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

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Abstract

Recent events in Europe and the U.S. suggest that the liberal order is increasingly under threat as nationalist, protectionist, and populist political entrepreneurs and their agendas are gaining significant ground across the Western world. This illiberal shift has impacted individual policy preferences on domestic and international economic issues. Many theories have been formulated as to which factors are more likely to explain such policy preferences. My hypothesis is that financial literacy affects economic policy preferences. In this paper, I analyze data from the British Election Study and I use multinomial logit models to test my theory on three contentious issues: Brexit, immigration, and views on 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 they are more likely to think that free trade with the EU and immigration are good for the British economy.

1   Introduction

The wave of liberal democracies and open economies that has triumphed over the West since the second half of the twentieth century is under threat, as vote shares of nationalist parties cross significant thresholds, the British people decided to leave the European Union, and the U.S. elected Donald Trump as their President. This illiberal shift has impacted domestic policy choices and preferences on domestic and international economic issues.

Why, despite overall benefits to national economies, some people still oppose free trade and immigration? Why did Brits vote in favor of Brexit, despite the negative consequences this will entail for the British economy? Several theories have been formulated as to which factors are more likely to explain such policy preferences. I hypothesize that financial literacy affects individual economic policy preferences. Various scholars have investigated what shapes people's attitudes towards trade[1], immigration[2], or Brexit[3], but apart from a few exceptions[4], none of these studies have investigated the effects of financial literacy on economic policy preferences. Recent studies have analyzed the effects of financial literacy on retirement choices and political preferences[5]. Financial literacy has been determined to be a key factor in affecting savings, employment and retirement choices. I claim that financial literacy may be key not only in the private sphere but also in the public sphere, facilitating the introduction of welfare-enhancing reforms[6]. As Stigler 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'[7].

In order to clarify the underlying theoretical mechanisms, I build a formal model that describes how financial literacy affects policy preferences. More specifically, financial literacy affects the accuracy with which an individual can evaluate the short-term and long-term expected costs and benefits of a certain policy: financially literate individuals are more likely to more accurately predict the effects of a specific economic policy on their economic well-being. Conversely, financially illiterate individuals are less likely to be accurate at estimating the effects of a policy on their economic well-being and, as a result, they may be more likely to rely on other factors, such as core personal values (for example culture, political ideology, identity, etc.), or cues from reference groups, rather than on cost-benefit analyses, to make their policy decisions. Furthermore, this paper is not claiming that culture or identity do not matter in affecting policy choices. Several studies find

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1. Burgoon and Hiscox 2008; Hainmueller and Hiscox 2006; Mansfield and Mutz 2009; O'Rourke and Sinnott 2001; Scheve and Slaughter 2001a; Walstad 1997.

2. Daniels and Von der Ruhr 2003; O'Rourke and Sinnott 2006; Scheve and Slaughter 2001a.

3. Colantone and Stanig 2018; Goodwin and Heath 2016; Inglehart and Norris 2016.

4. Mansfield and Mutz 2009; Walstad 1997.

5. Lusardi and Mitchell 2014; Lusardi 2008; Montagnoli et al. 2016.

6. Fornero 2015.

7. Stigler 1970, 79.

that culture does play an important role in determining immigration, trade, or European integration policy preferences[8]. However, this study examines the effect of financial literacy, which is usually unaccounted for in the previous literature, controlling for alternative explanations.

Voters' economic policy preferences may have very significant effects on trade deals, immigration policy, and decisions on whether to leave or remain in the European Union. The current backlash against globalization and European integration could lead to welfare losses for the overall population. If further research confirmed that financial literacy does affect people's economic policy preferences, this would have significant implications. First, it would provide new insights to the literature on determinants of economic policy preferences. Second, it could clear the way for randomized control trials in the field. The latter would permit to address internal validity issues and to accurately estimate cause and effect in the relationship of interest. Finally, it would provide policy implications, as it would imply that at least in the cases under analysis, in the long-term, providing economic and financial courses from early education, may potentially increase support for welfare-enhancing reforms.

In developing this argument, I start from an analysis of the British Election Study (BES) data, since at this time it represents the most comprehensive available dataset with questions on both financial literacy and policy preferences. My study concentrates on three contentious issues: views on trade, Brexit, and immigration. I test the hypotheses that financial literacy affects policy preferences for free trade, immigration and Brexit using multinomial logit models. The theory 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 more accurately estimate the effects of that policy on their expected utility. In the specific cases under investigation it is hypothesized that winners from globalization (i.e. those on high incomes, with tertiary education, performing non-routine jobs, and living in areas not highly exposed to the Chinese import shock) are more likely to support economic openness than similar financially illiterate individuals. Conversely, financially literate losers from globalization (those on low incomes, with secondary education or less, performing routine jobs, and living in areas highly exposed to the Chinese import shock) are less likely to support economic openness than similar financially illiterate individuals. I also control for variables known to affect

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8. O'Rourke and Sinnott 2001, 2006; Inglehart and Norris 2016.

the relationships of interest such as political self-placement, cultural conservatism, immigration stock and inflow, and for other demographic variables such as age and gender. Morever, I also attempt to partially tackle the issue of endogeneity. One concern is that globalization may be driving both the decision to become financially literate and preferences for economic openness. As a result, in addition to individual self-reported perceptions of economic conditions, which may contain a great deal of heterogeneity, I also exploit region-level measures of globalization[9]. More specifically, I use Colantone and Stanig's measure of the Chinese import shock, which they find explains people's support for Leave in the Brexit referendum[10]. Furthermore, a second issue, also pertaining to omitted variable bias, is the possibility that financial literacy and preferences for economic openness may both be correlated with some omitted variable measuring progressive and liberal attitudes. As a result, I also test whether there is a relationship between financial literacy and social policy preferences, in particular I analyze attitudes towards gay and lesbian civil rights. If it is true that financial literacy affects the accuracy with which an individual weights the costs and benefits of a policy and is not just capturing a more liberal and progressive stance towards economic and social policies, then financially literate people should not be any more progressive on gay and lesbian civil rights than financially illiterate individuals, since it is not an economic decision based on cost and benefit calculations.

Findings suggest that financial literacy does affect individual policy preferences for free trade, immigration, and Brexit. However, surprisingly, there is not a differential effect between winners and losers from globalization, as hypothesized. Financially literate individuals, regardless of 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. The findings are unchanged when financial literacy is interacted with globalization,which is measured through the Chinese import shock. Furthermore, financially literate individuals are not more likely to be socially progressive, suggesting that financial literacy is not correlated with an omitted variable measuring progressive and liberal attitudes. 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 discusses the issue of endogeneity, section 5 presents

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9. Colantone and Stanig 2018.

10. Colantone and Stanig 2018.

the data and models, section 6 contains the findings and their discussion, and section 7 concludes.

2 Prior approaches

2.1 Trade preferences

Several scholars have investigated what shapes people's economic policy preferences. With respect to free trade, economists agree that free trade is beneficial at the aggregate level [11]. However, there are distributional consequences: although the majority of people in a country benefits from free-trade, some individuals do suffer economic harm[12]. One key question then regards what shapes people's attitudes towards trade. 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[13]. 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[14]. Acemoglu and Autor suggest that the routine content of tasks is key in determining differences across occupations[15]. 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[16].

