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FINANCIAL LITERACY AND PREFERENCES FOR ECONOMIC OPENNESS IN THE U.K.

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Financial literacy and preferences for economic openness in the U.K.

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Abstract

Recent events in Europe and the United States suggest that the liberal order is increasingly under stress as nationalist, protectionist, and populist political entrepreneurs are gaining significant ground across the Western world. Many theories have been formulated as to which factors are more likely to explain such policy preferences. The hypothesis tested in this paper is that financial literacy affects economic policy preferences. I analyze data from the British Election Study and test my theory on three contentious issues: Brexit, immigration, and trade. Findings suggest that financial literacy does affect economic policy preferences. Financially literate individuals, regardless of economic self-interest, are more likely to vote remain in the Brexit referendum, and to think that free trade and immigration are good for the British economy.

1 Introduction

Western liberal democracies and open economies are under stress. Nationalist parties have achieved significant power in several European countries. The United Kingdom is leaving the European

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Union. Donald Trump is president of the United States. This illiberal shift ultimately reflects preferences held by individuals, many of them economic.

Why, despite overall benefits to national economies, some people still oppose free trade and immigration? Why did some Brits vote in favor of Brexit, despite the negative consequences this entails for the British economy?[1]. Several theories have been formulated about which factors are more likely to explain such policy preferences. Various scholars have investigated what shapes people's attitudes towards trade (Burgoon and Hiscox, 2008; Hainmueller and Hiscox, 2006; Mansfield and Mutz, 2009; O'Rourke and Sinnott, 2001; Scheve and Slaughter, 2001a; Walstad, 1997), immigration (Daniels and Von der Ruhr, 2003; O'Rourke and Sinnott, 2006; Scheve and Slaughter, 2001a), or Brexit (Colantone and Stanig, 2018; Goodwin and Heath, 2016; Inglehart and Norris, 2016). Despite nuances, these theories agree that preferences for economic openness are largely driven either by self-interest considerations or by cultural concerns.

I depart from extant theories in important ways. I hypothesize that financial literacy affects individual economic policy preferences. Apart from a few exceptions (Mansfield and Mutz, 2009; Walstad, 1997), none of these studies have investigated the effects of financial literacy on economic policy preferences. None has articulated a theory with strong microfoundations or formalized their intuitions, let alone tested them in a rigorous manner.

In order to clarify the underlying theoretical mechanisms, I introduce a heuristic model that describes how financial literacy impacts policy preferences. Financial literacy affects the accuracy with which an individual evaluates the short-term and long-term expected costs and benefits of a certain policy. When financial literacy increases, voters who are harmed or helped by certain economic policies are expected to weigh the costs and benefits of that policy with more precision and less bias. This allows financially literate individuals to make better predictions about the effects of a specific public policy on their economic well-being. Conversely, financially illiterate individuals are less likely to be accurate at evaluating the costs and benefits of a policy. Instead, they may be more likely to rely on other factors such as culture, political ideology, identity, or cues

[1]On free trade see: http://www.igmchicago.org/surveys/free-trade and Frankel and Romer (1999) and Alcala and Ciccone (2004). On immigration see Leeson and Gochenour (2015), Coppel, Dumont, and Visco (2001), Foged and Peri (2013), Hamilton and Whalley (1984), Ottaviano and Peri (2006), Ottaviano, Peri, and Wright (2010), Peri (2009), and Sequeira, Nunn, and Qian (2017). On Brexit see Emmerson et al. (2016)

from reference groups to make their policy decisions.

In doing so, I draw on a growing literature. Recent studies have analyzed the effects of financial literacy on retirement choices and savings decisions (Lusardi and Mitchell, 2014; Lusardi, 2008), however the literature investigating the relationship between financial literacy and policy and political preferences in still in its early stages (Montagnoli et al., 2016; Fornero and Lo Prete, 2019). Financial literacy may be important not only for household decisions, but also for public decisions, facilitating the introduction of welfare-enhancing reforms (Fornero, 2015). As Stigler (1970, p. 79) wrote in 1970, advocating for economic literacy, 'economic logic does not tell us what to do, but it teaches us to look for the non-obvious costs and benefits of various policies'.

To empirically support the argument, I start with an analysis of the British Election Study (BES) data, the most comprehensive available dataset that has questions on both financial literacy and policy preferences. I test the hypotheses that financial literacy affects policy preferences for three contentious issues: views on trade, Brexit, and immigration. Financially literate winners from globalization (i.e. those with high incomes, with tertiary education, performing non-routine jobs, or living in areas not highly exposed to the Chinese import shock[2]) should be more likely to support economic openness than similarly financially illiterate individuals. Conversely, financially literate losers from globalization (those with low incomes, with secondary education or less, performing routine jobs, or living in areas highly exposed to the Chinese import shock) should be less likely to support economic openness than similar financially illiterate individuals.

The findings suggest that financial literacy does affect preferences for economic openness. However, surprisingly, there is not a differential effect between winners and losers from globalization, as hypothesized. Financially literate individuals, regardless of self-reported economic self-interest, are more likely to favor free trade with the EU, they are more likely to vote remain in the Brexit referendum, and they are also more likely to believe that immigration is good for the British economy, than similar financially illiterate individuals. The findings are unchanged when financial literacy is interacted with an objective measure of globalization, which is measured through the Chinese import shock.

[2]The Chinese import shock is an objective measure of globalization based on to the sudden increase in the Chinese share of total manufacturing imports in the United Kingdom from the end of the 1980s until 2007 Colantone and Stanig (2018).

As a robustness check, I address the concern that financial literacy may have little to do with self-interest and the ability to conduct accurate cost-benefit calculations; rather it may be a proxy for more liberal views in general, both economic and social, including tolerance for out-groups. I investigate this possibility by looking at the relationship between financial literacy and social policy preferences. Once I condition on potential confounders, financial literacy has no relationship with social policy preferences, suggesting that financial literacy is not a proxy for tolerance for out-groups and progressivism.

My theory and findings carry important implications. As recent events in the developed world have illustrated to researchers, voters' economic policy preferences matter. They affect trade flows, immigration policy, and whether to leave or remain in the European Union. The current backlash against globalization and European integration could lead to major welfare losses for the overall population. The results suggest that financial and economic education may have the potential to increase support for welfare-enhancing reforms and to aid detecting welfare-reducing ones.

The remainder of the paper is organized as follows. Section 2 reviews prior approaches in the literature, section 3 lays out the theoretical argument, section 4 presents the data and models, section 5 contains the findings, section 5 includes robustness checks, section 6 discusses the results, and section 7 concludes.

2 Prior approaches

2.1 Preferences for economic openness

Several scholars have investigated what shapes people's preferences for economic openness. With respect to free trade and immigration, economists agree that the free movement of labor and goods is beneficial at the aggregate level[3]. However, there are distributional consequences: although the

[3]See for example http://www.igmchicago.org/surveys/free-trade on free trade, and Coppel, Dumont, and Visco (2001), Foged and Peri (2013), Hamilton and Whalley (1984), Ottaviano and Peri (2006), Ottaviano, Peri, and Wright (2010), Peri (2009), and Sequeira, Nunn, and Qian (2017) on immigration. The findings suggest that increased immigration leads to net gains in GDP, small but temporary negative impacts on the wages of low-skilled natives, more specifically on those without a high school diploma, it has no direct impact on unemployment in the host country, and it actually increases total factor productivity

majority of people in a country benefits from free trade and immigration, some individuals do suffer economic harm (Acemoglu, Autor, et al., 2016; Fajgelbaum and Khandelwal, 2016; Feyrer, 2009; Irwin, 2015). One key question then regards what shapes people's attitudes towards trade and immigration. Most studies on support for trade have focused on testing models predicting that trade preferences are shaped by self-interest and hence they examine how trade affects individuals' incomes, mostly using the Heckscher-Ohlin and the Ricardo-Viner models (Scheve and Slaughter, 2001b). Recently, several scholars have argued and found support for the claim that fragmented production has changed the competitive pressures from trade, which now happen at the level of individual jobs, rather than at the sectoral or firm levels (Acemoglu and Autor, 2011; Owen and Johnston, 2017; Ebenstein et al., 2014; Matias Cortes, 2016). The routine content of tasks may be key in determining differences across occupations (Acemoglu and Autor, 2011). Routine tasks are characteristic of middle-skilled cognitive and manual jobs, and because the main job tasks of these occupations rely on precise, repetitive procedures, they can be automated or outsourced easily. Indeed, findings suggest that greater task routineness leads workers to be more supportive of protectionist measures (Acemoglu and Autor, 2011; Owen and Johnston, 2017; Ebenstein et al., 2014; Matias Cortes, 2016). Other studies show that preferences for free trade are not driven by pocketbook evaluations, but rather by sociotropic perceptions and cultural concerns. Mansfield and Mutz (2009) find that educational effects almost disappear once individuals' anxieties about involvement with out-groups in their countries and abroad are accounted for (Mansfield and Mutz, 2009). Mansfield and Mutz (2009) also find that people form their trade preferences following sociotropic perceptions, not self-interest (Mansfield and Mutz, 2009). It is thus more likely that people's attitudes towards trade are influenced by how much they think it affected their country as a whole rather than how much it affected them. All of these models start from the assumption that all individuals know what their self-interest is and how the policy in question will affect it.

Multiple works have also examined the determinants of immigration policy preferences, testing two main explanations: self-interest (or egotropic economic explanations such as labor market competition or fiscal threat) and psychological mechanisms (which emphasize immigration's cultural impacts). Hainmueller and Hopkins (2012) review about a hundred studies of immigration attitudes from more than two dozen countries. The authors suggest that studies on immigration policy preferences consistently find that these attitudes are not strongly correlated with personal economic

circumstances (self-interest), instead they are shaped by sociotropic (or symbolic) concerns about its cultural effects on the country as a whole (Hainmueller and Hopkins, 2012).

With respect to Brexit, the Institute for Fiscal Studies (IFS) estimated that the United Kingdom could lose 4 percent of its GDP by 2030 if it loses access to the European Union single market (Emmerson et al., 2016). Although there is a consensus among most economists around central estimates of the costs of Brexit, there is also uncertainty, as these range from a cost of a few percentage points up to 10 percent of GDP (Miles, 2016). Furthermore, a poll commissioned by the Observer and carried out by IPSOS Mori also found that among 600 economists, 88 percent agreed that Brexit would damage the UK's growth prospects over the next five years (Sodha, Helm, and Inman, 2016). Similarly to preferences for free trade and immigration, most works on preferences for EU membership have tested whether economic insecurity, more specifically between the winners and losers of globalization, or cultural cleavages, reflected in opposition towards immigrants, best explain preferences for Brexit and EU membership in general, with mixed evidence (Colantone and Stanig, 2018; Goodwin and Heath, 2016; Halikiopoulou and Vlandas, 2018; Inglehart and Norris, 2016).

2.2 The state of the art on financial literacy

In a landscape where the complexity of financial and economic decisions is increasing, the level of financial literacy held by individuals and their ability to make sound financial and economic decisions has also become more important. Financial literacy is defined by the OECD as 'a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being'. Financial literacy has been consistently measured by questions on basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basic risk of diversification (Lusardi, 2008). These questions aim to measure a person's understanding of how to balance a budget, how compound interest works, how inflation affects one's income. Financial literacy has been determined to be a key factor in affecting savings, employment, and retirement choices. However, individuals increasingly have to make decisions not just on their personal finances but often also on public ones. Many countries have asked citizens to vote on economic reforms (be they

Brexit, or pension reforms, etc.) (Lusardi, 2015). One area where research has considerably grown is that on the relationship between financial literacy and household decisions. Several studies find that financial literacy affects the ability of individuals to save and to secure a comfortable retirement (Lusardi, 2008; Lusardi and Mitchell, 2014). In a political context, a recent study by Montagnoli et al. (2016) finds that there is a link between financial literacy and political orientation in Great Britain: financially literate individuals are between 11 and 19 percent more likely to orientate at the center-left or center-right of the political spectrum rather than at the extremes. They also find that financially literate individuals are more likely to have a stable political orientation over time. The authors interpret these findings as suggesting that greater financial literacy leads to greater stability of moderate political views and orientation. Finally, Fornero and Lo Prete (2019) investigate how financial literacy affects voting in the aftermath of a pension reform and they find that pension reforms take less of a toll on the politicians that passed them in countries with higher financial literacy scores. The complex nature of pension reforms requires some basic financial knowledge, such as notions of accumulation, compound interest, debt, and risk diversification. Furthermore and importantly, the authors also find that financial and economic knowledge has distinctive features that more general dimensions of education, including math literacy and years of schooling, do not capture (Fornero and Lo Prete, 2019).

3 Theoretical argument

3.1 Heuristic Model

I use a heuristic model to illustrate the theory[4]. The model assumes that individuals are guided by self-interest. Financial literacy is expected to have an impact on an individual's accuracy at calculating the effects of a specific policy on their expected utility. For simplicity, I consider two types of individuals: financially literate and financially illiterate. Each individual has their own priors over the utility that an economic policy will bring. If the utility can take any value between zero and one, I assume that for each individual all possible values are equally likely a priori, as they have no prior information and cannot distinguish between them.

[4]See Online Appendix A for details on how the model was derived.

Each individual then observes a signal, which contains information about the utility of the policy in question. The utility inferred from the signal may vary across different individuals: its content depends on the true, but hidden, utility of the policy, and on the individual's accuracy in interpreting it.

