation that young people lean left and older people lean right (e.g., Pew Research Center 2014). We also include the squared term of age to exploit potential nonlinear effects. Further, we use dummy variables for individuals' marital status.⁵ Importantly, we use the variable *University education* (a dummy variable equal to one during the individual's university years and zero otherwise) to control for the effect of the individual having university education in any field and thus avoid attributing the effects of university life on individuals in general to a major in business or economics in particular.

The second group of control variables includes individuals' psychological and cultural characteristics. Although many researchers claim that sociopolitical attitudes are especially influenced by family environment, school settings, and peer groups during the earlier life stages (e.g., Lipset et al. 1954; Campbell and Horowitz 2016), individuals might continue to experience psychosocial and role changes at different life stages, further influencing their political orientation (Kinder and Sears 1985; Steckenrider and Cutler 1989). For example, changes in social-cultural conservatism indicators have been associated not only with college experiences (Altemeyer 1996; Peterson and Lane 2001) but also, later in life, with parenthood (Altemeyer 1988, 1996) and influences from religious groups and peers (Lupfer and Rosenberg 1983). To this end, we experiment with a number of variables describing the relevant characteristics of individuals, such as total life satisfaction, satisfaction for their financial situation, the level of self-reported trust of other individuals, years of schooling, general interest in political matters, and religiosity. We find in preliminary regressions that the latter two variables play a significant role in explaining Political Ideology, and we thus include them in our analysis.

Third, we control for economic variables. Two important factors that potentially determine Political Ideology are individuals' levels of income and wealth (Coughlin and Lockhart 1998). In our dataset, individuals' actual annual income has many missing observations, so we resort to a variable indicating respondents' approximate taxable income. This is an ordinal variable that includes 10 cohorts, with cohort 1 being €2500 to €5000 and cohort 10 income of €75,000 or more. To measure wealth, we construct a variable called *Assets*, which is the natural logarithm of the sum of the respondent's wealth (see Table 1 for a detailed definition).⁶

⁵ Other individual-specific characteristics like gender, origin, etc., drop out when using individual fixed effects.

⁶ Because we use the log of this variable, we exclude individuals with debt or zero reported wealth. This exclusion decreases the number of observations but does not significantly change our main findings on the coefficient of *Business/Economics*.

University education in the Netherlands, especially in the curriculum of business and economics degrees, is similar to other developed countries like the UK and the USA. Also, as in the English-speaking world, Dutch universities are truly internationalized both in terms of curriculum in Business/Economics and in student origin. In terms of confidence of the general public in the educational system, based on data from the World Values Survey, the Netherlands achieve a score of 2.15 on a 1–4 scale (1 being full confidence and 4 no confidence), which is quite comparable to other developed countries (where data are available), such as the USA (2.32), Australia (2.01), Germany (1.96), Spain (2.11). One difference in the Netherlands is the expansion of liberal-arts-related programs to a considerable extent compared to other developed countries (van der Wende 2010), which could yield a more left political thinking of students and mainly concerns the potential effect of general university education on Political Ideology.

Analytical Methodology

As highlighted in the literature review and hypothesis section, the main obstacle to identifying a causal effect of *Business/Economics* on *Political Ideology* is the omitted-variable bias. Such bias emerges if unobserved traits of individuals are correlated with both pursuing a degree in business or economics and Political Ideology and thus are erroneously captured by *Business/Economics* in Eq. (1). The LISS panel is, to our knowledge, the only source of individual survey data that provides the opportunity to sufficiently reduce (if not completely eliminate) the omitted-variable bias. This is because the LISS panel tracks the same individuals over time (longitudinal data) and collects information on the key variables on an annual basis.^{7,8}

Unobserved in Eq. (1) are individual-specific traits that people carry with them for a long time. For example, the related literature highlights the unobserved family

⁷ Other similar sources of individual survey data (e.g., the European Union Statistics on Income and Living Conditions, the Panel Study of Income Dynamics, the British Household Panel Survey, and the German Socioeconomic Panel) either do not track the same individuals over time or (mostly being the case) do not include information on the specific field of university education.