Other scholars such as Hainmueller and Hiscox claim that the type of information to which citizens are exposed to, such as mainstream economic arguments, is likely to play a key role in shaping trade preferences[17]. Mansfield and Mutz find that educational effects almost disappear once individuals' anxieties about involvement with out-groups in their countries and abroad are

11. http://www.igmchicago.org/surveys/free-trade

12. Acemoglu et al. 2016; Fajgelbaum and Khandelwal 2016; Feyrer 2009; Irwin 2015.

13. Scheve and Slaughter 2001b.

14. Acemoglu and Autor 2011; Owen and Johnston 2017; Ebenstein et al. 2014; Matias Cortes 2016.

15. Acemoglu and Autor 2011.

16. Acemoglu and Autor 2011; Owen and Johnston 2017; Ebenstein et al. 2014; Matias Cortes 2016.

17. Hainmueller and Hiscox 2006.

accounted for[18]. Mansfield and Mutz also find that people form their trade preferences following sociotropic perceptions, not self-interest[19]. It is thus more likely that people's attitudes towards trade are affected by how much they think it affected their country as a whole rather than how much it affected them. Mansfield and Mutz[20] also test Hainmueller and Hiscox's[21]'s argument by adding a question on whether respondents had taken an economic course, and they find this to have a small impact on trade preferences. One of the few studies investigating the effect of economic knowledge on trade policy preferences is the 1992 poll conducted by Walstad[22]. The authors ask a set of substantive economic knowledge questions and they find that economic knowledge does have an effect on support for trade.

2.2 Immigration preferences

Multiple studies have also examined the determinants of immigration policy preferences. Several studies show that increased immigration leads to net gains in GDP, small but temporary 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[23]. Dustmann and Frattini also find that immigrants that arrived to the UK after 2000, especially those from the European Economic Area (EEA), have made a positive fiscal contribution to the UK economy[24].

As far as immigration preferences are concerned, studies have been 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). Studies that test the labor market competition hypothesis draw on the factor proportion model and, assuming perfect substitutability between workers, suggest that an influx of low-skilled immigrants should

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18. Mansfield and Mutz 2009.

19. Mansfield and Mutz 2009.

20. Mansfield and Mutz 2009.

21. Hainmueller and Hiscox 2006.

22. Walstad 1997.

23. Coppel, Dumont, and Visco 2001; Foged and Peri 2013; Hamilton and Whalley 1984; Ottaviano and Peri 2006; Ottaviano, Peri, and Wright 2010; Peri 2009; Sequeira, Nunn, and Qian 2017.

24. Dustmann and Frattini 2014.

lower wages for low-skilled natives, while raising wages for high-skilled workers[25]. Daniels and Von der Ruhr, Scheve and Slaughter, and O'Rourke and Sinnott find that less-skilled workers are significantly more likely to favor restricting immigrant inflows in advanced economies[26]. However, O'Rourke and Sinnott also find that, similarly to preferences towards trade[27], attitudes towards immigration are affected by nationalist sentiments[28]. Hainmueller and Hopkins review about a hundred studies of immigration attitudes from more than two dozen countries[29]. The authors suggest that findings 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. They argue that studies that find a correlation between education and immigration attitudes may actually be capturing something else, such as differences in tolerance, ethnocentrism, cultural capital, or sociotropic assessments[30].

2.3   Brexit preferences

With respect to Brexit, the Institute for Fiscal Studies (IFS) estimated that the United Kingdom could lose 4% of its GDP by 2030 if it loses access to the European Union single market[31]. 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% of GDP[32]. Furthermore, a poll commissioned by the Observer and carried out by IPSOS Mori also found that among 600 economists, 88% agreed that Brexit would damage the UK's growth prospects over the next five years[33].

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25. Scheve and Slaughter 2001b.

26. Daniels and Von der Ruhr 2003; Scheve and Slaughter 2001a; O'Rourke and Sinnott 2006.

27. O'Rourke and Sinnott 2001.

28. O'Rourke and Sinnott 2006.

29. Hainmueller and Hopkins 2012.

30. Citrin et al. 1997; Chandler and Tsai 2001; Card, Dustmann, and Preston 2012.

31. Emmerson et al. 2016.

32. Miles 2016.

33. Sodha, Helm, and Inman 2016.

Recent studies drawing on aggregate-level data[34] and individual level-data[35] have investigated the determinants of Brexit. Most works have tested whether economic insecurity or cultural cleavages best explain preferences for Brexit. Goodwin and Heath examine the relative importance of social class, age, immigration, and ethnic diversity in affecting attitudes towards Brexit and find that support for Brexit is polarized along education lines[36]. Initially they suggested that support for Brexit was lower in places with more immigrants, however, once they account for changes in levels of migration they find that areas that experienced a sudden influx of immigrants over the last years tended to vote more in favor of Brexit. Conversely, Colantone and Stanig find that immigration has no effect on Brexit, but rather globalization, in the form of Chinese import shock, turns out to be the key determinant of regional support for Brexit[37]. Halikiopoulou and Vlandas use BES survey data and show that economic insecurity has profound effects on support for Brexit: low-income respondents with no education, working in routine occupations, and who have faced the largest impacts of immigration from the EU are more likely to support Brexit[38]. These findings stand in contrast to Inglehart and Norris, who use seven waves of the European Social Survey (ESS) and test both the economic insecurity and cultural backlash hypotheses on support for populism[39]. Inglehart and Norris find the most convincing evidence supporting the cultural backlash thesis[40]. They thus suggest that traditional values and retro norms, especially among the older generation and less-educated groups, are bigger determinants of Brexit than economic factors among the so-called left-behind by globalization and the knowledge economy, such as low-waged manual workers, unemployed workers, and those living on lower incomes.

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34. Colantone and Stanig 2018; Goodwin and Heath 2016.

35. Colantone and Stanig 2018; Halikiopoulou and Vlandas 2018; Inglehart and Norris 2016.

36. Goodwin and Heath 2016.

37. Colantone and Stanig 2018.

38. Halikiopoulou and Vlandas 2018.

39. Inglehart and Norris 2016.

40. Inglehart and Norris 2016.

2.4   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 financial and economic decisions 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[41]. 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. Individuals 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.)[42]. One area where research has considerably grown is that on the relationship between financial literacy and retirement choices. Several studies find that financial literacy affects the ability of individuals to save and to secure a comfortable retirement[43]. Women, minorities .and those without a college degree appear to be more likely to display low financial knowledge. Findings also suggest that one third of adults in their 50s have failed to develop any type of retirement saving plan. Poor planning may be a primary result of financial illiteracy. Furthermore, a recent study by Montagnoli et al. finds that there is a link between financial literacy and political orientation in Great Britain[44]: financially literate individuals are between 11 and 19% 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 investigate how financial literacy affects voting in the aftermath of a pension reform and they find that pension reforms

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41. Lusardi 2008.