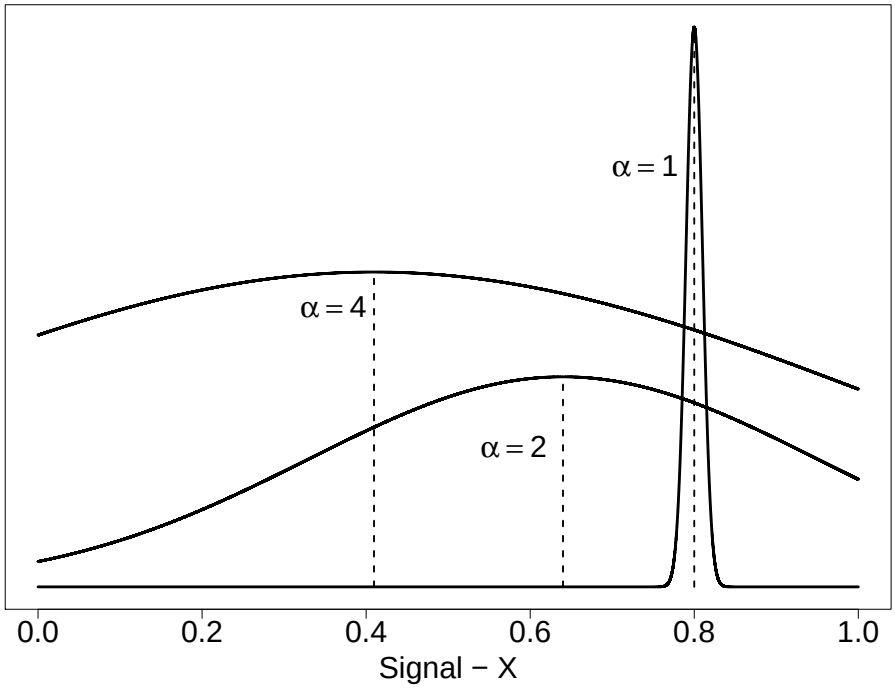


Figure 1: Truncated normal distributions of signal X when inaccuracy α=1, 2, 4 and true utility u=0.8. In this example, the true utility of the policy is set to u=0.8. For a financially literate individual (α = 1), the utility inferred from the signal equals 0.8, and variance is set to 0.0001. For a financially illiterate person, when α = 2, their inferred utility from the signal is about 0.6 and the variance increases with α. Finally, when α = 4 the signal wrongly indicates that u is equal to 0.4, with larger uncertainty.

I expect the signal to be more informative for financially literate people, as they can conduct more accurate cost-benefit analyses. Conversely, it will be less informative for financially illiterate people, who are less likely to be accurate at estimating the effects of a policy on their individual economic well-being and who may be more likely to rely on other decision making factors such as core personal values (for example culture, political ideology, identity, etc.), or cues from reference groups, and on less correct cost-benefit analyses to make their decisions.

As the individual's inaccuracy at evaluating the policy in question increases, the distance

between the perceived utility and the true one increases, and so does the uncertainty about it. Inaccuracy will be low for financially literate individuals as their ability to do more sophisticated cost-benefit analyses will give them a more precise and unbiased estimate of the expected utility of the policy, hence the verdict from the signal will most likely be very close to the true utility of the policy (see Figure 1 for an example). Conversely, for financially illiterate individuals inaccuracy will be larger and they will be more uncertain about the expected utility of the policy. As a result of this, the more inaccurate the person is, the further the signal is likely to be from the true utility of the policy, and the more uncertainty around it.

The reasons why financially illiterate individuals will have different levels of inaccuracy could be several and they are not the topic of investigation here: besides not conducting correct cost-benefit analyses, they may be getting biased but inexpensive cues from certain interested reference groups (such as politicians, employers' associations, or labor unions), or they may rely on ideology or other core personal values to make their decisions and these may not necessarily be reflecting their objective individual economic interest.

After observing the signal, each individual updates their prior. As inaccuracy decreases, the updated belief about the expected utility of the policy is more likely to be closer to the true utility of the policy. Conversely, as inaccuracy increases, the distance between the expected utility and the true utility of the policy increases.

3.2 Individual preferences for Brexit, immigration, and free trade

The heuristic model suggests that when financial literacy increases, voters who are harmed or helped by certain economic policies are expected to weigh the costs and benefits of that policy with more precision and less bias and as a result, they are more likely to accurately estimate what effect that policy is going to have on their expected utility. However, although there may be near consensus on the aggregate effects of a certain policy, there may be disagreement, even among experts, on its distributional impacts. This is the case for all the three policies under investigation here, as discussed in depth in the sections on trade, immigration, and Brexit preferences. There is near consensus among experts that free trade and the free movement of labor lead to efficiency gains, however, they both come with distributional consequences, as at least in the short run, a minority

loses while the majority wins, hence explaining why we still see preferences for protectionism.

Hence, although I expect that on average financially literate individuals will be more likely to favor economic openness, I also expect the presence of heterogeneous effects across winners and losers. Following the sectoral, factoral, and more recently individual task-level models, the winners from globalization are people who own abundant factors of production, working in export-oriented sectors, and performing non-routine tasks. Conversely, the losers are people who own scarce factors of production, working in import-competing sectors, and performing routine tasks. A financially literate winner from economic openness is expected to be more likely to favor the policy that gives her the highest expected utility than a financially illiterate individual, as the distance between her expected utility and the true utility of the policy is smaller for her than for similar financially illiterate individuals. Hence, the financially literate winner from globalization is more likely to favor the policy with the highest true utility, i.e. economic openness, than the financially illiterate. Conversely, financially literate losers from globalization are expected to be more likely to support protectionist measures than similar financially illiterate individuals. From these follow my hypotheses:

- H1: On average, financially literate individuals are more likely to vote Remain in the Brexit referendum, to think that immigration is good for the British economy, and to think that free trade with the EU is good for the British economy, than financially illiterate individuals;
- H2: Financially literate winners from economic openness are more likely to vote Remain in the Brexit referendum, to think that immigration is good for the British economy, and to think that free trade with the EU is good for the British economy, than financially illiterate winners;
- H3: Financially literate losers from economic openness are more likely to vote Leave in the Brexit referendum, to think that immigration is bad for the British economy, and to think that free trade with the EU is bad for the British economy, than financially illiterate losers.

4 Methodology

4.1 Data

The British Election Study (Fieldhouse et al., 2018) contains data on financial literacy in the United Kingdom and allows me to test the hypotheses. The BES internet panel data includes over 25,000 individuals and is conducted twice a year. However, the financial literacy questions were asked in Wave 2 (2014) to a sub-sample of 5,555 British respondents and in Wave 4 (2015) to a different sub-sample of 5,399 Scottish respondents only. I use the BES Wave 2 for the core of my empirical analysis [5]. The BES follows some of the individuals in the next waves, this allows me to use Wave 7 (2016) too, as some of the dependent variables are only available in later waves. However, not all respondents are followed through in subsequent waves. Depending on the dependent variable of interest, the total number of observations ranges between 3,000 to 5,555[6].

My first dependent variable comes from wave 2 and is: 'If there was a referendum on Britain's membership of the European Union, how do you think you would vote?'. My second dependent variable come from wave 2 and is: 'Do you think immigration is good or bad for Britain's economy?'[7]. My third dependent variable comes from wave 7 and is: 'Is this good or bad for Britain: Free trade with Europe'[8]. Table 1 shows descriptive statistics for the dependent variables.

My covariate of interest is financial literacy and it is measured by the number of correct answers to three questions, which are reflecting knowledge about interest compounding, inflation, interest rates, and risk diversification (Lusardi, 2008; Lusardi and Mitchell, 2014; Montagnoli et al., 2016). Table 2 shows descriptive statistics for my covariates of interest. The first question is: 'Suppose

[5] I analyzed the BES Wave 4 as an additional test and findings are similar, results are available upon request.

[6] I used multiple imputation with the R package Amelia in order to deal with missing observations.

[7] It's an ordinal variable that takes values from 1(bad) to 7 (good), and 'don't know'. I recoded it so to take values from 1 to 3 and 'don't know'.

[8] The question on the British referendum clearly measures a personal preference on the matter. However, due to data availability, the questions on free trade and immigration ask the respondent what she thinks is best for Britain. It is possible that these people may actually have a different personal preference on the issue. Mansfield and Mutz (2009) use five survey questions to generate their dependent variable on support for free trade, ranging from questions which ask about personal preferences on various facets of international economic relations to questions that ask the respondent what she thinks is best for her country, and they find that although those items do not address the same issues, people's preferences are very consistent.

you have £100 in a savings account with an interest rate of 2% per year. If you never withdrew any money from this account, how much do you think there would be after 5 years?' The answers are: 1) More than £102, 2) Exactly £102, 3) Less than £102, 4) Don't know, and 5) Prefer not to say. The second question is: 'Suppose inflation is 2% per year and you have put money into a savings account with an interest rate of 1% per year. Assuming that you buy the same things today and in one year's time, do you think you would be able to buy more with the money in this account in one year than today, less in one year than today, or do you think you would be able to buy exactly the same things in one year as today?' The answers are: 1) More than today, 2) Exactly the same as today, 3) Less than today, 4) Don't know, and 5) Prefer not to say. The third question asks: 'Which one of the following do you think is the riskier asset to invest in?' The answers are: 1) An individual share in a company, 2) A portfolio of different company shares, 3) The risk is the same in both cases, 4) Don't know, and 5) Prefer not to say. The variable of interest combines these three questions and measures the number of correct answers to the questions: 0) 0 correct answers, 1) 1 correct answer, 2) 2 correct answers, and 3) 3 correct answers.

In order to investigate the effect of subjective and objective economic self-interest, following the most recent research on the determinants of individual trade preferences, I include measures of the respondent's skill level and occupational task that they perform and interact them with financial literacy. Owners of relatively abundant factors of production benefit from trade, and in the case of the U.K., the abundant factors are highly skilled labor and capital. Due to do data availability, I use household annual income as a proxy of capital endowment and level of education to measure skill endowment (Hays, Ehrlich, and Peinhardt, 2005; Mansfield and Mutz, 2009). In order to distinguish occupational tasks based on the risk of displacement, I rely on the recent literature's distinction between routine and non-routine tasks (Acemoglu and Autor, 2011; Matias Cortes, 2016; Halikiopoulou and Vlandas, 2018). *Education* is a dummy variable indicating the respondent's qualification, low education includes anyone who has a secondary education or less and high education anyone who has a university degree (undergraduate or postgraduate)[9]. The variable *routine* is derived from a variable that reports NS-SEC analytic classes, operational categories, and sub-categories. Following the recent literature (Acemoglu and Autor, 2011; Matias

[9]I use two education groups as it is the conventional division in labor economics, however, the results' significance does not change by using three groups (no qualifications, secondary education, and tertiary education)

Cortes, 2016; Halikiopoulou and Vlandas, 2018), I classify occupations into two groups based on whether the occupation is intensive in routine tasks, which are more likely to be traded and replaced by technology, or not.[10] *Income* is an ordinal variable that indicates in which bracket the household's respondent gross income is. I have recoded this variable so that it takes three values based on whether the respondent's income is below the 25th percentile, between the 25th and 75th percentile, and above the 75th percentile. Furthermore, I also exploit region-level measures of globalization (Colantone and Stanig, 2018). Colantone and Stanig (2018) identify losers from globalization as individuals concentrated in regions that have been historically specialized in manufacturing activities that have been overtaken by China. Areas more exposed to Chinese competition have witnessed a fall in employment not just in the affected industries, but more in general across industries, as local labor markets have not adjusted fast enough (Colantone and Stanig, 2018; Autor, Dorn, and Hanson, 2013). Hence, I use their measure of the Chinese import shock to determine winners and losers from globalization at the regional level[11].

In order to avoid confounding bias, I control for income, education, age, gender, and whether the respondent lives in an area highly exposed to the Chinese import shock or not[12].

Table 3 shows descriptive statistics for interaction terms and control variables, from one of the

[10]As a result of the fact that we do not have detailed occupational data, there might be a significant amount of heterogeneity in each occupation group.

[11]More precisely, I identify winners as those living in areas with import shock equal to mean - 1 standard deviation, and losers as those living in areas with import shock equal to mean + 1 standard deviation. Moreover, the analysis is performed at the NUTS-3 level of regional disaggregation. The NUTS-3 measure for each individual was matched based on the available measure of local authority unit in the BES. In the dataset there are in total 167 NUTS-3 British regions, the most disaggregated level. For more information on the import shock measure see Colantone and Stanig (2018).

[12]If the goal is to prevent confounding bias, it is often argued that we should control for any variable that is correlated with both our dependent and our independent variable, but this is not necessarily true. In fact, we do not want to control for a collider, which is a variable with two arrows pointing into it, otherwise we would find a relationship between two variables when there is not one. We do instead want to control for confounders, which represent common causes to our treatment and outcome variables (Elwert, 2013; Pearl and Mackenzie, 2018). Political ideology and cultural conservatism, although affecting the outcome variable, do not affect financial literacy and hence should not be controlled for. This is also tested with the R package *daggity*, which tests conditional independence parametrically. The findings from this test suggest that political ideology and cultural conservatism are independent of financial literacy once we condition on age, gender, income, education, and living in high import shock area.

imputed datasets (N = 5,555).

Table 1: Descriptive statistics of the dependent variables for the imputed dataset (N = 5,555)

	Relative frequency, %
Vote intention on Brexit	
Stay in the EU	43.9
Leave the EU	38.5
I would not vote	3.7
Don't know	13.9
Immigration good or bad for economy	
Bad	39.3
Neither good nor bad	16.9
Good	36
Don't know	7.8
Free trade with Europe is	
Good for Britain	58
Neither good nor bad for Britain	22
Bad for Britain	8.5
Don't know	11.5

Table 2: Descriptive statistics of the covariate of interest for the imputed dataset (N = 5,555)

Financial literacy index				
# Correct answers	3	2	1	0
%	47.2	28.5	15.3	9.0
Financial literacy questions				
	% Correct	% Incorrect	% Don't know	% Refuse to answer
Interest rate	84.2	7.4	6.0	2.4
Inflation	74.7	9.9	12.5	2.9
Risk diversification	55.0	24.1	18.9	2.0

4.2 Models

To test my hypotheses, I use multinomial logit models. Let Y_i be the unordered categorical dependent variable for individual i which takes an integer values $j = 1, ..., J$. I model respondent i's policy preference using multinomial logistic regression:

$$Y_i \sim Multinomial(Y_i \mid \pi_{i,j}) \tag{1}$$

Table 3: Descriptive statistics of the controls for the imputed dataset (N = 5,555)

	Rel. frequency, %	
Education		
Low education	55.6	
High education	44.4	
Income		
Low income	30	
Middle income	43.8	
High income	26.2	
Occupation W2 (W7)		
Non-routine	73.4 (71.7)	
Routine	26.6 (28.3)	
Male	50.8	
	Mean	Sd
Age	52.6	15.1
Import shock	0.32	0.13

where $\pi_{i,j} = Pr(Y_i = j)$ for $j = 1, ..., J$.

$$\pi_{i,j} = \frac{exp(\mu_{i,j})}{\sum_{k=1}^{J} exp(\mu_{i,j})} \tag{2}$$

$$\mu_{i,j} = \beta_{j0} + \sum_{k=1}^{P} \beta_{j,k} x_{i,k}, \tag{3}$$

where x is a vector of k explanatory variables for observation i and β is a vector of coefficients for category j. Category J is assumed to be the baseline category. I estimate all models using this specification, with different outcome variables, interaction terms, and controls. The outcome variables for the main models are Brexit, immigration, and free trade. The main covariate of interest is financial literacy when testing H1, while it is interacted with education, income, routine occupation, and the Chinese import shock respectively to test H2 and H3.