⁸ In alternative specifications, we include the lagged Political Ideology variable in Eq. (1) to capture persistence in Political Ideology and also potentially mean-reverting dynamics (i.e., the tendency of the Political Ideology score to return to some equilibrium value for the same individual). In doing this, we can exclude the possibility that a change in Political Ideology causes a contemporaneous change in the decision to study business. We estimate these specifications with the generalized method of moments for dynamic panels (see Baltagi 2013). Our results resemble those reported in the empirical analysis section, and to avoid analytical complexity, we report only the results from the simpler OLS estimation method (without a dynamic setting) with and without individual fixed effects.

backgrounds as an important source of omitted-variable bias (e.g., Campbell and Horowitz 2016; Markus et al. 2001). The longitudinal nature of LISS allows using individual fixed effects to solve this problem.

The fixed effects model eliminates the individual-specific characteristics by demeaning the variables using the within transformation (see, e.g., Wooldridge 2012). Thus, under the fixed effects model, identification of Eq. (1) is achieved only through those individuals for whom there is a *change* in the value of *Business/Economics*. Such a change occurs for 374 individuals in our sample. For all other individuals in our sample, *Business/Economics*, either zero or stable across the time dimension of our panel, is eliminated from the within transformation.

Omitted variables can still affect the coefficient estimates if there are some other time-specific variations in the individuals' characteristics that are systematically correlated with both *Business/Economics* and *Political Ideology* (i.e., variations systematically occurring at the same time as a change in the value of *Business/Economics*). As we show in our discussion of the empirical results, the fixed effects model yields a statistically insignificant coefficient estimate on *Business/Economics*. Thus, we are interested only in whether time-variant (during individuals' university years) unobserved variables can downward bias our estimates on *Business/Economics*.

To back up our reasoning that such a downward bias is highly unlikely, consider the following bias correlation matrix:

Correlation between omitted variable and Business/Economics		
	Positive	Negative
Correlation between omitted variable and Political Ideology		
Positive	Upward bias	Downward bias
Negative	Downward bias	Upward bias

For an omitted variable to downward bias the estimate on *Business/Economics*, this variable must have either a negative correlation with *Business/Economics* and a positive correlation with *Political Ideology*, or a positive correlation with *Business/Economics* and a negative correlation with *Political Ideology*. In addition, this omitted variable must be time-varying during the years that *Business/Economics* changes values (because the fixed effects model controls for time-invariant factors). From a theoretical viewpoint, the only elements that could satisfy all of these conditions are individuals' characteristics that change during students' university years. Including *University education* among the explanatory

variables of *Political Ideology* should capture these effects, however, purifying the effect of *Business/Economics* from these forces.

A related endogeneity problem can arise due to selection: Students with certain characteristics decide to pursue *Business/Economics* degrees and those characteristics also drive *Political Ideology* (Frank et al. 1993). In our identification framework, this selection problem does not necessarily affect the results, precisely due to the inclusion of individual fixed effects. In this respect, we consider situations where *Political Ideology changes during* the individual's studies by comparing business students to other students during the course of the degree. Of course, before entering the university, there are reasons to choose a specific degree and these reasons can correlate with political orientation. These predetermined reasons are part of personality traits and up to the initiation of studies are captured (at least partially) by the fixed effects. Thus, the predetermined reasons (including selection) to enter a specific degree will unlikely yield a *change* in political orientation *during or by the end* of the individual's studies.⁹ Still, to ensure that our strategy is robust to selection bias, we also consider an IV (two-stage least squares) model in which we include the use of internet banking services in the year prior to the initiation of studies as instrument. We provide more details for this approach below.

Empirical Results

Table 3 reports the first empirical results for the effect of *Business/Economics* on *Political Ideology*. In the first three columns, the estimation method is pooled OLS, and we only include year dummies to control for time-specific effects common to all individuals (e.g., general perceptions about the 2007–2009 economic crisis that could affect individuals' *Political Ideology*). In column 1, we use *Business/Economics*, *University education*, and the demographic characteristics of the individuals as explanatory variables; in column 2, we add the variables related to the respondents' political interest and religiosity; and in column 3, we add the variables reflecting the individuals' economic condition (*Income* and *Assets*).