42. Lusardi 2015.

43. Lusardi 2008; Lusardi and Mitchell 2014.

44. Montagnoli et al. 2016.

take less of a toll on the politicians that passed them in countries with higher financial literacy scores[45]. The complex nature of pension reforms requires some basic financial knowledge, such as notions of accumulation, compound interest, debt, and risk diversification. The authors suggest that if a reform is needed and citizens understand it, they are less likely to oppose its introduction. If, instead, a reform is expected to lead to differential outcomes and priviliges, more financially literate individuals would be better placed to realize this and oppose the reform[46]. The authors' results also suggest that financial and economic knowledge has distinctive features that more general dimensions of education do not capture[47].

3 Theoretical argument

3.1 Model

The model assumes that individuals are guided largely 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. In the model, for simplicity, the are two types of individuals: financially literate and financially illiterate. Each individual has his or her own prior probability distribution over U, one 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[48], 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 (see Figure 1 for the probability density function). Both types of individuals' prior subjective probability density functions for the policy's utility are:

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

45. Fornero and Lo Prete 2019.

46. Fornero and Lo Prete 2019.
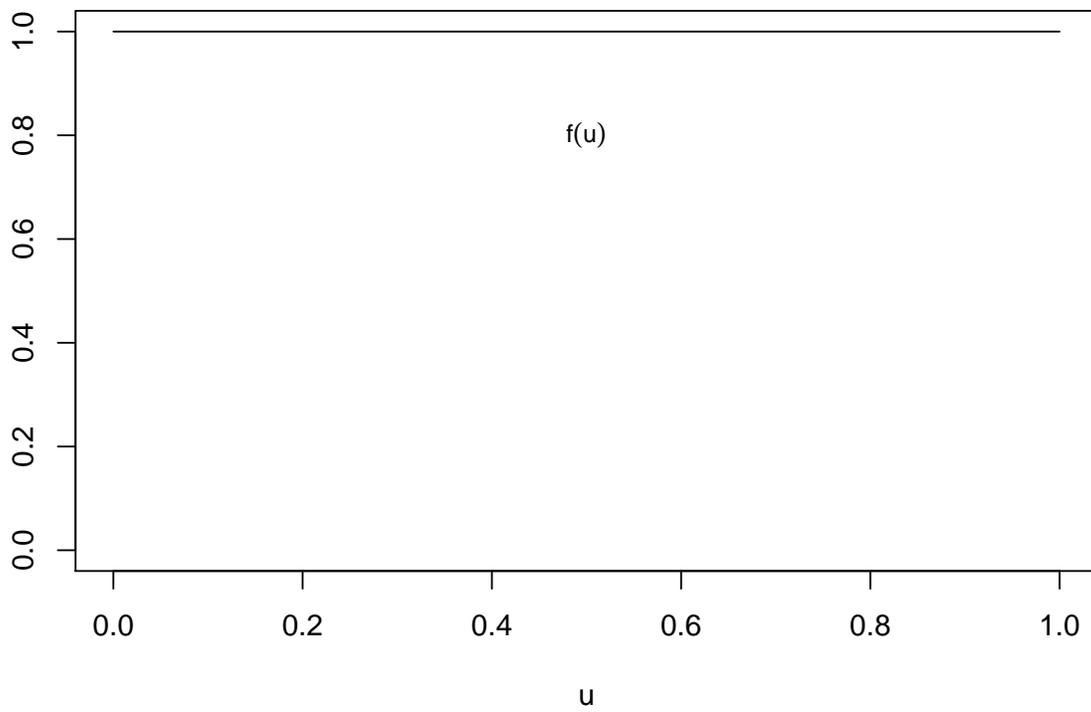
47. Fornero and Lo Prete 2019.

48. Calvert 1985.

Figure 1: Prior probability for *U*

Then, each individual will observe X, the signal about U, which will vary across different individuals and which will depend on the true but hidden utility of the policy and on α, an accuracy 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, 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.

$$X \sim TN(\mu, \sigma^2, 0, 1)$$

$$\mu = u^\alpha$$

$$\sigma^2 = (log\alpha + \hat{\sigma^2})^2$$

X has a truncated normal distribution and lies within the interval $X \in [0, 1]$. The closer the signal is to 1 the better the policy is argued to be, the closer the signal is to 0 the worse the policy is argued to be. The constant $\alpha \in [1, 10]$, which I will call the accuracy parameter[49], has two effects on the signal X itself, one on bias and the other on precision. I argue that α is equal to 1 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 2

49. If I allowed $0 < \alpha < 1$, it would be possible to also overestimate the benefits of a policy, whereas in the current 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 Figure 3). 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 0.001 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, and when the signal is more biased (so α is greater than one) the verdict is unlikely to be close to the true utility of the policy (see Figure 4, Figure 5, Figure 6, and Figure 7 for examples). Furthermore, X will also have larger variance, as the signal might not be as clear and informative. With larger values of α, it is very unlikely that the signal will communicate that the policy is good, no matter how good the policy actually is. The reasons why financially illiterate individuals will have different values of α could be several and they are not the topic of investigation here: it could be that the individual may not be conducting correct cost-benefit analyses, he or she may be getting biased but inexpensive cues from certain interested reference groups (such as politicians, employers' associations, or labor unions), or she may rely on ideology or other core personal values to make her decisions and these may not necessarily be reflecting her objective individual economic interest.

After observing $X = x$, the individual updates his or her prior, using Bayes rule, which gives $f(u|x)$, the posterior distribution of U:

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

Figure 8 shows the maxima a posteriori (MAP), the parameter values with highest posterior probability, for the same utility level (in this example $u = 0.8$) but different values of α. As α goes to 1, the updated belief about the expected utility from the policy is more likely to be closer the true utility of the policy. Conversely, as α increases, the distance between the most likely signal 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:
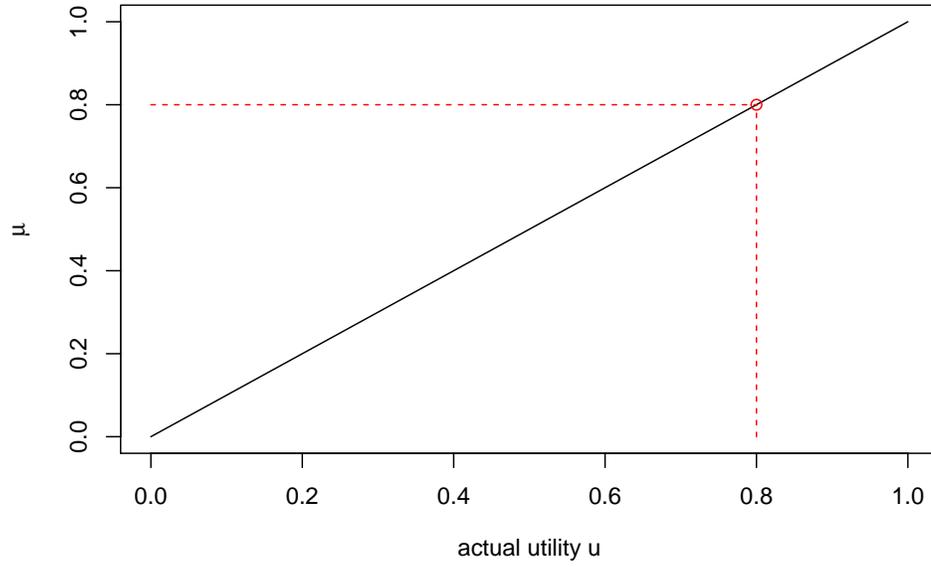
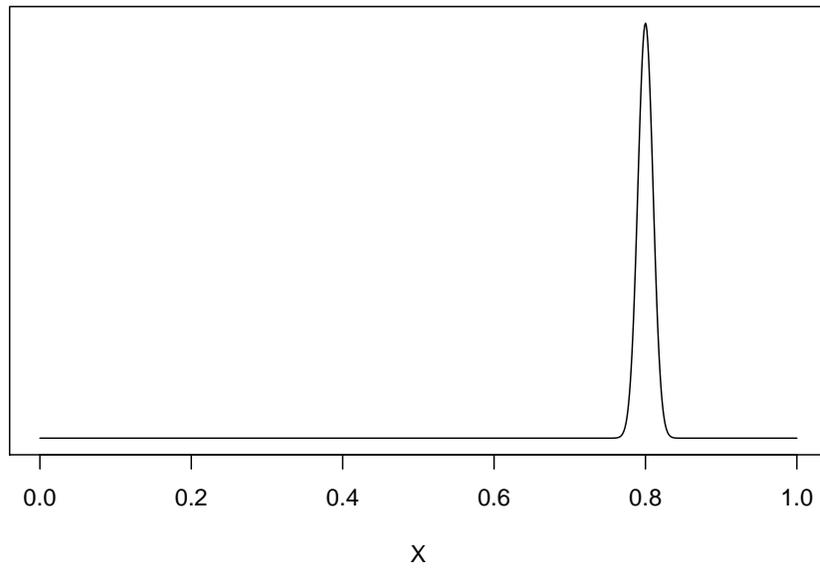Figure 2: μ when financial literacy=1, α=1 and true utility u=0.8

Figure 3: Truncated normal distribution of X when financial literacy=1, α=1 and true utility u=0.8
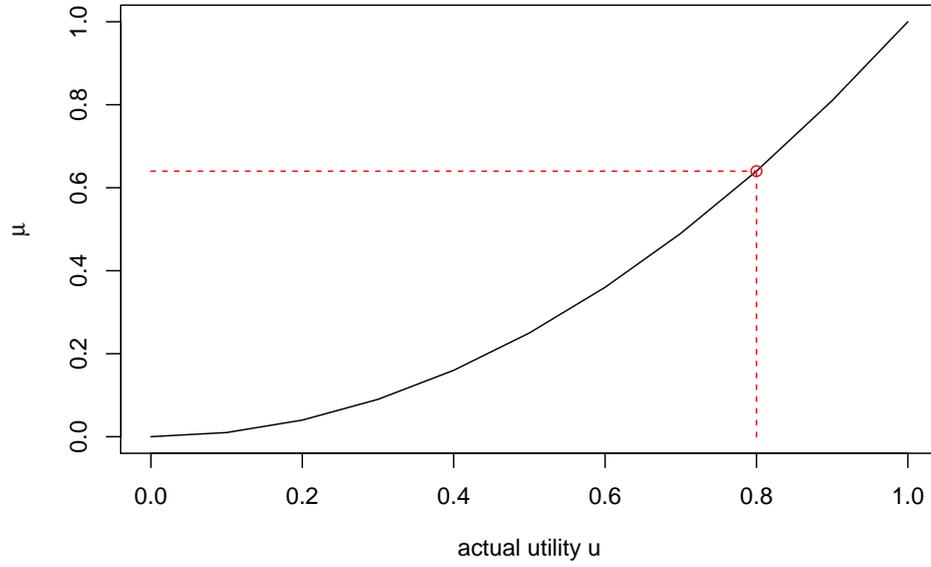
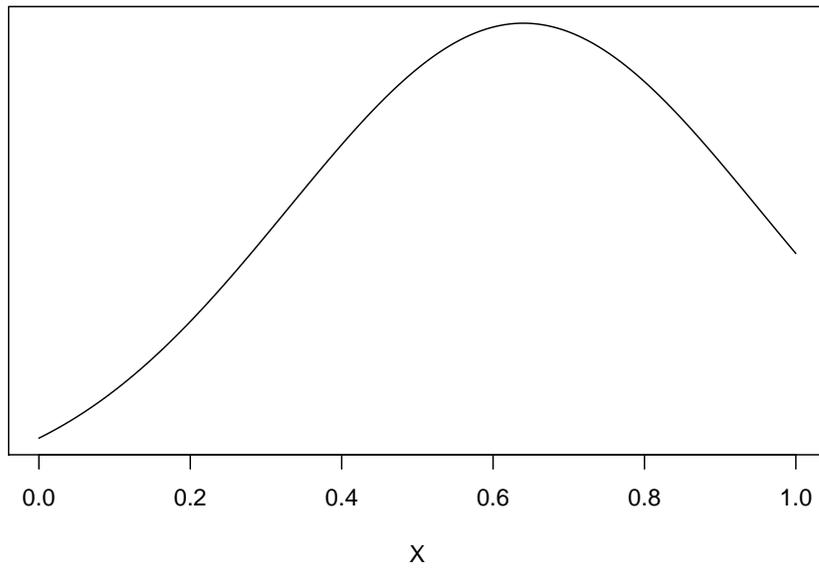Figure 4: μ when financial literacy=0, α=2 and true utility u=0.8