Individual respondents are clustered by region. However, the number of clusters is very small. There are only 11 regions: North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East, South West, Wales and Scotland. When the number of clusters is small, cluster-robust standard errors (CRSEs) can produce misleading inferences, where confidence intervals are too narrow and false positive rates too common, even though the model is consistent and there are several observations in each cluster (Angrist and

Pischke, 2009; Esarey and Menger, 2016; Green and Vavreck, 2008). As a result, in all models I apply pairs clustered bootstrapped t-statistics (PCBSTs) with CRSE replicates[13].

5 Findings

5.1 Financial literacy and preferences for economic openness

I first estimate Equation 1 for the three different dependent variables and test H1, specifically whether on average financially literate individuals are more likely to vote Remain in the Brexit referendum, to think that immigration is good for the British economy, and to think that free trade with the EU is good for the British economy, than similar financially illiterate individuals.

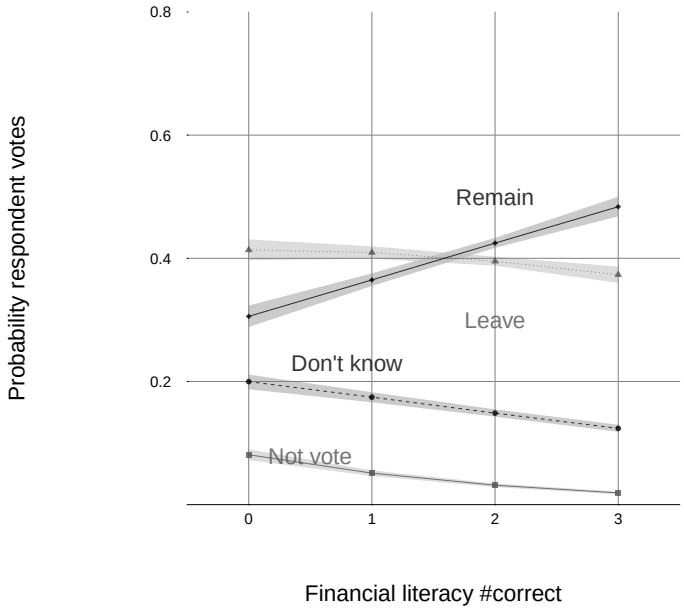


Figure 2: Expected probabilities of voting Remain or Leave in Brexit referendum with 95% confidence intervals

[13]I used the R package *clusterSEs* to estimate cluster-robust p-values and confidence intervals using PCBSTs for multinomial logit models and I used the CRSE replicates to plot all the figures. The R package documentation suggests that I drop the fixed effects for regions because they are absorbed into cluster-level coefficients

Figures 2 to 4 show the expected probabilities of voting for or against Brexit, favoring or not favoring immigration and free trade with the EU, with 95 percent confidence intervals[14].

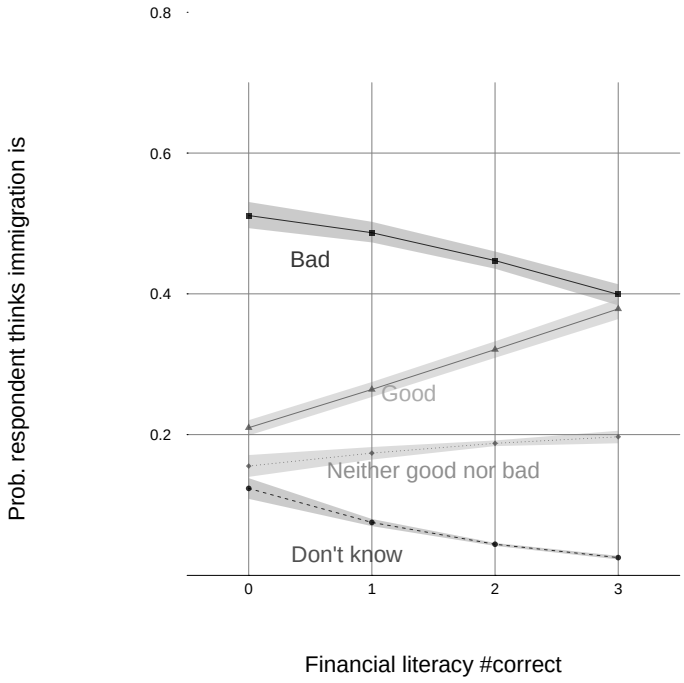


Figure 3: Expected probabilities of thinking immigration is good for the British economy with 95% confidence intervals

As figures 2 to 4 show, as financial literacy increases so does the probability that the respondent votes Remain in the Brexit referendum, that she thinks that immigration is good for the British economy, and that she thinks that free trade with the EU is good for the British economy. To understand the substantive significance of these findings, it is helpful to compare a financially literate individual (someone who got all three questions correct) to a financially illiterate individual (who got no correct answers). A financially literate individual is respectively 18 percent, 17 percent, and 32 percent more likely than a financially illiterate individual to vote Remain in the Brexit referendum, to think that immigration is good for the British economy, and to think that free trade is good for the British economy.

[14]Online appendix B shows log-odds with standard errors in parentheses, and cluster bootstrapped p-values.

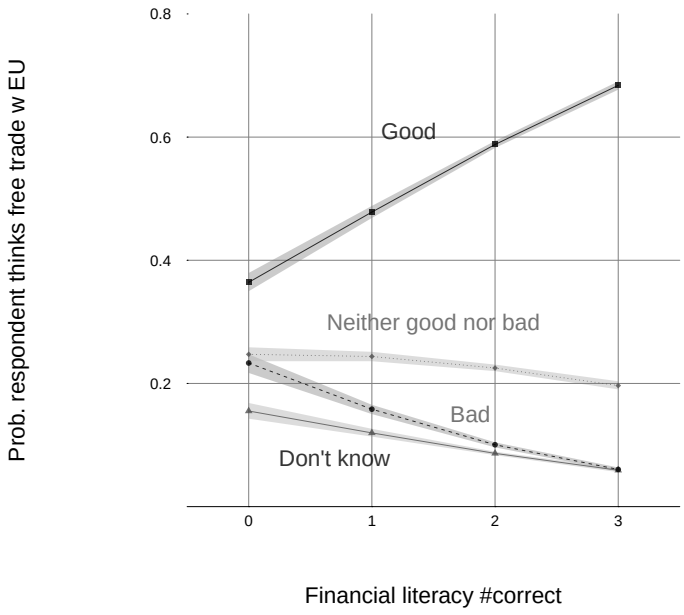


Figure 4: Expected probabilities of thinking free trade is good for the British economy with 95% confidence intervals

5.1.1 Heterogeneous Effects

I then estimate Equation 1 for the three different dependent variables and test H2 and H3, specifically whether: 1) financially literate winners from economic openness are more likely to vote Remain in the Brexit referendum, to think that immigration is good for the British economy, and to think that free trade with the EU is good for the British economy than similar financially illiterate individuals; and 2) financially literate losers from economic openness are more likely to vote Leave in the Brexit referendum, to think that immigration is bad for the British economy, and to think that free trade with the EU is bad for the British economy than similar financially illiterate individuals.

Figures 5 to 7 show the first differences of voting for or against Brexit, favoring or not favoring immigration and free trade with the EU, based on financial literacy and education, routine occupation, income, and the Chinese import shock, with 95 percent confidence intervals[15].

What emerges is that financially literate individuals, regardless of self-reported and objective

[15]Online appendix B shows log-odds with standard errors in parentheses, and cluster bootstrapped p-values.

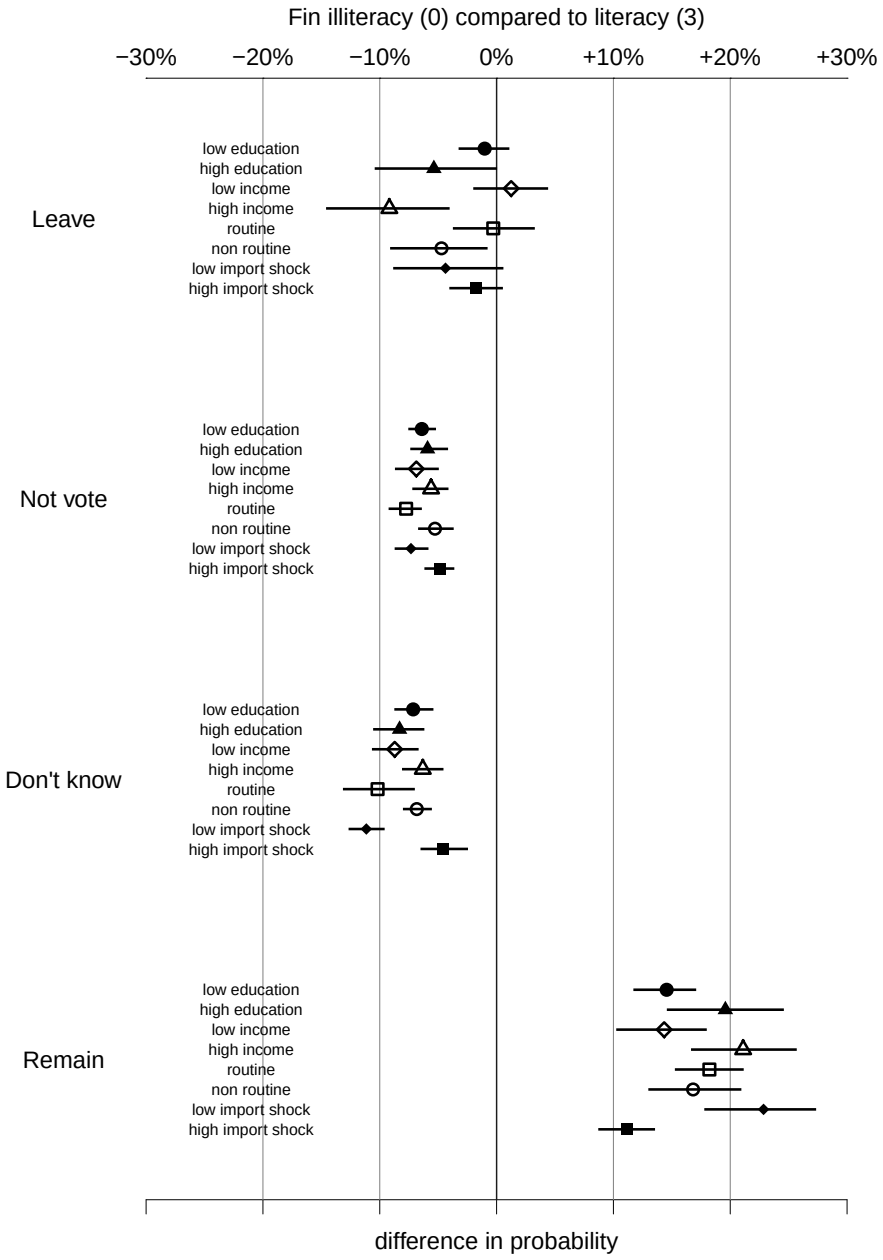


Figure 5: First differences in probability of voting Remain or Leave in Brexit referendum with 95% confidence intervals between financially illiterate individuals (0 correct answers) and financially literate individuals (3 correct answers), by education, income, job routineness, and import shock

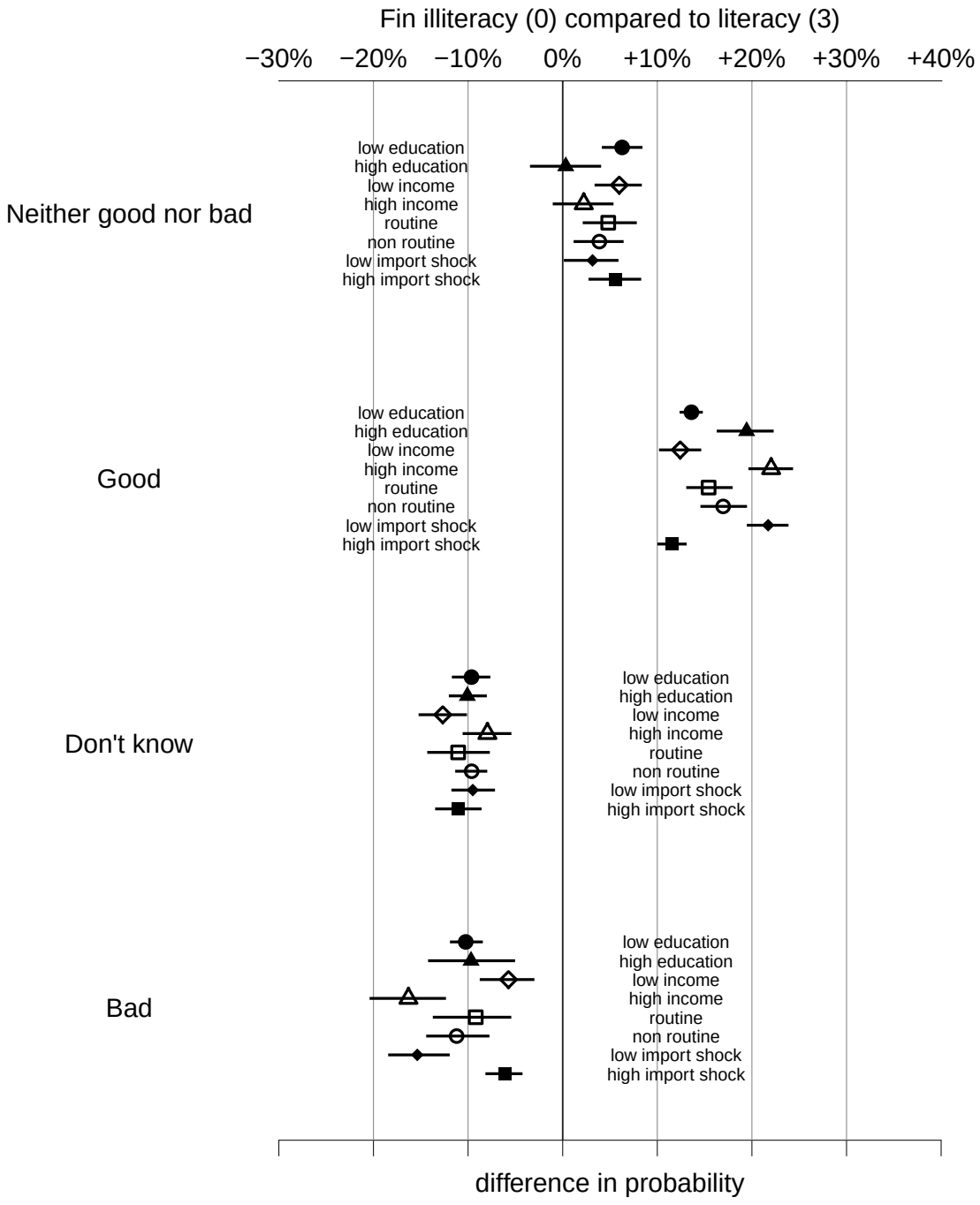


Figure 6: First differences in probability of thinking immigration is good for the British economy with 95% confidence intervals between financially illiterate individuals (0 correct answers) and financially literate individuals (3 correct answers), by education, income, job routineness, and import shock

economic self-interest, are more likely to support immigration, free trade, and remaining in the EU than financially illiterate individuals. To understand the substantive importance of these findings, looking at figures 5 to 7, we can see that an individual with high education who answered all three financial literacy questions correctly is 20 percent more likely to vote Remain in the Brexit referendum than a similar individual who answered no questions correctly. Conversely, financially literate individuals with low education are not more likely to vote Leave than similar illiterate individuals, they are actually 15 percent more likely to vote Remain than their illiterate counterpart.