In these three columns, the coefficients on *Business/Economics* are positive and statistically significant at the 1% level. These effects are also quantitatively important: According to results of column 2,¹⁰ one extra year of

⁹ Note that based on our bias correlation matrix and our theoretical considerations, selection of pursuing a major in business or economics should be positively correlated with both *Business/Economics* and *Political Ideology*. Thus, if anything, the bias should be upward.

¹⁰ We use column 2 for inference because it covers the middle ground in terms of observations' availability between column 1 and column 3.

university education in a business or economics degree makes individuals more conservative by 0.508 on the 0–10 scale. For the average individual in our sample (who takes a value 5.24 on *Political Ideology*), this implies approximately a 9.7% increase (i.e., become more right-leaning) in *Political Ideology* per annum of *Business/Economics*. This is a substantial effect and quite consistent with our hypothesis.

With regard to the control variables, the results are in line with our expectations. We observe that having a university degree in general makes individuals more left-wing, a result in line with Newcomb (1943) and more-recent scholars. Regarding the age of individuals, we find that (based on column 3) individuals tend to lean left until the age of 34¹¹ and lean right from this age onward. The effect of *Married* is positive and significant, indicating that men are 0.22 points more right-leaning than women. This finding is intuitive, because life experiences and role transitions tend to make individuals more conservative (Cornelis et al. 2008). The simple OLS regressions also show that individuals who voted in the last general election are more left-leaning and those considering themselves a member of a religion are more right-leaning in their *Political Ideology*. Finally, *Income* and *Assets* are positively and significantly correlated with *Political Ideology*, which implies that when income and wealth increase, people become more politically conservative (Napier and Jost 2008; Jost et al. 2009).

In columns 3–6 of Table 3, we replicate the analysis of the first three columns using the fixed effects model. We observe that *Business/Economics*, along with other control variables, completely loses its statistical significance. Because the adjusted R squared is also significantly higher, we may conclude that *Business/Economics* was capturing in the simple OLS regressions of columns 1–3 other unobserved time-invariant traits of individuals that are now controlled for by the individual fixed effects. Thus, based on our earlier discussion of the analytical methodology, we conclude that the results of columns 1–3 reflect spurious correlations and that there is no evidence that *Business/Economics* has a causal effect on individuals' *Political Ideology*.¹²

A few control variables continue to significantly affect *Political Ideology*, albeit with a much lower quantitative effect. *University education* bears a negative and significant coefficient at the 5% level in column 4 and at the 10% level in columns 5 and 6, whereas the effect of age is

¹¹ We calculate this finding by taking the first derivative of the regression and solving with respect to age—for example, $0.062 / (2 \times 0.001)$.

¹² Note that the number of observations is lower as we move from the first three columns to columns (4)–(6), owing to observations that uniquely identify individuals dropping out from the sample.

significant only marginally. As in the first three columns, individuals associated with a religious group and wealthier individuals are more right-leaning in their *Political Ideology*, but again the economic significance of the estimates is much lower compared to the findings in the first three columns of Table 3.

From a policy perspective, our results are quite novel, given that they are the first to predict an insignificant effect of a major in *Business/Economics* on individuals' *Political Ideology*. Phrased differently, we do not identify causality running from a business or economics degree to more-conservative political thinking. In contrast, the specific time-invariant characteristics of individuals explain most of the variation in individuals' *Political Ideology*. These time-invariant fixed effects must be related to the individuals' backgrounds (family, cultural, psychological, physiological, institutional, and so on). According to the difference of the adjusted R squared between the pooled OLS model and the fixed effects model, these individual fixed effects explain more than 70% of the variation in *Political Ideology* between individuals. Thus, about 30% of the variation in *Political Ideology* is year specific, and we find no evidence that this variation is affected by pursuing a degree in *Business/Economics*.