Figure 5: Truncated normal distribution of X when financial literacy=0, α=2 and true utility u=0.8
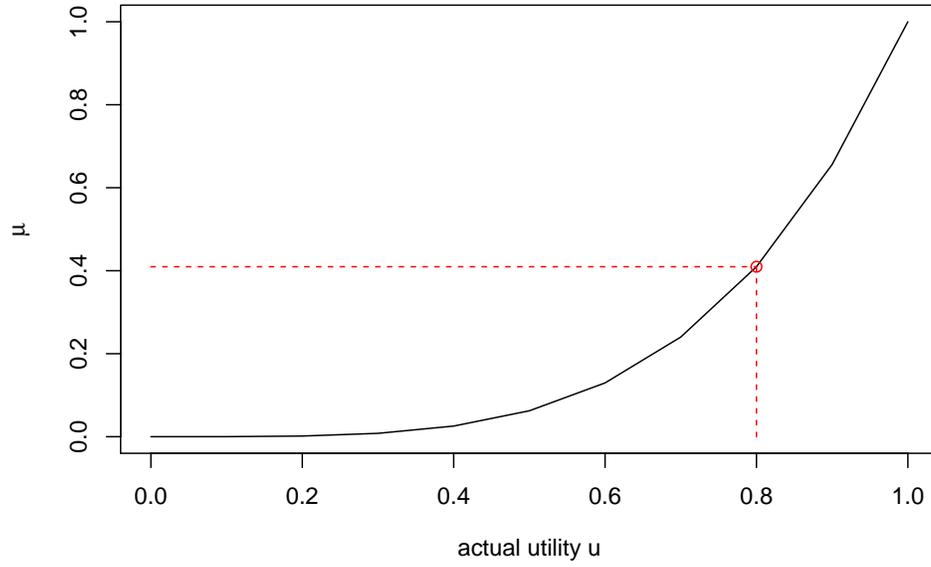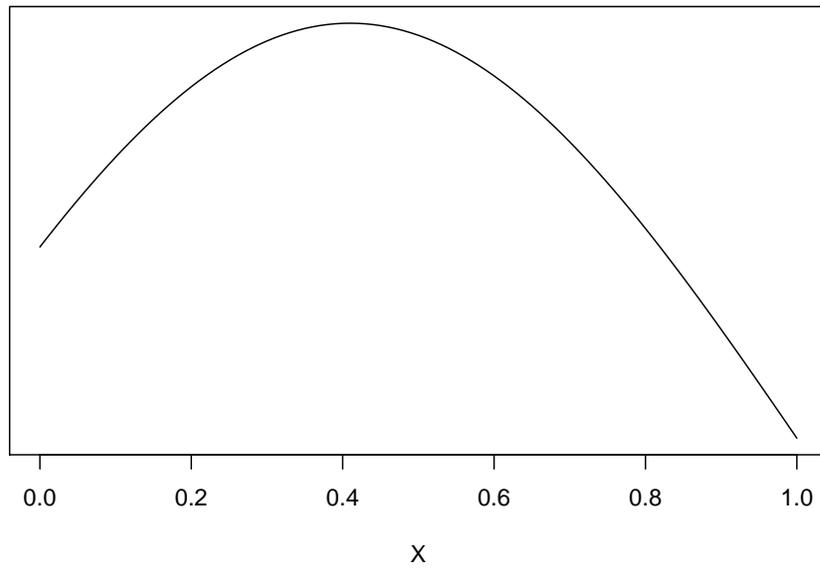
Figure 6: μ when financial literacy=0, α=4 and true utility u=0.8

Figure 7: Truncated normal distribution of X when financial literacy=0, α=4 and true utility u=0.8

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

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

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

For all levels of utility (Figure 9 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.

3.2   Individual preferences for Brexit, immigration, and free trade

In the baseline scenario, the 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. This is going to give more definitive answers when the expected utility of a policy is easy to calculate and there is little variation on its effects on different subpopulations. However, although in some circumstances there is near consensus on the aggregate effects of a certain policy, in other circumstances there may be more disagreement, even among experts, especially 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.

The hypotheses are based on the interaction between financial literacy and measures of individual self-interest, and how specific groups are differentially affected by certain economic policies. A
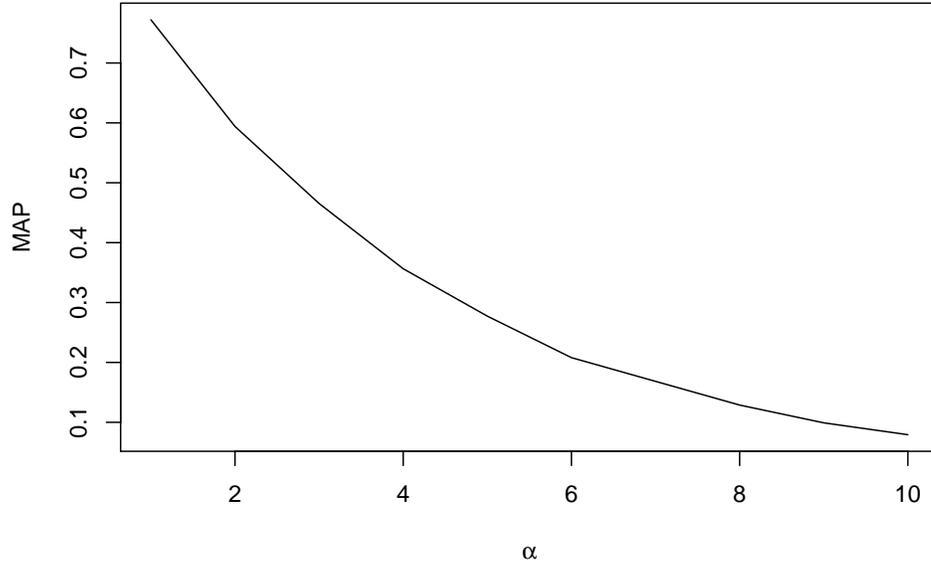
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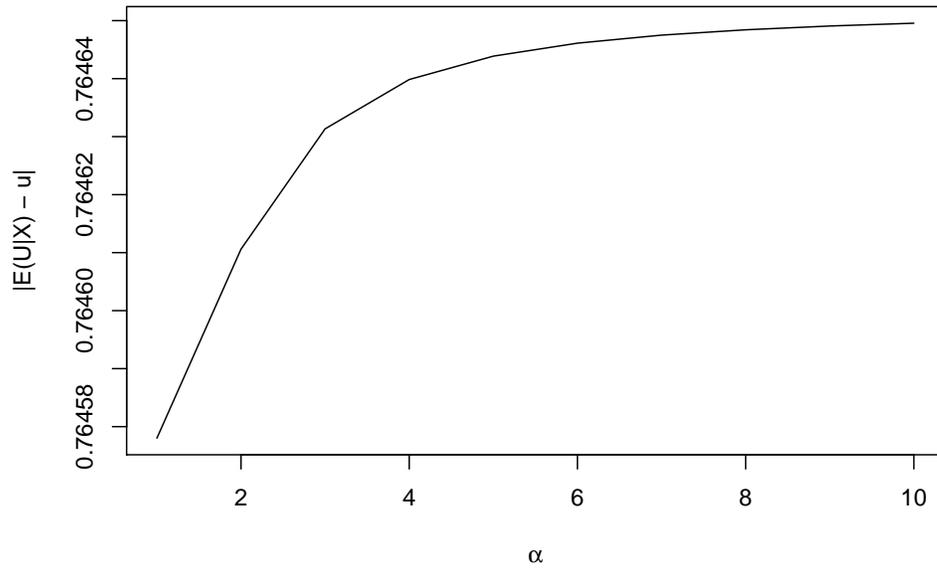Figure 8: Maxima a posteriori (MAP) with true utility u=0.8 and for all values of α

Figure 9: Difference between $E(U|X)$ and true utility with u=0.8 for all values of α

financially literate winner from economic openness is expected to be more likely to favor the policy that gives her the highest expected utility, and 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. Conversely, financially literate losers from globalization are expected to be more likely to support protectionist measures than similar financially illiterate individuals. Hence, I will argue that a financially literate loser from globalization (i.e. someone with a low income, secondary education or less, performing a routine job, and living in areas highly exposed to the Chinese import shock) is more likely to hold protectionist positions than a similar financially illiterate individual. Conversely, financially literate winners from globalization (i.e. those with high incomes, tertiary education, performing non-routine jobs, and living in areas not highly exposed to the Chinese import shock) are more likely to support economic openness than similar financially illiterate individuals.