In a similar way, a financially literate individual with high education is 19 percent more likely to think that immigration is good for the British economy and 30 percent more likely to think that free trade with the EU is good for the British economy than a similar financially illiterate individual. On the contrary, financially literate individuals with low education are not more likely to be opposed to immigration and free trade, they are actually respectively 14 and 32 percent more likely to support economic openness than their illiterate counterpart.

These results are similar in size and direction for all of the interacted variables (i.e., income, education, job routineness, and import shock) suggesting that financially literate winners from globalization are significantly more likely to support economic openness than their illiterate counterparts. However, financially literate losers from globalization are not more likely to oppose economic openness than their illiterate counterparts, they are actually more likely to favor it.

6 Robustness checks

6.1 Financial literacy and social policy preferences

An issue with this empirical approach is endogeneity. In the absence of a randomized controlled trial (RCT), which randomly assigns financial literacy, we are not able to avoid selection bias, confounds, and omitted variable bias completely. Analyzing existing data on financial literacy and policy preferences does not allow me to rule out all alternative explanations as an experiment would, but, so much as the data available permits me, I attempt to partially address this problem by laying out all of the assumptions I make and controlling for the relevant confounders.

One further possibility is that financial literacy may have little to do with self-interest, but rather

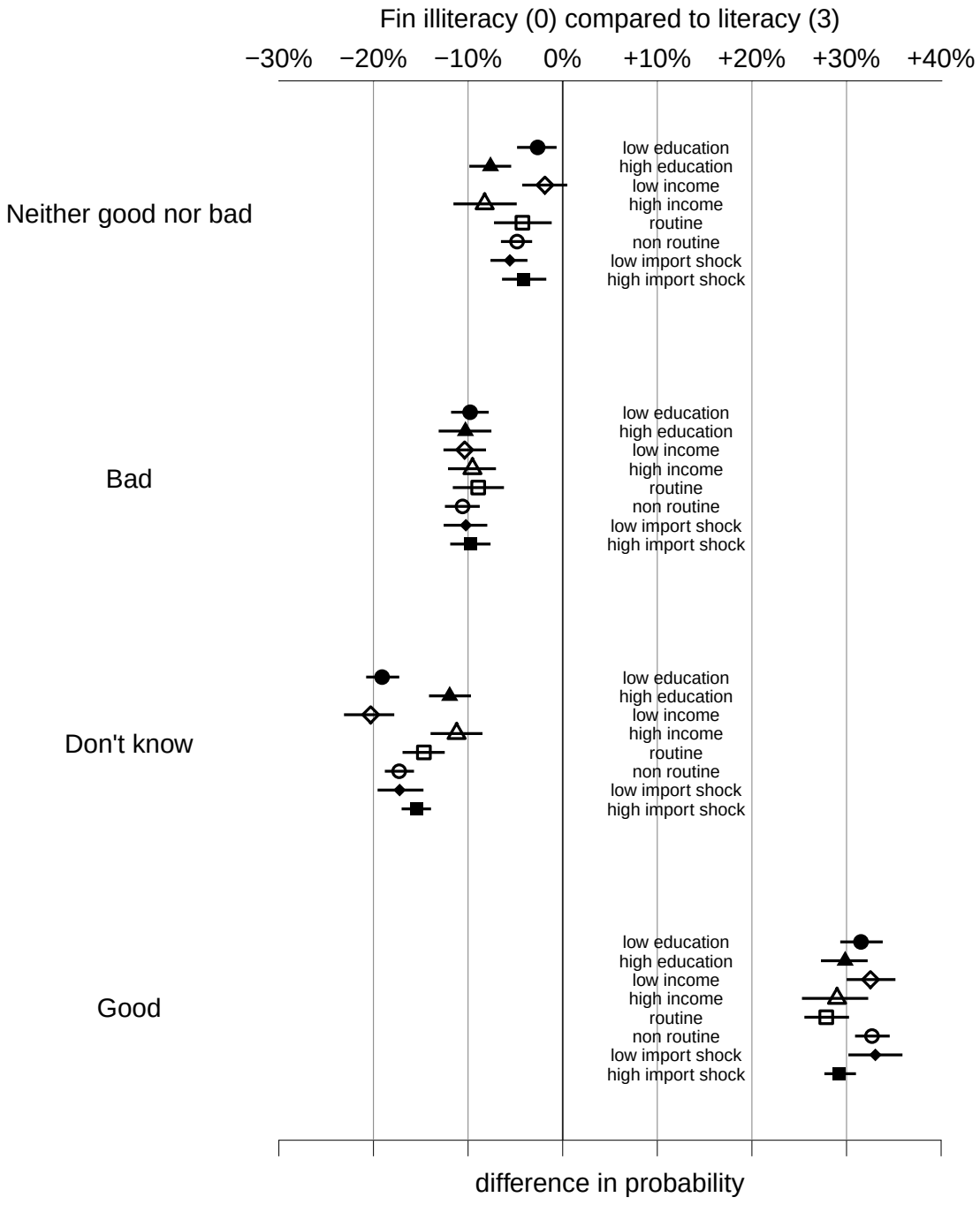


Figure 7: First differences in probability of thinking free trade is good for the British economy with 95% confidence intervals between financially illiterate individuals (0 correct answers) and financially literate individuals (3 correct answers), by education, income, job routineness, and import shock

it may be a proxy for liberal views in general, including tolerance for out-groups, which are not measured in the survey. More educated people may be more financially literate and also more likely to be more progressive and tolerant not only in their economic views but also in their social views. More specifically, I investigate whether financial literacy predicts attitudes towards gay and lesbian civil rights. I expect there to be no direct relationship between financial literacy and social policy preferences, as people are not expected to make decisions on social policies based on costs and benefits calculations. However, both financial literacy and social policy preferences are expected to be affected by the same set of variables: age, gender, education, and income. This means that any relationship that may exist between financial literacy and social policy preferences can be explained by the confounders (i.e. income, education, gender, and age). Hence, financial literacy and social policy preferences may appear related if these confounders were not considered, but if we control for them by holding them constant, then any apparent relationship between financial literacy and social policy preferences should disappear.

Findings suggest that financially literate individuals are 3.2 percent more likely to think that attempts to give equal opportunities to gays and lesbians have been just about right, they are 3.7 percent more likely to think that they have not gone far enough, but they are also 2.3 percent more likely to think that they have gone too far, compared to financially illiterate individuals. Furthermore, financially literate individuals are not any more likely than financially illiterate individuals to think that these attempts have not gone nearly far enough or to think that these attempts have gone way too far, as these effects are not statistically significant at the 95 percent confidence level and hence not distinguishable from zero. This suggests that once we condition on confounders, financial literacy has no relationship with social policy preferences, hence financial literacy is unlikely to be a proxy for liberal and progressive values.

7 Discussion

The finding that financially literate winners from globalization, measured both objectively and subjectively, are more likely to support free trade with the EU, immigration, and remaining in the EU than similar financially illiterate individuals, supports hypothesis 2 and suggests that financially literate winners from more economic openness are more likely to recognize its economic benefits

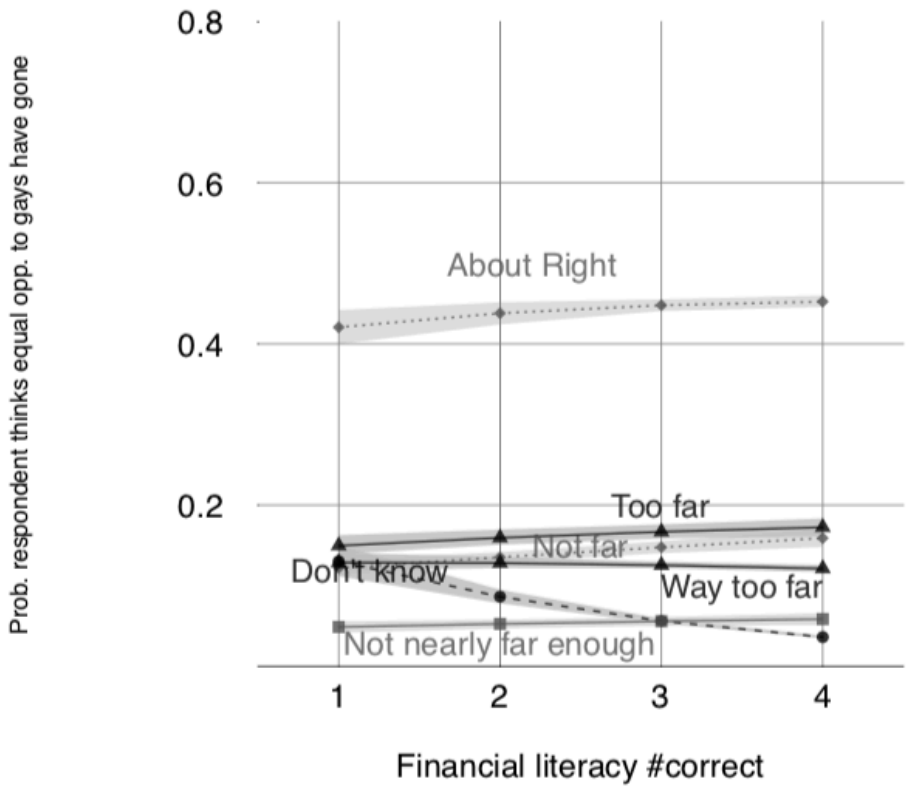


Figure 8: Expected probabilities of thinking attempts to give equal opp. to gays have gone with 95% confidence intervals

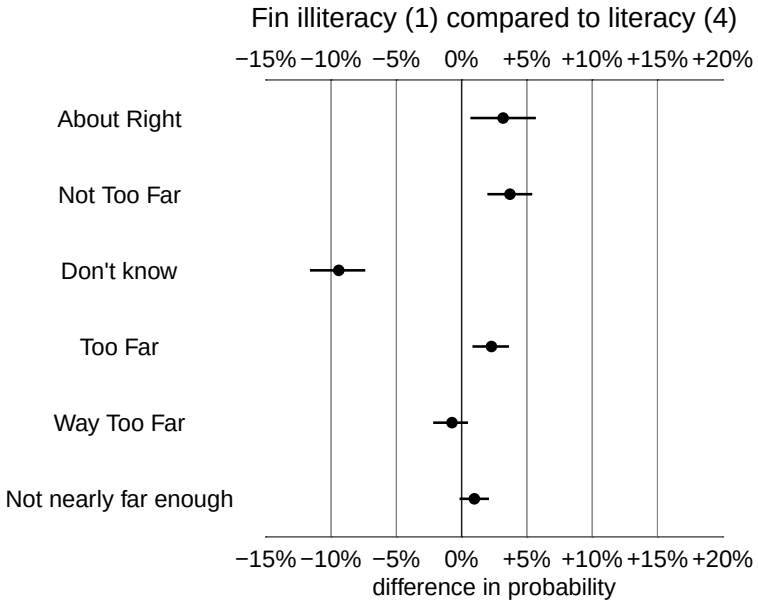


Figure 9: First differences in probability of thinking attempts to give equal opp. to gays have gone with 95% confidence intervals

than their illiterate counterparts. However, the finding that, for the most part, financially literate people who supposedly stand to lose from openness in the short-term are more likely to support free trade with the EU, immigration, and remaining in the EU compared to similar financially illiterate individuals, does not support hypothesis 3 and raises some interesting questions.

Given data availability, we can only speculate as to the mechanisms through which this may be happening. One possibility has to do with discount rates. Some studies find that learning financial concepts like compound interest, the time value of money, and the risk of capitalization affects subjective discount rates by effectively lowering them (Lahav, Rosenboim, and Shavit, 2015). If indeed financially literate people have longer time horizons, it is possible that in the presence of a trade-off between the short run and the long run they may put more weight on the long-term effects. More specifically in this case, economists agree that freer trade and freer movement of labor improve productive efficiency and offer consumers better choices, and in the long run these gains are much larger than any effects on employment[16]. As a result, it is possible that if it is true that financially literate individuals have lower discount rates, then they might be weighting costly short run adjustments less, in the expectation of larger and broader gains in the long run. Alternative explanations are also possible. One is that those we often consider to be losing from globalization actually realize that most manufacturing jobs are lost to technological change, largely to automation, and not to trade or immigration, as one study suggests this has been the case in the U.S. (Hicks and Devaraj, 2015). Another possibility is that financially literate losers from globalization may weigh the benefits that they gain as consumers more, compared to losses in the job market, since Fajgelbaum and Khandelwal (2016) suggest that people at the lower end of the social ladder concentrate spending on more traded sectors. Future research should address these questions more thoroughly, potentially looking at the relationship between financial literacy and discount factors.