In Table 4, we use the two dummy variables, instead of the ordinal variable, to measure *Business/Economics*. These variables have the advantage (compared with the ordinal variable) of being even more restrictive in terms of statistical identification, because it is even more unlikely that other important changes in individuals' characteristics occur simultaneously (in the same year) with the change in the values on the dummy variables from zero to one. The dummy variables have the disadvantage, however, of being unable to capture as accurately any possible transition in *Political Ideology* during the years of study. In columns 1 and 3, we use *Business/Economics dummy 1*, and in columns 2 and 4 we use *Business/Economics dummy 2*. In all specifications, we use the control variables of columns 2 and 5 of Table 3; using the full set of controls yields very similar results. With both dummies, the results are equivalent to those of Table 3: The models without individual fixed effects (columns 1 and 2) yield statistically and quantitatively significant coefficients on the *Business/Economics* dummies, whereas the models with individual fixed effects (columns 3 and 4) yield statistically and quantitatively insignificant coefficients.

In Table 5, we repeat the exercise of Table 3 with *Inequality preferences* as the dependent variable. Again, this analysis yields almost identical results to Table 3, implying that *Business/Economics* does not have a systematic effect on individuals' preferences for economic egalitarianism. Interestingly, the results in Table 5 show that obtaining university education lowers individuals'

Table 3 Business/Economics and Political Ideology: baseline results

	(1)	(2)	(3)	(4)	(5)	(6)
Business/Economics	0.492*** [11.397]	0.508*** [11.661]	0.501*** [8.221]	-0.021 [-0.326]	-0.023 [-0.344]	-0.051 [-0.502]
University education	-0.463*** [-13.852]	-0.487*** [-14.278]	-0.520*** [-10.410]	-0.195** [-2.129]	-0.161* [-1.899]	-0.154* [-1.840]
Age	-0.063*** [-11.775]	-0.068*** [-11.556]	-0.112*** [-11.076]	0.015* [1.768]	0.016* [1.812]	0.017* [1.817]
Age squared	0.001*** [10.440]	0.001*** [9.643]	0.001*** [9.917]	-0.000* [-1.754]	-0.000* [-1.663]	-0.000 [-0.873]
Married	-0.355*** [-7.975]	-0.218*** [-4.767]	-0.288*** [-4.363]	-0.076 [-0.878]	-0.054 [-0.606]	0.041 [0.279]
Voted		-0.229*** [-5.580]	0.075 [1.211]		-0.091** [-2.180]	-0.004 [-0.069]
Religious		0.663*** [19.779]	0.762*** [16.250]		0.134** [2.390]	0.143** [2.486]
Income			0.069*** [6.614]			0.016** [2.367]
Assets			0.089*** [5.906]			0.023** [2.480]
Observations	17,911	17,160	8759	16,083	15,352	7574
Year fixed effects	Y	Y	Y	Y	Y	Y
Individual fixed effects	N	N	N	Y	Y	Y
Adjusted R squared	0.029	0.055	0.077	0.777	0.779	0.798

The table reports coefficient estimates and *t* statistics in brackets. The dependent variable is *Political Ideology*. All variables are defined in Table 1. The lower part of the table denotes the number of observations, whether the estimated equations include year and/or individual fixed effects, and the adjusted *R* squared

***, **, and * Statistical significance at the 1, 5, and 10% levels, respectively

Table 4 Business/Economics and Political Ideology: using dummy variables to measure Business/Economics

	(1) Pooled OLS	(2) Pooled OLS	(3) Fixed effects	(4) Fixed effects
Business/Economics dummy 1	0.525*** [8.150]		0.028 [0.352]	
Business/Economics dummy 2		0.302*** [3.940]		0.025 [0.184]
Observations	17,160	8759	15,352	7574
Year fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	No	No	Yes	Yes
Adjusted R squared	0.068	0.065	0.782	0.779

The table reports coefficient estimates and *t* statistics in brackets. The dependent variable is *Political Ideology*. All regression equations include the control variables of columns (3) and (6) of Table 3, and the results of which are not reported for expositional brevity. All variables are defined in Table 1. The lower part of the table denotes the number of observations, whether the estimated equations include year and/or individual fixed effects, and the adjusted *R* squared