1. Financially literate winners from economic openness are more likely to vote 'Remain' in the Brexit referendum than financially illiterate winners;

2. Financially literate winners from economic openness are more likely to think that immigration is good for the British economy than financially illiterate winners;

3. Financially literate winners from economic openness are more likely to think that free trade with the EU is good for the British economy than financially illiterate winners;

4. Financially literate losers from economic openness are more likely to vote 'Leave' in the Brexit referendum than financially illiterate losers;

5. Financially literate losers from economic openness are more likely to think that immigration is bad for the British economy than financially illiterate losers;

6. Financially literate losers from economic openness are more likely to think that free trade with the EU is bad for the British economy than financially illiterate losers.

4 Endogeneity

An issue with this empirical approach is endogeneity. If there were no time and budgets constraints, the optimal way to test the hypotheses would be through a randomized controlled trial (RCT). An RCT would allow us to tackle internal validity issues and to correctly estimate cause and effect within the sample of interest. The experiment would imply implementing a pilot course on introductory economics and finance and give this course to the treatment group but not to the control group, in both of which people would have been randomly assigned. Before and after giving the treatment both groups would be asked, among other survey questions, policy preferences questions. That way, it would be possible to test if the treatment had any effect into shifting individual policy preferences. This, however, would be subject to large time and budget constraints and may not be feasible. Foregoing the experiment means that I am 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 address this problem by controlling for all the alternative explanations that have been offered in the existing literature for the relationship under study.

One significant issue with this empirical approach regards omitted variable bias. Globalization may affect both preferences for economic openness and the propensity to acquire financial literacy, 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. The problem with the self-reported measures of economic conditions (such as education, income, and routine tasks) available is that they contain a significant amount of heterogeneity and they may not be tapping correctly who the globalization winners and losers are. Colantone and Stanig provide an objective measure of globalization through the Chinese import shock. More specifically, regions more exposed to the Chinese import shock, due to their sectoral specialization, are expected to face larger employment losses and declining wages as Chinese imports rise. In particular, they show that support for Leave is significantly higher in regions where the Chinese import shock is higher[50]. Hence, one possibility is that globalization and its pressures may be affecting both a person's decision to acquire financial

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50. Colantone and Stanig 2018.

literacy and their preferences for economic openness. Unfortunately, a time-varying measure of financial literacy, which would allow me to see if this changes based on changes in globalization pressures, is not available. However, in all my models, I control for globalization, using Colantone and Stanig's objective measure. Furthermore, I also run three models in which I interact financial literacy with this objective measure of globalization, to test what the effect of financial literacy is for different levels of globalization pressures, going beyond the potentially imperfect self-reported measures of economic conditions[51].

The second issue also pertains to omitted variable bias. There is a possibility that financial literacy and preferences for economic openness may both be correlated with some omitted variable measuring progressive and liberal attitudes. More educated people may be more financially literate and also more likely to be more progressive in their economic and social views. In order to test for this possibility, besides interacting financial literacy with education, I check whether financial literacy predicts attitudes towards gay and lesbian civil rights. If indeed financial literacy is correlated with progressive attitudes, then financially literate people should be more likely to think that gay and lesbian civil rights should be expanded. Otherwise, if financial literacy is not merely tapping such a progressive and liberal attitude, financially literate individuals should not be any more likely to be in favor of expanding gay and lesbian civil rights than financially illiterate individuals.

5 Methodology

5.1 Data

The British Election Study (BES)[52] 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

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51. Colantone and Stanig 2018.

52. Fieldhouse et al. 2018.

Scottish respondents only. I use the BES Wave 2 for the core of my empirical analysis [53]. 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.[54]

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?'[55]. My third dependent variable comes from wave 7 and is: 'Is this good or bad for Britain: Free trade with Europe'[56]. Table 1 shows descriptive statistics for the dependent variables. Furthermore, as mentioned in section 4, in order to partially tackle endogeneity concerns, I also test the model on a social issue, which comes from wave 2 and asks whether the following have gone too far or have not gone far enough in Britain: 'Attempts to give equal opportunities to gays and lesbians'.

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[57]. Table 2 shows descriptive statistics for my covariates of interest. The first question is: 'Suppose you have £100 in a savings account with an interest rate of 2% per

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

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

55. 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'.

56. 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, with a Cronbach's alpha greater than 0.80 and a Cramer's V that also averages about 0.80 for pairs of items. Hence, Mansfield and Mutz 2009 suggest that people's attitudes are consistent across different questions and it would be appropriate to describe them as having a single underlying protrade or antitrade preference.

57. Lusardi 2008; Lusardi and Mitchell 2014; Montagnoli et al. 2016.

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: 1) 0 correct answers, 2) 1 correct answer, 3) 2 correct answers, and 4) 3 correct answers.

In order to investigate the effect of 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[58]. 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[59]. *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)[60]. The variable *routine* is derived from a variable that reports NS-SEC analytic classes, operational categories, and sub-categories. Following the recent literature[61], I classify occupations into two groups based on whether the occupation is intensive in routine tasks, which

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58. Hays, Ehrlich, and Peinhardt 2005; Mansfield and Mutz 2009.

59. Acemoglu and Autor 2011; Matias Cortes 2016; Halikiopoulou and Vlandas 2018.

60. 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)

61. Acemoglu and Autor 2011; Matias Cortes 2016; Halikiopoulou and Vlandas 2018.

are more likely to be traded and replaced by technology, or not.[62] *Income* is an ordinal variable that indicates in which bracket the household's respondent gross income is. I have recoded this variable so that, based on values below the 25th percentile, between the 25th and 75th percentile, and above the 75th percentile, it takes three values. Furthermore, I also exploit region-level measures of globalization[63]. Colantone and Stanig 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[64]. Hence, I use their measure of the Chinese import shock to determine winners and losers from globalization at the regional level[65].

In order to rule out alternative explanations, I control for variables known to affect the relationships of interest such as political self-placement, cultural conservatism, age, gender, and immigrants' arrivals and immigrants' share, as measured by Colantone and Stanig[66]. Table 3 shows descriptive statistics for interaction terms and control variables, from one of the imputed datasets (N = 5,555). Political self-placement is an ordinal variable that goes from 0 – extreme left – to 10 – extreme right. In order to measure cultural conservatism, I used principal component analysis to reduce my four initial variables to a few principal components. The original four variables are: 'Britishness' from 1 to 7 (least to most), 'I would rather be a citizen of Britain than any other country in the world' which goes from 'Strongly disagree - 1' to 'strongly agree - 5'; 'the world would be a better place if people from other countries were more like the British', which also goes from 'Strongly disagree - 1' to 'strongly agree - 5'; and finally, 'do you think that immigration

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62. 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.

63. Colantone and Stanig 2018.

64. Colantone and Stanig 2018; Autor, Dorn, and Hanson 2013.

65. More precisely, I identify winners as those living in areas with (mean - 1 standard deviation) of the import shock value, and losers as those living in areas with (mean + 1 standard deviation) of the import shock value. 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.

66. Colantone and Stanig 2018.

undermines or enriches Britain's cultural life?' which I reversed and goes from 1 (enriches) to 7 (undermines). I decided to extract two components, which account for about 75% of the variance. I also account for demographic characteristics: male (0 female), and age (15-87). Immigrant share and immigrant arrivals, which come from Colantone and Stanig[67]'s data, stand respectively for the share of foreign-born residents out of the total population of the NUTS-3 regions in 2015, and for the inflow of immigrant workers divided by the total working age population of the region in 2015.