[16]On free trade see: http://www.igmchicago.org/surveys/free-trade and Frankel and Romer (1999) and Alcala and Ciccone (2004). On immigration see Leeson and Gochenour (2015), Coppel, Dumont, and Visco (2001), Foged and Peri (2013), Hamilton and Whalley (1984), Ottaviano and Peri (2006), Ottaviano, Peri, and Wright (2010), Peri (2009), and Sequeira, Nunn, and Qian (2017)

8 Conclusion

This paper investigates the relationship between financial literacy and preferences for economic openness in the U.K.. Currently, not many of the existing surveys would allow to empirically test this relationship, as questions on both financial literacy and economic policy preferences are often lacking. The BES, which includes data on political attitudes and behavior in Great Britain, at this time is the most comprehensive dataset in Europe containing questions on the variables of interest. The recent decision to leave the European Union makes the U.K. a case in point to analyze determinants of increasingly nationalist and protectionist policy preferences. As I laid out my model, I argued that any individual is expected to choose the policy that she thinks will give her the highest expected utility. The model suggests that for a financially literate individual the distance between her expected utility and the true utility of the policy is smaller than for similar financially illiterate individuals, since as financial literacy increases, voters are expected to weigh the costs and benefits of that policy with more precision and less bias and as a result, they are more likely to accurately estimate what effect that policy is going to have on their expected utility. In the cases under analysis, I expect that on average financially literate individuals are more likely to be in favor of economic openness. However, due to the distributional consequences of these policies, I also anticipate heterogeneous effects. Financially literate winners from globalization (measured both objectively and subjectively) are expected to be more likely than similar financially illiterate individuals to favor the policy with the highest true utility for them, which is economic openness. Conversely, financially literate losers from globalization are expected to be more likely to oppose economic openness than similar financially illiterate individuals. Findings only partially support my hypotheses. Financially literate winners from economic openness are more likely to favor free trade with the EU, they are more likely to vote remain in the Brexit referendum, and they are also more likely to believe that immigration is good for the British economy than similar financially illiterate individuals. However, financially literate losers from globalization are not more likely to oppose economic openness than their illiterate counterparts, they are actually more likely to favor it. One speculative explanation could be that financial literacy, by drastically reducing preference for the present, may help potential losers from more economic openness abandon their short-term interests in favor of the long-term benefits. Contrary to claims and studies arguing that an individual

who has economic knowledge is more likely to act as a *homo economicus*, and hence more likely to behave in a selfish way and maximize her own well-being only, these findings seem to suggest that, regardless of whether they are actually pursuing their own future self-interest or not, financially literate people are more likely to favor policies that advance the common good - the average welfare of society.

Furthermore, the robustness checks address some omitted variable bias concerns. More specifically, I investigate the possibility that financial literacy may be a proxy for liberal and progressive values. Hence, I test whether financial literacy influences attitudes towards gay and lesbian civil rights. The expectation is that financial literacy has no direct effect on social policy preferences, since people do not decide on social policies based on cost and benefit calculations. If this assumption were wrong, we would find financial literacy to be associated with social policy preferences, after controlling for potential confounders. Findings show that, after conditioning on potential confounders, financial literacy is not associated with social policy preferences, and hence it is unlikely to be a proxy for progressive and more tolerant views.

For future research, if more data on policy preferences and economic and financial literacy were available, this theory could be tested across more countries. In many European countries nationalist and populist parties are crossing significant thresholds at the polls. These parties' political agendas include increasingly protectionist economic policies, and a common denominator has been their tendency to blame globalization and European integration for their country's woes. If future studies suggested that individuals do end up supporting the introduction of more welfare-enhancing economic policies as they are better able to apply economic reasoning and evaluate both the short-term and long-term costs and benefits of reforms, viewing them as social investments, this may suggest that in the long run, providing economic and financial courses from early education, could potentially increase support for welfare-enhancing economic policies.

References

Acemoglu, D. and D. Autor (2011). "Handbook of Labor Economics". In: Elsevier. Chap. Skills, Tasks and Technologies: Implications for employment and earnings.

Acemoglu, D., D. Autor, et al. (2016). "Import competition and the great U.S. employment sag of the 2000s". In: *Journal of Labor Economics* 34.1, pp. 141–194.

Alcala, F. and A. Ciccone (2004). "Trade and Productivity". In: *The Quarterly Journal of Economics* 119.2, pp. 613–646.

Angrist, J.D. and J. Pischke (2009). *Mostly harmless econometrics*. Princeton University Press.

Autor, D., D. Dorn, and G.H. Hanson (2013). "The China Syndrome: Local Labor Market Effects of Import Competition in the United States". In: *American Economic Review* 103.6, pp. 2121–68.

Burgoon, B.A. and M.J. Hiscox (2008). "The gender divide over international trade: Why do men and women have different views about openness to the world economy?" In: *Unpublished paper*.

Colantone, I. and P. Stanig (2018). "Global competition and Brexit". In: *American Political Science Review* 112.2, pp. 201–218.

Coppel, J., J. Dumont, and I. Visco (2001). "Trends in immigration and economic consequences". In: *OECD Economics Working Paper* 242001.

Daniels, J.P. and M. Von der Ruhr (2003). "The determinants of immigration policy preferences in advanced economies: A cross-country study". In: *Atlantic Economic Journal* 31.2, pp. 146–158.

Ebenstein, A. et al. (2014). "Estimating the impact of trade and offshoring on American workers using the current population surveys". In: *The Review of Economics and Statistics* 96.4, pp. 581–595.

Elwert, F. (2013). "Graphical causal models". In: *Handbook of Causal Analysis for Social Research*. Ed. by S.L. Morgan (ed.) Springer Science. Chap. 13.

Emmerson, C. et al. (2016). "Brexit and the U.K.'s public finances". In: *Institute for Fiscal Studies*.

Esarey, J. and A. Menger (2016). "Practical and Effective Approaches to Dealing with Clustered Data". In: *Conditionally accepted at Political Science Research and Methods*.

Fajgelbaum, P.D. and A.K. Khandelwal (2016). "Measuring the unequal gains from trade". In: *The Quarterly Journal of Economics*, pp. 1113–1180.

Feyrer, J. (2009). “Trade and income - exploiting time series in geography”. In: *NBER Working Paper* 14190.

Fieldhouse, E. et al. (2018). “British Election Study Internet Panel Waves 1-14”. In:

Foged, M. and G. Peri (2013). “Immigrants’ and native workers: new analysis on longitudinal data”. In: *NBER Working Paper* 19315.

Fornero, E. (2015). “Economic-financial literacy and (sustainable) pension reforms: Why the former is a key ingredient for the latter”. In: *Bankers, Markets and Investors* 134.

Fornero, E. and A. Lo Prete (2019). “Voting in the aftermath of a pension reform: The role of financial literacy”. In: *Journal of Pension Economics and Finance* 18.1, pp. 1–30.

Frankel, J.A. and D.H. Romer (1999). “Does Trade cause Growth?” In: *American Economic Review* 89.3, pp. 379–399.

Goodwin, M.J. and O. Heath (2016). “The 2016 Referendum, Brexit and the left behind: An aggregate-level analysis of the result”. In: *The Political Quarterly* 87.3, pp. 323–332.

Green, D.P. and L. Vavreck (2008). “Analysis of Cluster-Randomized Experiments: A Comparison of Alternative Estimation Approaches”. In: *Political Analysis* 16.2, pp. 138–152.

Hainmueller, J. and M.J. Hiscox (2006). “Learning to love globalization: Education and individual attitudes toward international trade”. In: *International Organization* 60.2, pp. 469–498.

Hainmueller, J. and D.J. Hopkins (2012). “Public attitudes toward immigration”. In: *Annual Review of Political Science* 17, pp. 225–249.

Halikiopoulou, D. and T. Vlandas (2018). “Voting to leave: Economic insecurity and the Brexit vote”. In: *The Routledge Handbook of Euroscepticism*. Ed. by B. Leruth, N. Startin, and S. Usherwood. Routledge. Chap. 34.

Hamilton, B. and J. Whalley (1984). “Efficiency and distributional implications of global restrictions on labour mobility: Calculations and policy implications”. In: *Journal of Development Economics* 14.1-2, pp. 61–75.

Hays, J.C., S.D. Ehrlich, and C. Peinhardt (2005). “Government spending and public support for trade in the OECD: An empirical test of the embedded liberalism thesis”. In: *International Organization* 59, pp. 473–494.

Hicks, M.J. and S. Devaraj (2015). “The myth and the reality of manufacturing in America”. In: *Center for Business and Economic Research, Ball State University*.

Inglehart, R. and P. Norris (2016). “Trump, Brexit, and the rise of populism: Economic have-nots and cultural backlash”. In: *HKS Working Paper* RWP16-026.

Irwin, D.A. (2015). *Free trade under fire*. 4th ed. Princeton University Press.

Lahav, E., M. Rosenboim, and T. Shavit (2015). “Financial literacy’s effect on elicited subjective discount rate”. In: *Economics Bulletin* 35.2, pp. 1360–1368.

Leeson, P.T. and Z. Gochenour (2015). “The economic effects of international labor mobility”. In: *The economics of immigration: Market-based approaches, social science, and public policy*. Ed. by B. Powell. Oxford University Press, pp. 11–25.

Lusardi, A. (2008). “Household saving behavior: The role of financial literacy, information, and financial education programs”. In: *NBER Working Paper* 13824.

— (2015). “Financial literacy: Do people know the ABCs of finance?” In: *Public understanding of science* 24.3, pp. 260–271.

Lusardi, A. and O.S. Mitchell (2014). “The economic importance of financial literacy: Theory and evidence”. In: *Journal of Economic Literature* 52.1, pp. 5–44.

Mansfield, E.D. and D.C. Mutz (2009). “Support for free trade: Self-interest, sociotropic politics, and out-group anxiety”. In: *International Organization* 63, pp. 425–457.

Matias Cortes, G. (2016). “Where have the middle-wage workers gone? A study of polarization using panel data”. In: *Journal of Labor Economics* 34.1.

Miles, D. (2016). “Brexit realism: What economists know about costs and voter motives.” In: *VoxEU*. URL: http://voxeu.org/article/brexit-realism-what-economists-know-aboutcosts-%20and-voter-motives.

Montagnoli, A. et al. (2016). “Financial literacy and political orientation in Great Britain”. In: *IZA Discussion Paper* 10285.

O’Rourke, K.H. and R. Sinnott (2001). “What determines attitudes towards protection? Some cross-country evidence”. In: *Brookings Trade Forum*. Ed. by S.M. Collins and D. Rodrik. Washington, D.C.: Brookings Institute Press, pp. 157–206.

— (2006). “The determinants of individual attitudes towards immigration”. In: *European Journal of Political Economy* 22, pp. 838–861.

Ottaviano, G.I.P. and G. Peri (2006). “Rethinking the effects of immigration on wages”. In: *NBER Working Paper* 12497.

Ottaviano, G.I.P., G. Peri, and G.C. Wright (2010). "Immigration, offshoring and American jobs". In: *NBER Working Paper* 16439.

Owen, E. and N.P. Johnston (2017). "Occupation and the political economy of trade: Job routineness, offshorability, and protectionist sentiment". In: *International Organization* 71.4, pp. 665–699.

Pearl, J. and D. Mackenzie (2018). *The book of why: The new science of cause and effect*. Basic Books.

Peri, G. (2009). "The effect of immigration on productivity: Evidence from U.S. states". In: *NBER Working Paper* 15507.

Scheve, K.F. and M.J. Slaughter (2001a). "Labor market competition and individual preferences over immigration policy". In: *The Review of Economics and Statistics* 83.1, pp. 133–145.

— (2001b). "What determines individual trade policy preferences?" In: *Journal of International Economics* 54, pp. 267–292.

Sequeira, S., N. Nunn, and N. Qian (2017). "Migrants and the making of America: The short and long-run effects of immigration during the age of mass migration". In: *NBER Working Paper* 23289.

Sodha, S., T. Helm, and P. Inman (2016). "Economists overwhelmingly reject Brexit in boost for Cameron." In: *The Guardian*. URL: https://www.theguardian.com/politics/2016/may/28/economists-reject-brexit-boost-cameron.

Stigler, G. (1970). "The case, if any, for economic literacy". In: *Journal of Economic Education* 1.2, pp. 77–84.

Walstad, W.B. (1997). "Economic knowledge and public opinion on economic issues". In: *Journal of Economic Education* 28.3, pp. 195–205.

A Online Appendix A

A.1 Heuristic Model

The model assumes that individuals are guided by self-interest. Financial literacy is expected to have an impact on an individual's accuracy at calculating the effects of a specific policy on their expected utility. For simplicity, I consider two types of individuals: financially literate and financially illiterate. Each individual has his or her own prior probability distribution over U, a random variable describing the unknown levels of utility that a policy will bring. The individuals' prior beliefs about U can be represented by a uniform distribution on bounded intervals (Calvert, 1985), so no utility level is any more likely than another. This will be the unit interval, so that all utility values lie between zero and one. Both types of individuals' prior subjective probability density functions for the policy's utility are:

$$f(u) = 1, \text{if } 0 \leq u \leq 1$$
$$= 0, \text{otherwise}$$

Each individual then observes X, a signal with information about U. The utility inferred from the signal may vary across different individuals: its content depends on the true, but hidden, utility of the policy, and on the individual's accuracy in interpreting it. The latter is represented by α, an inaccuracy parameter which will be described below.