***, **, and * Statistical significance at the 1, 5, and 10% levels, respectively

egalitarian preferences by approximately 0.17 points on the 1–5 scale of *Inequality preferences*. Thus, even though obtaining a university degree makes individuals more

liberal in their Political Ideology, when it comes to the implementation of economic egalitarianism, the average individual becomes more conservative. Further analysis is

Table 5 Business/Economics and inequality preferences

	(1)	(2)	(3)	(4)
Business/Economics	-0.230*** [-11.538]	-0.188*** [-7.098]	-0.041 [-0.902]	-0.036 [-0.544]
University education	-0.200*** [-13.126]	-0.145*** [-6.794]	-0.149 [-1.478]	-0.168* [-1.667]
Observations	19,355	9348	17,521	8149
Year fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	No	No	Yes	Yes
Adjusted R squared	0.037	0.056	0.496	0.532

The table reports coefficient estimates and *t* statistics in brackets. The dependent variable is *Inequality preferences*. All regression equations include the control variables of columns (3) and (6) of Table 3, and the results of which are not reported for expositional brevity. All variables are defined in Table 1. The lower part of the table denotes the number of observations, whether the estimated equations include year and/or individual fixed effects, and the adjusted *R* squared

***, **, and * Statistical significance at the 1, 5, and 10% levels, respectively

of course needed to back up this latter finding and its theoretical sources, and we leave this as a desideratum for future research.

In Table 6, we use an IV model to examine the sensitivity of our results to selection bias (degree selection), as discussed in the previous section. We construct our instrumental variable from the answer to the question on the usage of internet banking in the year just before commencing university education. Intuitively, the users of internet banking services are more likely to pursue a major in business or economics (or other technology-related disciplines). The first stage results (lower part of Table 6) show that this is indeed the case: *Internet banking* is strongly correlated with *Business/Economics* in the first stage of the two-stage model, both when the model does not include individual fixed effects (columns 1 and 2) and when it does (column 3 and 4). In placebo tests, we examine whether *Internet banking* has a direct effect on *Political Ideology* by including this variable in the models presented in Table 3. We find that the effect of *Internet banking* is particularly weak (coefficient is 0.048 and *t*-statistic 0.64).

The results of the second stage of the model (reported in the upper part of Table 6) are reassuring that degree selection does not play an important role in our sample. Specifically, even when we exclude individual fixed effects from the estimation in the first two columns, the results on *Business/Economics* are statistically insignificant and of course remain insignificant when we add these fixed effects. Thus, as it should if properly specified, the IV model takes away the significance of the results even in the absence of additional control variables (such as the individual fixed effects in our case). This procedure also eases concerns on the possibility that our insignificant results when including individual fixed effects are driven by low

power (the fact that only 374 individuals drive our results in the fixed effects model).

In additional robustness tests, we: (1) include variables reflecting happiness, trust, family relations, nationality and ethno-linguistic characteristics, area of residence (rural versus urban), employment status, information on dwelling; (2) use an ordered logit model with fixed effects (the so-called Blow-Up and Cluster estimator by Baetschmann et al. 2015; as implemented by Dickerson et al. 2011) to capture the fact that *Political Ideology* takes discrete values; (3) add the squared term of *Business/Economics* to examine any potential nonlinear effects.¹³ The results from the first set of tests (not reported but available on request) are qualitatively very similar, even though the number of observations decreases. The results from the ordered logit estimation with and without fixed effects almost ideally replicate those in Tables 3 and 4 (as evidenced by both simple observation and a formal Hausman test). The results from the third test do not show any nonlinearity.

Concluding Remarks and Discussion

Our study empirically analyzes the potential causal effect of pursuing a major in business (including management, business administration, and accounting) or economic university education on individuals' Political Ideology. One strand of the theoretical literature argues that business schools and economics departments are the cornerstone of neoclassical economic thinking, mostly teaching students

¹³ The nonlinear effects could originate in the fact that business students initially adopt conservative views (as they learn conservative principles), but subsequently move away from these views as they realize the importance of other (left-wing) views.