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
Attempts to give equal opportunities to gays and lesbians	
Not gone nearly far enough	6.5
Not gone far enough	15.4
About right	41.2
Gone too far	16.5
Gone much too far	14
Don't know	6.4

5.2 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

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67. Colantone and Stanig 2018.

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

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	
Rather be a citizen of UK than any other country W7		
Strongly disagree	3.8	
Disagree	9.8	
Neither agree nor disagree	20.8	
Agree	31.8	
Strongly agree	33.8	
World would be better if people were more like British W7		
Strongly disagree	6.3	
Disagree	16.9	
Neither agree nor disagree	34.2	
Agree	28.3	
Strongly agree	14.3	
	Mean	Sd
Political self-placement (left 0 - to right 10) W2 (W7)	5.2 (5.1)	2.5 (2.5)
Age	52.6	15.1
Britishness (1 least - 7 most) W2 (W7)	5.7 (5.7)	1.5 (1.5)
Immigration enriches (1) undermines (7) British culture W2 (W7)	4.5 (4.4)	2.0 (2.0)
Import shock	0.32	0.13
Immigrant share	14.5	11.7
Immigrant arrivals	2.1	1.9

preference using multinomial logistic regression:

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

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 thirteen models using this specification, with different outcome variables and interaction terms. In models 1A, 2A, and 3A the outcome variables are respectively Brexit, immigration, and free trade, and financial literacy is interacted with education. In models 1B, 2B and 3B the outcome variables are respectively Brexit, immigration, and free trade, and financial literacy is interacted with routine occupation. In models 1C, 2C and 3C the outcome variables are respectively Brexit, immigration, and free trade, and financial literacy is interacted with income. In models 1D, 2D, and 3D the outcome variables are respectively Brexit, immigration, and free trade, and financial literacy is interacted with the Chinese import shock. Finally, in model 4A the outcome variable is gay and lesbian civil rights and the independent variable is financial literacy. 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[68]. As a result, in all models I apply pairs clustered bootstrapped t-statistics (PCBSTs) with CRSE replicates. Esarey and Menger[69] argue that applying cluster-adjusted t-statistics (CATs) or

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68. Angrist and Pischke 2009; Esarey and Menger 2016; Green and Vavreck 2008.

69. Esarey and Menger 2016.

PCBSTs with CRSE replicates is a valid way of limiting the false positive rate when conducting hypothesis tests for multinomial models with a small number of clusters [70].

6 Findings

6.1 Financial literacy and self-reported measures of economic condition

I first estimate Equation 1 for the three different dependent variables and I test first whether financially literate winners from economic openness (as measured by self-reported indicators of economic condition) 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. Secondly, I test whether 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.

All the figures are plotted using CRSE replicates. Figure 10, Figure 12, Figure 14, Figure 16, Figure 18 and Figure 20 show respectively the expected probabilities 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, and income. Figure 11, Figure 13, Figure 15, Figure 17, Figure 19 and Figure 21 show instead first differences of the probabilities of voting for or against Brexit, and favoring or not favoring immigration and free trade with the EU between financially literate individuals (respondents who got all financial literacy questions correct) and financially illiterate individuals (those who got no correct answers), by education, routine occupation, and income groups, with 95% confidence intervals. The online appendix shows log-odds with standard errors in parentheses, and cluster bootstrap p-values.

Figure 11 shows that an individual with high education who answered all 3 financial literacy questions correctly (who we define as a financially literate individual) is 12.8% more likely to vote Remain in the Brexit referendum than a similar individual who answered no questions correctly

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70. 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 the figures. The R package documentation suggests that I drop the fixed effects for regions because they are absorbed into cluster-level coefficients
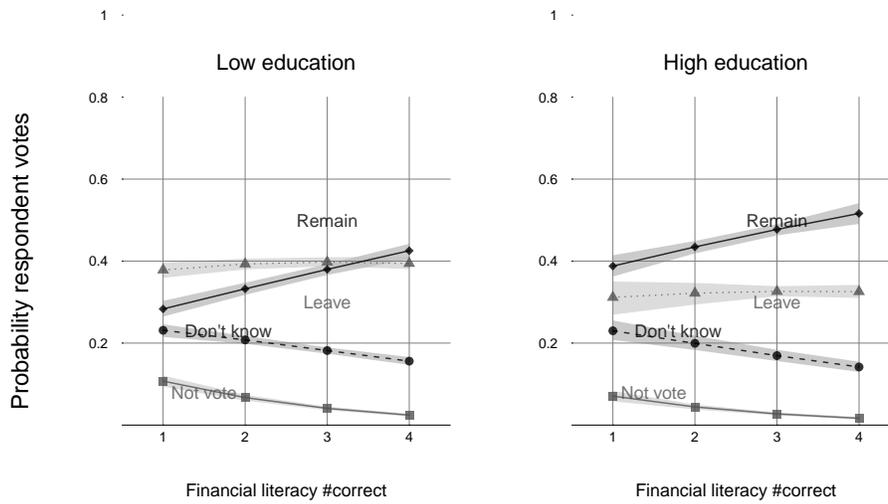
Figure 10: Expected probabilities of voting Remain or Leave in Brexit referendum - Education
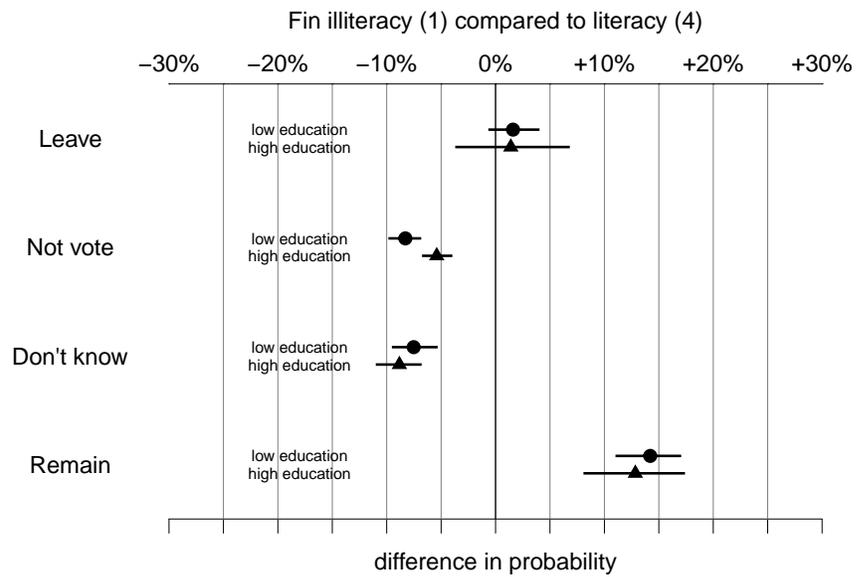