The signal X will be more informative for financially literate people, as they can conduct more accurate cost-benefit analyses. Conversely, it will be less clear and less informative for financially illiterate people, who are less likely to be accurate at estimating the effects of a policy on their individual economic well-being and who may be more likely to rely on other decision-making factors such as core personal values (for example culture, political ideology, identity, etc.), or cues from reference groups, and on less correct cost-benefit analyses to make their decisions. The signal X is a continuous variable. Its mean value, μ, represents the utility inferred from the signal, and the distance between the policy's actual utility and the utility inferred from the signal is the bias. Its variance, σ^2, represents the precision over the signaled utility, and it increases as inaccuracy

increases.

$$X \sim TN(\mu, \sigma^2, 0, 1)$$
$$\mu = u^{\alpha}$$
$$\sigma^2 = (log\alpha + \hat{\sigma^2})^2$$

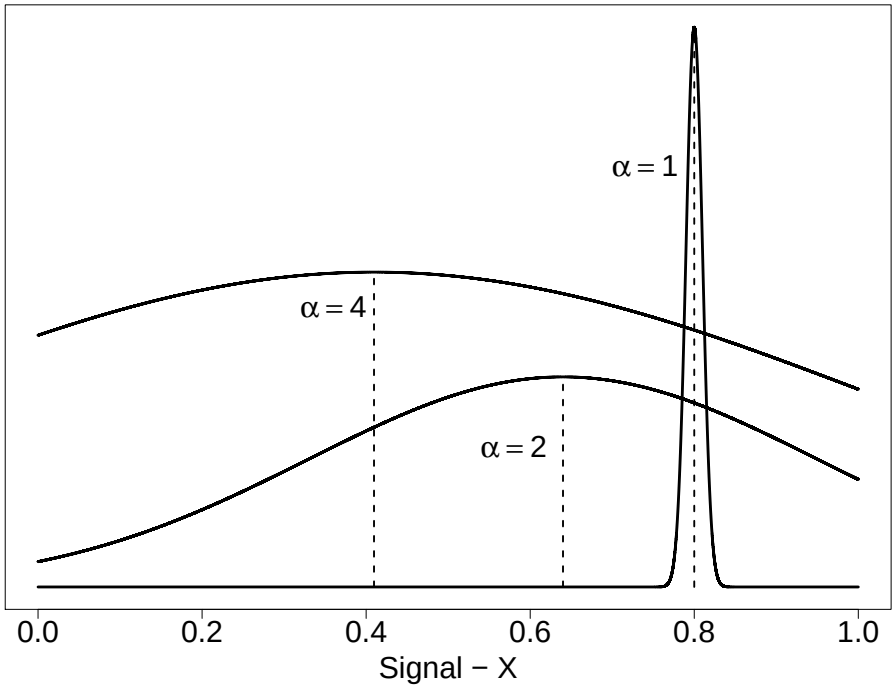


Figure A1: Truncated normal distributions of signal X when inaccuracy α=1, 2, 4 and true utility u=0.8. In this example, the true utility of the policy is set to u=0.8. For a financially literate individual (α = 1), the utility inferred from the signal μ equals 0.8, and $\hat{\sigma^2}$ is set to 0.0001. For a financially illiterate person, when α = 2, their inferred utility from the signal is about 0.6 and the variance increases with α. Finally, when α = 4 the signal wrongly indicates that u is equal to 0.4, with larger uncertainty.

The signal X has a truncated normal distribution and lies within the interval $X \in [0, 1]$. The closer the signal is to 1 the higher the expected utility of the policy is argued to be, the closer the signal is to 0 the lower the expected utility of the policy is argued to be. The constant $\alpha \in [1, 10]$, which I will call the inaccuracy parameter[1], has two effects on the signal X itself, one on bias and

[1]If I allowed $0 < \alpha < 1$, it would be possible to also overestimate the benefits of a policy, whereas in the current

the other on precision. I argue that α is low for financially literate individuals as their ability to do more sophisticated cost-benefit analyses will give them a more precise and unbiased estimate of the expected utility of the policy, hence the verdict from the signal will most likely be very close to the true utility of the policy (see Figure A1). Moreover, the variance around the signal will be smaller (it will be assumed fixed at $\hat{\sigma}^2$ for financially literate individuals and in these examples it is set at 0.0001 for simplicity) as they can be more confident of their estimate. Conversely, for financially illiterate individuals α will be any number greater than 1, suggesting that as there are varying degrees of inaccuracy, there is more uncertainty over the expected utility of the policy. As a result of this, when the signal is more inaccurate (so α is greater than one) the verdict is unlikely to be close to the true utility of the policy (see Figure A1 for examples). Furthermore, X will also have larger variance, as the signal might not be as clear and informative.

After observing the signal, the individual updates their prior, using Bayes rule, which gives $f(u|x)$, the posterior distribution of U.

$$f(u|x) = \frac{f(u) \cdot P(X = x|U = u)}{\int_0^1 f(u) \cdot P(X = x|U = u)du}$$

.

As inaccuracy α approaches 1, the updated belief about the expected utility of the policy is more likely to be closer to the true utility of the policy. Conversely, as inaccuracy α increases, the distance between the expected utility and the true utility of the policy increases.

In order to show what type of individual is more likely to more accurately assess the effect on her economic well-being of a specific economic policy, we have to first calculate the expected utility of the policy given the signal:

$$E(U|X) = \int_0^1 u \cdot f(u|x)du$$

setting a financially illiterate person would always be more likely to underestimate the benefits of a policy; for this model this complication is unnecessary. Since each policy under discussion can go in both directions (e.g. Brexit or Remain, free trade or protectionism, immigration or protectionism. If you are a financially illiterate loser from globalization, overestimating the benefits of free trade is equivalent to saying you are underestimating the benefits of protectionism), the accuracy can be in either direction even with $\alpha > 1$

and then calculate the difference between $E(U|X)$ and the true utility of the policy u:

$$| \, (E(U|X) - u) \, |$$

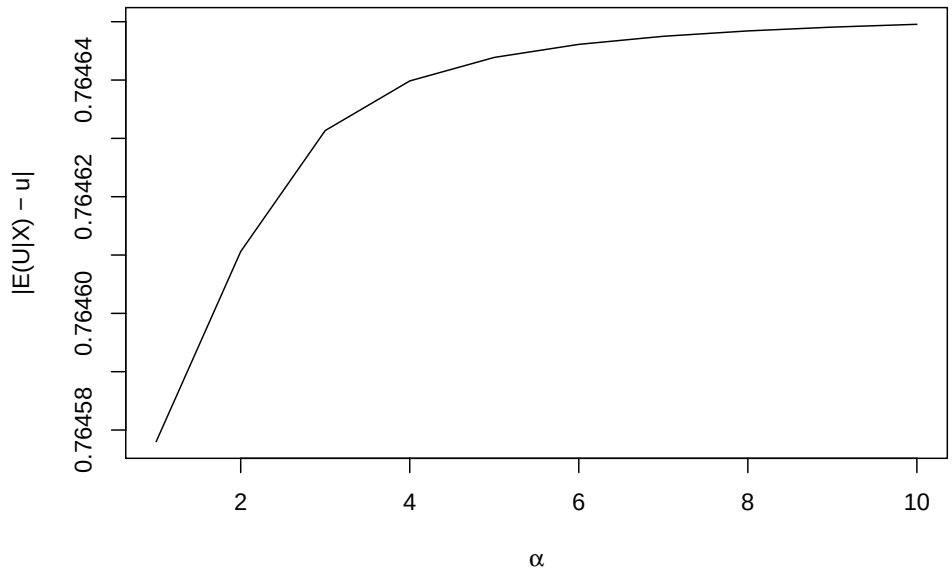
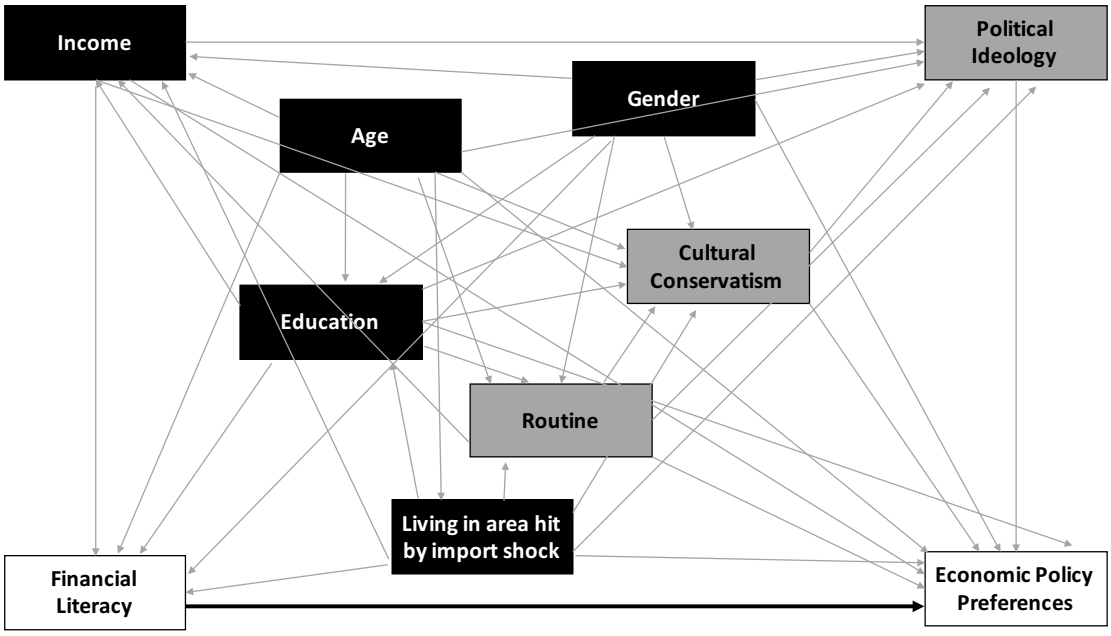


Figure A2: Difference between $E(U|X)$ and true utility with u=0.8 for all values of α

For all levels of utility (Figure A2 shows that this is the case for u=0.8), indeed the difference between the expected utility of a policy after receiving the signal x and the true utility of the policy u is smallest when α is equal to 1, hence implying that financially literate individuals are more likely to more accurately assess the effect of a specific economic policy on their expected utility than financially illiterate individuals.

A.2 DAG

The theory can also be represented by a causal diagram (or directed acyclic graph - DAG), which is a visual representation of qualitative causal assumptions. This helps us disentangle the causal mechanisms and understand which variables we need to adjust for. The arrows represent potential direct causal effects between variables, while missing arrows suggest that there is no causal effect between two variables. It is often argued that we should control for any variable that is correlated with both our dependent and our independent variable, but this is not necessarily true. In fact, we do not want to control for a collider, which is a variable with two arrows pointing into it, otherwise we would find a relationship between two variables when there is not one. We do instead want to control for confounders, which represent common causes to our treatment and outcome variables. Finally, we do not want to control for a mediator, a variable on the causal path between our treatment and outcome, as this would bias the total causal effect of the treatment on the outcome (Elwert, 2013; Pearl and Mackenzie, 2018).



Note: The white squares represent the treatment, financial literacy, and the outcome variable, economic policy preferences. The gray arrows represent biasing paths, while the black one represents the causal path. The gray squares are variables that should not be adjusted for, while the black squares represent the variables that we should adjust for.

Figure A3: Causal diagram of the relationship between financial literacy and economic policy preferences

Prior studies reveal that age, income, gender, and education may all affect financial literacy (Lusardi and Mitchell, 2014; Monticone, 2010). Men, the middle-aged, highly educated individuals, and people on higher incomes all tend to have higher levels of financial literacy. One possibility further considered here is that living in a more globalized region may also have an effect on people's decisions to become financially literate, as people receiving more globalization spoils may have more resources to invest in the first place, and this would require them to become more financially literate. Furthermore, income may be affected by age, gender, education, the type of job that one does, and globalization, as individuals living in areas highly exposed to the Chinese import shock experienced larger declines in income as documented by Colantone and Stanig (2018). In an analogous way, education may also be determined by demographic variables like age and gender, but it could also be affected in different ways by globalization's pressures: living in a highly globalized region encourages individuals to pursue more education, while living in areas more exposed to the Chinese import shock, which led to persistent economic decline, is more likely to be associated with lower levels of education, due to the lack of opportunities. The routineness of jobs tend to be associated with skills, which will be proxied with education, and by age and gender. The routineness of jobs may also be affected by globalization's pressures: living in a highly globalized areas increases the probability that you perform non-routine tasks. Conversely, living in areas more exposed to the Chinese import shock is more likely to be associated with the prevalence of routine tasks, which are more likely to be automated or outsourced. Age is also likely to be associated with living in an area highly exposed to the Chinese import shock, as we can expect younger people to be less likely to live in such areas due to the prevalence of long-term economic decline and lack of opportunities. As suggested by the literature review, economic policy preferences may be affected by income, education, the routine content of jobs, demographic factors, globalization's pressures, political ideology, and cultural conservatism. In a similar way, political ideology and cultural conservatism may be affected by education, income, globalization's pressures, and demographic variables. Political ideology may also be affected by the type of job that one does. In DAGs we cannot have bidirectional arrows, however, it is possible to have situations in which two variables cause one another. These situations can be dealt with by adding a time dimension, so that the variables can have different relationships with each other at different points in time. For instance, globalization pressures, education, income, and routine jobs may all affect each other at different

points in time. At time 1 the Chinese import shock is more likely to be higher in areas where there are already more low-skilled people (we proxy this with education), however, this will reinforce this relationship further and change the direction of causality at time 2, as people with higher levels of education (and hence highly-skilled) will move to areas where there is a higher demand for them, leaving these areas characterized by persistent economic decline with a prevalence of low-skilled individuals. Here we are looking at the effects of the Chinese import shock between 1990 and 2007, hence we expect that most of its effects (in terms of different levels of income and education) have materialized already by 2015 when the survey is conducted. Another example is that here we assume that political ideology affects economic policy preferences, but it is also possible that economic policy preferences may affect political ideology. In either case, political ideology should not be controlled for, as all backdoor paths have already been closed. Finally another possibility is that, as suggested by Montagnoli et al. (2016), financial literacy affects political ideology, which in turn affects economic policy preferences (Montagnoli et al., 2016). Even if that were the case, political ideology would become a mediator, and as such, it should not be conditioned on, or it would bias the total effect of financial literacy on economic policy preferences. In order to make sure that the causal assumptions that were made are consistent with the data, we test the restrictions identified in the form of conditional independencies. If at least one implied independence does not hold in the dataset, this means that the causal processes encoded by the DAG cannot have generated these data. If the independencies are not refused by the data, this will give credibility to the data, but it still does not mean that the DAG is necessarily correct (Textor et al., 2016).