Table 6 Business/Economics and Political Ideology: IV results

	(1)	(2)	(3)	(4)
Business/Economics	0.655 [1.388]	0.595 [1.050]	-0.641 [-0.259]	0.561 [0.665]
University education	-0.488*** [-14.278]	-0.422*** [-7.051]	-0.199 [-1.136]	-0.292* [-1.938]
Age	-0.068*** [-11.537]	-0.122*** [-9.013]	0.010 [1.426]	0.012 [0.800]
Age squared	0.001*** [9.564]	0.001*** [8.593]	-0.000* [-1.680]	-0.000 [-0.912]
Married	-0.227*** [-5.510]	0.153** [2.014]	-0.088** [-2.036]	-0.005 [-0.070]
Voted	0.664*** [19.655]	0.792*** [14.417]	0.033 [0.668]	0.030 [0.357]
Religious		0.000 [0.962]		0.111** [2.145]
Income		0.113*** [5.299]		0.018*** [2.715]
Assets		0.103*** [4.860]		0.034*** [2.806]
<i>First stage results</i>				
Obtain job	0.071 [11.771]	0.097 [9.472]	0.008 [2.630]	0.010 [2.441]
Observations	17,160	7574	15,352	6399
Year fixed effects	Y	Y	Y	Y
Individual fixed effects	N	N	Y	Y
Adjusted R squared	0.054	0.081	0.777	0.741

The table reports coefficient estimates and *t* statistics in brackets. The dependent variable is *Political Ideology*. All variables are defined in Table 1. The lower part of the table denotes the number of observations, whether the estimated equations include year and/or individual fixed effects, and the adjusted *R* squared

***, **, * Statistical significance at the 1, 5, and 10% levels, respectively

about profit- and value-maximization concepts (even if not in a mathematical framework) and associated argumentation. This practice, in turn, should influence students toward increased conservatism (right-wing Political Ideology). A dated empirical literature studies the potential effect of economics (not business) education on individuals' political attitudes, with most of these studies concurring that even a single economics course influences Political Ideology toward increased conservatism.

We use a sample with longitudinal survey data for Dutch individuals to test the hypothesis that business or economics education makes individuals' Political Ideology more conservative. Our initial evidence indeed suggests a strong positive correlation between pursuing a major in Business/Economics and right-wing ideology. When our empirical model includes individual fixed effects, however, effectively implying that identification is achieved only through the individuals that study in business or economic degrees during our sample period and thus controlling for

all time-invariant individual traits, this positive correlation vanishes. The same results prevail when we use individuals' egalitarian preferences as our outcome variable, alternative variables to measure Political Ideology and Business/Economics, and an IV method. Thus, we find no evidence that a major in business or economics causally affects individuals' Political Ideology.

Our approach would not be a panacea if we identified a strong positive effect of pursuing a major in Business/Economics on right-wing Political Ideology. The reason is that during the years of study, other time-varying forces might *complement* university education (e.g., association with other conservative Business/Economics students and stronger effects of degree selection), and it could well be that these forces shape Political Ideology and not the education material *per se*.

Our analysis and findings have the limitation of being specific to Dutch residents. Despite these individuals apparently having widely different backgrounds and

studying in a variety of universities, it could still be possible that the institutional environment in the Netherlands lowers the effect of pursuing a degree in Business/Economics on Political Ideology. It would be interesting to check if our results apply to non-Dutch residents if relevant data become available. Further, our analysis does not distinguish, due to informational limitations, between economics, management, business administration, and accounting students. This can be a limitation because the curriculum of these programs is different as regards to the level of connection with the principles of rationality, efficiency, performativity, and ultimately profit maximization and managerialism. This would be another fruitful extension of our study, if more disaggregate data become available.

Further, our analysis considers the effect for the average individual and the average university. It does not examine potential nonlinear effects resulting from specific characteristics of individuals or universities. Admittedly, these potential nonlinear effects can still be important for society because they can form influential lines of thinking. It would be interesting to consider an analysis based on individuals' future employment, especially if they become, for instance, senior managers in large corporations. Finally, our analysis provides no inference regarding the effects of business and economics schools' other activities on general Political Ideology, especially concerning the schools' networks with governmental organizations or large corporations. Our analysis already covers significant ground, and thus, we leave these ideas for future research.

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