The conditional independencies tested, as suggested by the DAG on *dagitty.net*, are:

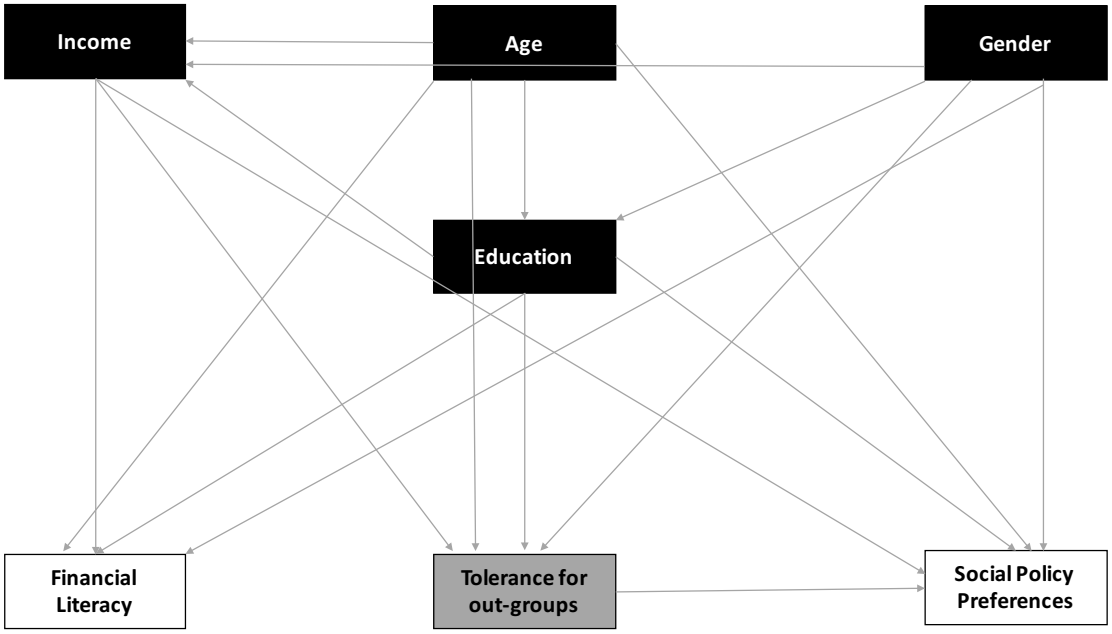
- Cultural conservatism $\perp$ Financial literacy | Age, gender, education, income, living in high import shock area
- Cultural conservatism $\perp$ Routine Job | Age, gender, education, income, living in high import shock area
- Financial literacy $\perp$ Political Ideology | Age, gender, education, income, living in high import shock area
- Financial literacy $\perp$ Routine Job | Age, gender, education, income, living in high import shock area

- Age $\perp$ gender[2]

All of the testable implications have been found to be consistent with the dataset and have been tested with the R package dagitty following Textor et al. (2016). Following these rules and what prior studies reveal about the relationship between our variables of interest, it emerges that in order to estimate the total causal effect of financial literacy on economic policy preferences we should condition on age, gender, income, education, and living in high import shock area (as measured by the Chinese import shock). Furthermore, we do not need to control for routine jobs, political orientation, and cultural conservatism since controlling for income, education, and demographic variables already blocks all backdoor paths from the treatment to the outcome.

Furthermore, the following causal diagram lays out the hypothesized causal relationships between financial literacy and social policy preferences. The lack of an arrow connecting financial literacy and social policy preferences suggests the lack of a direct relationship between financial literacy and social policy preferences, as people are not expected to make decisions on social policies based on costs and benefits calculations. There is also no arrow connecting directly tolerance for out-groups and financial literacy, instead they are expected to both be affected by the same set of variables: age, gender, education, and income. In this specification, financial literacy and social policy preferences are conditionally independent given a set of variables Z (here income, education, age, and gender). This means that any relationship that may exist between financial literacy and social policy preferences can be explained by income, education, gender, and age. Hence, financial literacy and social policy preferences may appear related if Z were not considered, but if we control for Z by holding it constant, then any apparent relationship between financial literacy and social policy preferences should disappear. This is also tested with the R package daggity, which after specifying a dataset and a DAG tests conditional independence parametrically, using a test of residual independence after linear regression is performed. The findings from this test already suggest that social policy preferences and financial literacy are independent once we condition on age, gender, income, and education.

[2]When testing independencies it emerges that age and gender are not independent. This might have to do with the fact that the online BES survey is not entirely representative of the British population, and there are actually more males than females in older age groups.



Note: The white squares represent the treatment, financial literacy, and the outcome variable, social policy preferences. The gray arrows represent biasing paths between variables. The black squares represent potential confounders, while the gray square represents an unmeasured variable.

Figure A4: Causal diagram for the relationship between financial literacy and social policy preferences

B Online Appendix B

Table B1: Multinomial logit models for Brexit: Log-odds and standards errors in parentheses

	DV: Brexit (ref. category: Remain)		
	Leave	Not vote	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.212***	−0.609***	−0.319***
	(0.037)	(0.074)	(0.046)
High education	−0.929***	−0.680***	−0.498***
	(0.068)	(0.163)	(0.091)
Income	−0.166***	−0.404***	−0.267***
	(0.046)	(0.110)	(0.062)
Age	0.024***	−0.008	−0.002
	(0.002)	(0.005)	(0.003)
Male	0.164**	−0.158	−0.361***
	(0.066)	(0.154)	(0.090)
Import shock	0.854***	0.731	1.093***
	(0.254)	(0.578)	(0.335)
Constant	−0.306	0.689*	0.568**
	(0.193)	(0.383)	(0.239)
Akaike Inf. Crit.	11,263.800	11,263.800	11,263.800
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B2: Clustered bootstrap p-values for Brexit

	Leave	Not vote	Don't know
Constant	0.209	0.143	0.124
Financial Literacy (# correct)	0.165	0	0.001
High Education	0	0.004	0.005
Income	0	0.052	0.017
Age	0.054	0.783	0.014
Male	0	0.033	0.642
Import shock	0.133	0.483	0.078

Table B3: Multinomial logit models for immigration: Log-odds and standards errors in parentheses

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	0.174^{***}	0.268^{***}	-0.425^{***}
	(0.044)	(0.039)	(0.065)
High education	0.612^{***}	1.177^{***}	0.602^{***}
	(0.084)	(0.071)	(0.143)
Income	0.020	0.113^{**}	-0.377^{***}
	(0.057)	(0.048)	(0.099)
Age	-0.012^{***}	-0.020^{***}	-0.031^{***}
	(0.003)	(0.002)	(0.004)
Male	-0.232^{***}	0.093	-0.166
	(0.081)	(0.069)	(0.137)
Import shock	-0.382	-1.438^{***}	-1.256^{**}
	(0.307)	(0.267)	(0.527)
Constant	-0.839^{***}	-0.412^{**}	1.539^{***}
	(0.233)	(0.199)	(0.339)
Akaike Inf. Crit.	11,755.290	11,755.290	11,755.290

Note: *p<0.1; **p<0.05; ***p<0.01

Table B4: Clustered bootstrap p-values for immigration

	Neither good nor bad	Good	Don't know
Constant	0.010	0.219	0.024
Financial Literacy (# correct)	0.097	0.002	0.001
High Education	0	0	0.001
Income	0.074	0.046	0.054
Age	0.004	0.067	0.234
Male	0.122	0.001	0
Import shock	0.103	0.091	0.032

Table B5: Multinomial logit models for free trade: Log-odds and standards errors in parentheses

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	-0.276^{***}	-0.525^{***}	-0.722^{***}
	(0.040)	(0.054)	(0.048)
High education	-0.558^{***}	-0.477^{***}	-0.421^{***}
	(0.077)	(0.114)	(0.102)
Income	-0.194^{***}	-0.286^{***}	-0.175^{**}
	(0.051)	(0.075)	(0.068)
Age	0.011^{***}	-0.003	-0.017^{***}
	(0.003)	(0.004)	(0.003)
Male	-0.352^{***}	-0.207^{*}	-0.691^{***}
	(0.073)	(0.106)	(0.099)
Import shock	0.661^{**}	0.570	0.424
	(0.278)	(0.403)	(0.368)
Constant	-0.096	0.511^{*}	2.037^{***}
	(0.215)	(0.289)	(0.254)
Akaike Inf. Crit.	10,937.890	10,937.890	10,937.890

Note: *p<0.1; **p<0.05; ***p<0.01

Table B6: Clustered bootstrap p-values for free trade

	Neither good nor bad	Bad	Don't know
Constant	0.936	0.423	0.004
Financial Literacy (# correct)	0.003	0.001	0
High Education	0	0.025	0.001
Income	0.004	0.005	0.165
Age	0.004	0.403	0.001
Male	0.040	0.877	0.010
Import shock	0.047	0.461	0.834

Table B7: Multinomial logit models for Brexit with education and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Brexit (ref. category: Remain)		
	Leave	Not vote	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.169***	−0.607***	−0.293***
	(0.045)	(0.091)	(0.059)
High education	−0.786***	−0.428	−0.436
	(0.244)	(0.427)	(0.287)
Income	−0.155***	−0.455***	−0.223***
	(0.046)	(0.114)	(0.062)
Male	0.144**	−0.126	−0.337***
	(0.066)	(0.158)	(0.089)
Age	0.024***	−0.014***	0.001
	(0.002)	(0.005)	(0.003)
Import shock	0.768***	1.338**	0.925***
	(0.254)	(0.580)	(0.335)
Financial literacy: high education	−0.047	−0.141	−0.002
	(0.072)	(0.151)	(0.088)
Constant	−0.445**	0.832**	0.262
	(0.208)	(0.407)	(0.262)
Akaike Inf. Crit.	11,198.360	11,198.360	11,198.360
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B8: Clustered bootstrap p-values for Brexit (interaction education and financial literacy)

	DV: Brexit (ref. category: Remain)		
	Leave	Not Vote	Don't know
Constant	0.092	0.084	0.110
Financial Literacy (# correct)	0.019	0.003	0.003
High education	0.055	0.270	0.088
Income	0.010	0.002	0
Male	0.119	0.044	0.028
Age	0	0.061	0.901
Import shock	0.051	0.243	0.004
Financial literacy: high education	0.925	0.058	0.878

Table B9: Multinomial logit models for Brexit with routineness and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Brexit (ref. category: Remain)		
	Leave	Not vote	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.187***	−0.538***	−0.290***
	(0.042)	(0.092)	(0.053)
Routine occupation	−0.066	0.811*	0.100
	(0.245)	(0.414)	(0.293)
High education	−0.870***	−0.965***	−0.584***
	(0.069)	(0.182)	(0.093)
Income	−0.185***	−0.375***	−0.174***
	(0.046)	(0.115)	(0.062)
Male	0.120*	−0.032	−0.314***
	(0.066)	(0.160)	(0.089)
Age	0.024***	−0.011**	0.003
	(0.002)	(0.005)	(0.003)
Import shock	0.961***	0.895	1.217***
	(0.253)	(0.597)	(0.332)
Financial literacy: routine occupation	0.022	−0.312*	−0.045
	(0.076)	(0.160)	(0.095)
Constant	−0.416**	0.459	0.048
	(0.207)	(0.423)	(0.258)
Akaike Inf. Crit.	11,245.400	11,245.400	11,245.400
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B10: Clustered bootstrap p-values for Brexit (interaction routineness and financial literacy)

	DV: Brexit (ref. category: Remain)		
	Leave	Not Vote	Don't know
Constant	0.164	0.054	0.238
Financial Literacy (# correct)	0.150	0.006	0.001
Routine occupation	0.836	0.190	0.079
High education	0.003	0.001	0.022
Income	0.001	0.003	0.009
Male	0.030	0.994	0.027
Age	0	0.020	0.990
Import shock	0.103	0.642	0
Financial literacy: routine occupation	0.666	0.415	0.048

Table B11: Multinomial logit models for Brexit with income and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Brexit (ref. category: Remain)		
	Leave	Not vote	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.068	−0.470**	−0.291**
	(0.093)	(0.190)	(0.116)
Income	−0.012	−0.060	−0.197
	(0.156)	(0.273)	(0.186)
High education	−0.860***	−0.898***	−0.527***
	(0.068)	(0.171)	(0.091)
Male	0.131**	−0.175	−0.405***
	(0.066)	(0.157)	(0.089)
Age	0.023***	−0.014***	0.001
	(0.002)	(0.005)	(0.003)
Import shock	0.798***	0.311	0.854**
	(0.253)	(0.597)	(0.335)
Financial literacy: Income	−0.061	−0.087	−0.016
	(0.046)	(0.096)	(0.058)
Constant	−0.658**	0.624	0.411
	(0.334)	(0.596)	(0.399)
Akaike Inf. Crit.	11,274.520	11,274.520	11,274.520
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B12: Clustered bootstrap p-values for Brexit (interaction income and financial literacy)

	DV: Brexit (ref. category: Remain)		
	Leave	Not Vote	Don't know
Constant	0.022	0.520	0.372
Financial Literacy (# correct)	0.408	0.047	0.034
Income	0.810	0.513	0.402
High education	0	0	0.090
Male	0.112	0.043	0.042
Age	0	0.067	0.890
Import shock	0.045	0.262	0.002
Financial literacy: Income	0.231	0.459	0.756

Table B13: Multinomial logit models for immigration with education and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	0.185***	0.273***	−0.450***
	(0.054)	(0.050)	(0.081)
High education	0.872***	1.224***	0.577
	(0.293)	(0.253)	(0.364)
Income	−0.013	0.100**	−0.351***
	(0.057)	(0.048)	(0.099)
Male	−0.222***	0.105	−0.162
	(0.081)	(0.069)	(0.137)
Age	−0.009***	−0.019***	−0.026***
	(0.003)	(0.002)	(0.004)
Import shock	−0.343	−1.364***	−1.240**
	(0.308)	(0.267)	(0.529)
Financial literacy: high education	−0.053	−0.012	0.014
	(0.087)	(0.074)	(0.127)
Constant	−1.011***	−0.467**	1.296***
	(0.252)	(0.221)	(0.359)
Akaike Inf. Crit.	11,768.940	11,768.940	11,768.940
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B14: Clustered bootstrap p-values for immigration (interaction education and financial literacy)

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
Constant	0.009	0.396	0.033
Financial Literacy (# correct)	0.007	0	0.022
High education	0.156	0.025	0.154
Income	0.116	0.138	0.015
Male	0.010	0.071	0.276
Age	0.092	0	0
Import shock	0.113	0.060	0.032
Financial literacy: high education	0.647	0.723	0.444

Table B15: Multinomial logit models for immigration with routineness and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	0.148***	0.268***	−0.420***
	(0.051)	(0.045)	(0.076)
Routine occupation	−0.319	−0.200	−0.007
	(0.296)	(0.267)	(0.361)
Income	−0.021	0.087*	−0.366***
	(0.057)	(0.049)	(0.099)
High education	0.674***	1.148***	0.562***
	(0.087)	(0.073)	(0.147)
Male	−0.231***	0.091	−0.177
	(0.082)	(0.069)	(0.137)
Age	−0.009***	−0.020***	−0.026***
	(0.003)	(0.002)	(0.004)
Import shock	−0.341	−1.363***	−1.237**
	(0.308)	(0.267)	(0.530)
Financial literacy: routine occupation	0.056	−0.003	−0.085
	(0.092)	(0.082)	(0.138)
Constant	−0.811***	−0.328	1.356***
	(0.248)	(0.213)	(0.355)
Akaike Inf. Crit.	11,766.300	11,766.300	11,766.300

Note: *p<0.1; **p<0.05; ***p<0.01

Table B16: Clustered bootstrap p-values for immigration (interaction routine and financial literacy)

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
Constant	0	0.415	0.010
Financial Literacy (# correct)	0.105	0.001	0
Routine occupation	0.953	0.967	0.529
Income	0.147	0.149	0.013
High education	0	0	0.001
Male	0.006	0.062	0.269
Age	0.096	0	0
Import shock	0.115	0.069	0.031
Financial literacy: routine occupation	0.663	0.738	0.358

Table B17: Multinomial logit models for immigration with income and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	0.217*	0.157	−0.418***
	(0.112)	(0.098)	(0.161)
Income	0.198	−0.071	−0.151
	(0.189)	(0.166)	(0.242)
High education	0.620***	1.128***	0.508***
	(0.085)	(0.071)	(0.145)
Male	−0.233***	0.106	−0.167
	(0.081)	(0.069)	(0.137)
Age	−0.006**	−0.018***	−0.020***
	(0.003)	(0.002)	(0.004)
Import shock	−0.389	−1.438***	−1.281**
	(0.307)	(0.266)	(0.528)
Financial literacy: Income	−0.035	0.059	−0.030
	(0.057)	(0.049)	(0.085)
Constant	−1.393***	−0.150	0.792
	(0.400)	(0.349)	(0.509)
Akaike Inf. Crit.	11,811.830	11,811.830	11,811.830
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B18: Clustered bootstrap p-values for immigration (interaction income and financial literacy)

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
Constant	0.024	0.638	0.046
Financial Literacy (# correct)	0.014	0.127	0.012
Income	0.225	0.534	0.518
High education	0	0.001	0.009
Male	0.002	0.060	0.169
Age	0.274	0.005	0.001
Import shock	0.065	0.062	0.023
Financial literacy: Income	0.374	0.138	0.668

Table B19: Multinomial logit models for free trade with education and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.233***	−0.464***	−0.616***
	(0.048)	(0.064)	(0.059)
High education	−0.527**	−0.363	−0.779***
	(0.267)	(0.335)	(0.287)
Income	−0.115**	−0.173**	−0.194***
	(0.051)	(0.075)	(0.068)
Male	−0.389***	−0.133	−0.725***
	(0.072)	(0.106)	(0.098)
Age	0.010***	−0.004	−0.016***
	(0.003)	(0.004)	(0.003)
Import shock	0.549**	0.942**	0.324
	(0.277)	(0.397)	(0.365)
Financial literacy: high education	−0.024	−0.093	0.102
	(0.079)	(0.106)	(0.093)
Constant	−0.237	0.094	1.801***
	(0.227)	(0.304)	(0.267)
Akaike Inf. Crit.	11,094.600	11,094.600	11,094.600
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B20: Clustered bootstrap p-values for free trade with EU (interaction education and financial literacy)

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
Constant	0.268	0.798	0
Financial Literacy (# correct)	0.004	0.002	0
High education	0.062	0.414	0.032
Income	0.076	0.127	0.126
Male	0.006	0.201	0.005
Age	0.001	0.064	0.007
Import shock	0.034	0.082	0.331
Financial literacy: high education	0.776	0.537	0.194

Table B21: Multinomial logit models for free trade with routineness and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.239***	−0.484***	−0.640***
	(0.047)	(0.063)	(0.056)
Routine occupation	0.095	0.123	−0.572**
	(0.256)	(0.319)	(0.285)
High education	−0.583***	−0.615***	−0.504***
	(0.078)	(0.118)	(0.104)
Income	−0.108**	−0.168**	−0.197***
	(0.051)	(0.076)	(0.068)
Male	−0.379***	−0.124	−0.731***
	(0.073)	(0.106)	(0.099)
Age	0.010***	−0.004	−0.015***
	(0.003)	(0.004)	(0.003)
Import shock	0.548**	0.930**	0.359
	(0.277)	(0.398)	(0.365)
Financial literacy: routine occupation	0.005	−0.017	0.199**
	(0.080)	(0.107)	(0.097)
Constant	−0.294	0.099	1.882***
	(0.231)	(0.310)	(0.268)
Akaike Inf. Crit.	11,095.090	11,095.090	11,095.090
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B22: Clustered bootstrap p-values for free trade with EU (interaction routine and financial literacy)

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
Constant	0.081	0.731	0.002
Financial Literacy (# correct)	0	0	0.001
Routine occupation	0.545	0.637	0.015
High education	0.007	0	0.007
Income	0.059	0.159	0.106
Male	0.003	0.272	0.006
Age	0.003	0.089	0.008
Import shock	0.041	0.101	0.305
Financial literacy: routine occupation	0.915	0.857	0.013

Table B23: Multinomial logit models for free trade with income and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.266***	−0.385***	−0.781***
	(0.101)	(0.136)	(0.122)
Income	−0.160	−0.010	−0.501***
	(0.171)	(0.214)	(0.189)
High education	−0.604***	−0.628***	−0.502***
	(0.077)	(0.116)	(0.102)
Male	−0.390***	−0.131	−0.731***
	(0.072)	(0.106)	(0.098)
Age	0.010***	−0.004	−0.016***
	(0.003)	(0.004)	(0.003)
Import shock	0.547**	0.941**	0.324
	(0.277)	(0.397)	(0.365)
Financial literacy: Income	0.014	−0.061	0.111*
	(0.051)	(0.069)	(0.062)
Constant	−0.130	−0.109	2.249***
	(0.360)	(0.462)	(0.401)
Akaike Inf. Crit.	11,092.230	11,092.230	11,092.230
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B24: Clustered bootstrap p-values for free trade with EU (interaction income and financial literacy)

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
Constant	0.682	0.763	0.006
Financial Literacy (# correct)	0.016	0.031	0
Income	0.371	0.931	0.016
High education	0.008	0	0.019
Male	0.005	0.195	0
Age	0.001	0.064	0.009
Import shock	0.043	0.088	0.321
Financial literacy: Income	0.782	0.328	0.045

Table B25: Multinomial logit models for Brexit with import shock and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Brexit (ref. category: Remain)		
	Leave	Not vote	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.351***	−1.137***	−0.611***
	(0.093)	(0.193)	(0.116)
Import shock	−0.923	−2.610*	−2.113**
	(0.877)	(1.482)	(1.068)
Income	−0.156***	−0.462***	−0.226***
	(0.046)	(0.115)	(0.062)
Male	0.144**	−0.122	−0.337***
	(0.066)	(0.158)	(0.089)
Age	0.024***	−0.014***	0.001
	(0.002)	(0.005)	(0.003)
High education	−0.942***	−0.809***	−0.453***
	(0.068)	(0.173)	(0.092)
Financial literacy: import shock	0.523**	1.468***	0.989***
	(0.266)	(0.532)	(0.334)
Constant	0.148	2.260***	1.250***
	(0.333)	(0.590)	(0.403)
Akaike Inf. Crit.	11,185.960	11,185.960	11,185.960
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B26: Clustered bootstrap p-values for Brexit (interaction import shock and financial literacy)

	DV: Brexit (ref. category: Remain)		
	Leave	Not Vote	Don't know
Constant	0.472	0.001	0.008
Financial Literacy (# correct)	0.132	0.001	0.013
Import shock	0.336	0.004	0.064
Income	0.002	0.020	0
Male	0.026	0.357	0.004
Age	0	0.001	0.712
High education	0.001	0.027	0.014
Financial literacy: import shock	0.263	0.018	0.054

Table B27: Multinomial logit models for immigration with import shock and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	0.216*	0.493***	−0.179
	(0.113)	(0.097)	(0.164)
Import shock	0.093	0.882	0.935
	(1.056)	(0.934)	(1.297)
Income	−0.012	0.102**	−0.349***
	(0.057)	(0.048)	(0.099)
Male	−0.221***	0.105	−0.165
	(0.081)	(0.069)	(0.137)
Age	−0.009***	−0.019***	−0.026***
	(0.003)	(0.002)	(0.004)
High education	0.701***	1.189***	0.606***
	(0.085)	(0.072)	(0.145)
Financial literacy: import shock	−0.152	−0.705**	−0.840*
	(0.322)	(0.282)	(0.486)
Constant	−1.097***	−1.175***	0.579
	(0.399)	(0.348)	(0.508)
Akaike Inf. Crit.	11,761.340	11,761.340	11,761.340
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B28: Clustered bootstrap p-values for immigration (interaction import shock and financial literacy)

	DV: Immigration (ref. category: Bad)		
	Neither good nor bad	Good	Don't know
Constant	0.002	0.001	0.121
Financial Literacy (# correct)	0.051	0	0.339
Import shock	0.961	0.057	0.464
Income	0.087	0.114	0.012
Male	0.007	0.054	0.256
Age	0.081	0	0
High education	0	0	0
Financial literacy: import shock	0.416	0.005	0.238

Table B29: Multinomial logit models for free trade with import shock and financial literacy interaction: Log-odds and standards errors in parentheses

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
	(1)	(2)	(3)
Financial Literacy (# correct)	−0.363***	−0.614***	−0.645***
	(0.101)	(0.136)	(0.121)
Import shock	−0.668	−0.197	−0.326
	(0.952)	(1.166)	(1.028)
Income	−0.115**	−0.174**	−0.195***
	(0.051)	(0.076)	(0.068)
Male	−0.389***	−0.132	−0.727***
	(0.072)	(0.106)	(0.098)
Age	0.010***	−0.004	−0.015***
	(0.003)	(0.004)	(0.003)
High education	−0.605***	−0.631***	−0.502***
	(0.077)	(0.116)	(0.102)
Financial literacy: import shock	0.385	0.378	0.207
	(0.291)	(0.383)	(0.349)
Constant	0.178	0.545	1.916***
	(0.362)	(0.460)	(0.398)
Akaike Inf. Crit.	11,095.070	11,095.070	11,095.070
Note:			*p<0.1; **p<0.05; ***p<0.01

Table B30: Clustered bootstrap p-values for free trade with EU (interaction import shock and financial literacy)

	DV: Free Trade with EU (ref. category: Good)		
	Neither good nor bad	Bad	Don't know
Constant	0.520	0.143	0.001
Financial Literacy (# correct)	0.004	0	0
Import shock	0.443	0.714	0.635
Income	0.079	0.134	0.110
Male	0.002	0.173	0.006
Age	0.002	0.061	0.011
High education	0.005	0	0.015
Financial literacy: import shock	0.172	0.177	0.299

Table B31: Multinomial logit models for attitude towards gay rights: Log-odds and standards errors in parentheses

	DV: Attempts to give gays equal rights gone (ref. category: Not nearly far enough)				
	Not far	About right	Too far	Way too far	Don't know
	(1)	(2)	(3)	(4)	(5)
Financial Literacy (# correct)	0.002	−0.057	−0.023	−0.091	−0.530***
	(0.069)	(0.064)	(0.071)	(0.074)	(0.079)
High education	−0.105	−0.537***	−0.732***	−0.962***	−0.826***
	(0.135)	(0.123)	(0.136)	(0.143)	(0.165)
Income	−0.019	0.140*	−0.007	−0.022	−0.107
	(0.089)	(0.082)	(0.091)	(0.094)	(0.109)
Age	0.015***	0.040***	0.058***	0.073***	0.016***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Male	−0.290**	−0.078	0.324**	0.728***	−0.280*
	(0.130)	(0.118)	(0.132)	(0.138)	(0.158)
Constant	0.402	0.264	−1.714***	−2.706***	1.366***
	(0.271)	(0.250)	(0.293)	(0.316)	(0.303)
Akaike Inf. Crit.	16,655.290	16,655.290	16,655.290	16,655.290	16,655.290

Note: *p<0.1; **p<0.05; ***p<0.01

Table B32: Clustered bootstrap p-values for attitude towards gay rights

	DV: Attempts to give equal opp. to gays gone (ref. category: Not nearly far)				
	Not far	About right	Too far	Way too far	Don't know
Constant	0.380	0.500	0.003	0	0.113
Financial Literacy (# correct)	0.984	0.554	0.835	0.324	0.020
High education	0.203	0	0.002	0	0.002
Income	0.850	0.379	0.954	0.859	0.451
Age	0.092	0	0	0	0.080
Male	0.033	0.472	0.051	0.022	0.040

References

Calvert, R.L. (1985). “The Value of Biased Information: A Rational Choice Model of Political Advice”. In: *The Journal of Politics* 47.2, pp. 530–55.

Colantone, I. and P. Stanig (2018). “Global competition and Brexit”. In: *American Political Science Review* 112.2, pp. 201–218.

Elwert, F. (2013). “Graphical causal models”. In: *Handbook of Causal Analysis for Social Research*. Ed. by S.L. Morgan (ed.) Springer Science. Chap. 13.

Lusardi, A. and O.S. Mitchell (2014). “The economic importance of financial literacy: Theory and evidence”. In: *Journal of Economic Literature* 52.1, pp. 5–44.

Montagnoli, A. et al. (2016). “Financial literacy and political orientation in Great Britain”. In: *IZA Discussion Paper* 10285.

Monticone, C. (2010). “How much does wealth matter in the acquisition of financial literacy?” In: *The Journal of Consumer Affairs* 44.2, pp. 403–422.

Pearl, J. and D. Mackenzie (2018). *The book of why: The new science of cause and effect*. Basic Books.

Textor, J. et al. (2016). “Robust causal inference using directed acyclic graphs: the R package ‘dagitty’”. In: *International Journal of Epidemiology* 45.6, pp. 1887–1894.

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