Figure 11: First differences in probability of voting Remain or Leave in Brexit referendum - Education
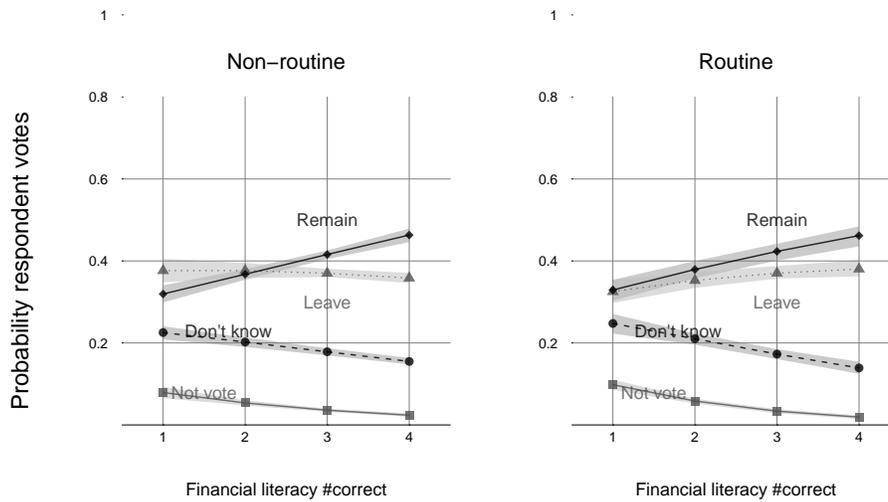
29

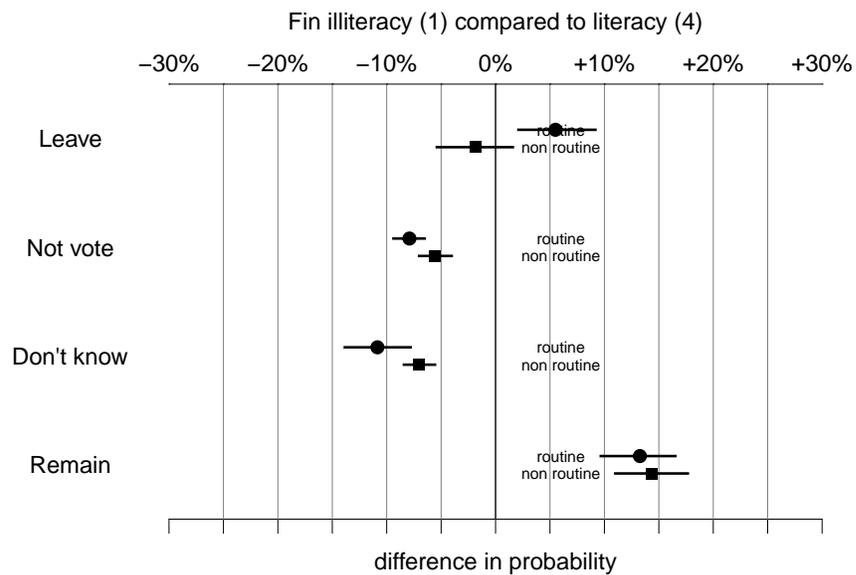Figure 12: Expected probabilities of voting Remain or Leave in Brexit referendum - Routine vs non-routine occupations

Figure 13: First differences in probability of voting Remain or Leave in Brexit referendum - Routine vs non-routine occupations
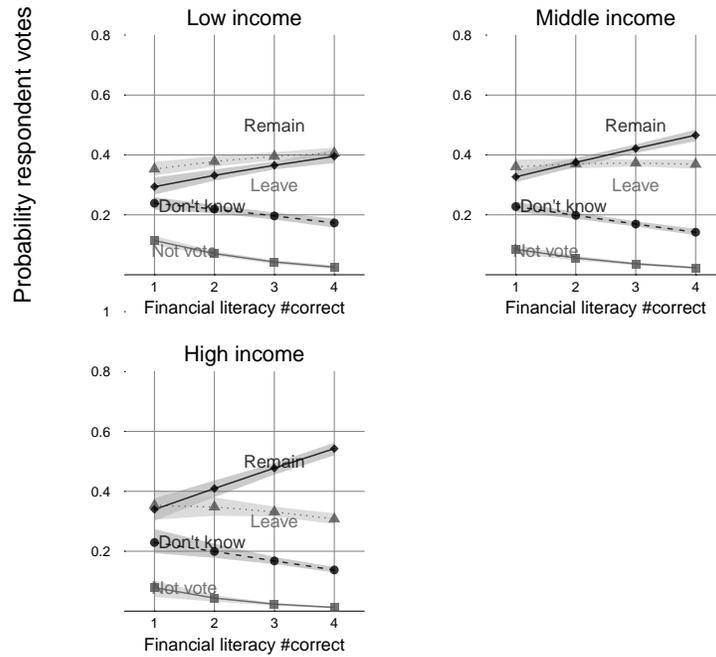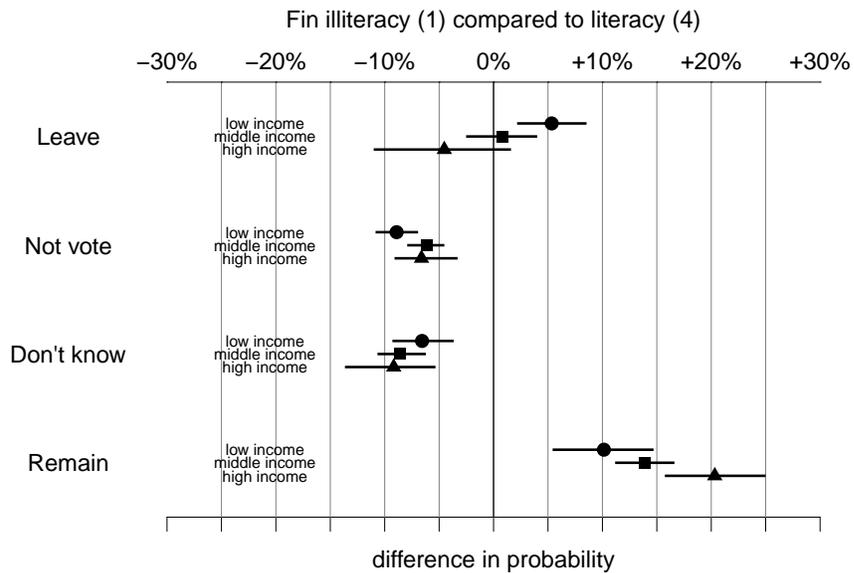
Figure 14: Expected probabilities of voting Remain or Leave in Brexit referendum - Income

Figure 15: First differences in probability of voting Remain or Leave in Brexit referendum - Income

(from here on financially illiterate individual). If we look at losers from economic openness we can see that financially literate individuals with low education are slightly more likely, by 1.6% to vote Leave in the Brexit referendum than similar financially illiterate individuals, however, this is not significant at the 95% confidence level, and hence the effect is not distinguishable from zero. They are also 14.2% more likely to vote Remain than a financially illiterate respondent. Figure 13 and Figure 15 tell a similar story. Financially literate workers performing non-routine jobs are 14.4% more likely to vote Remain in the Brexit referendum than similar financially illiterate individuals. Financially literate workers performing routine jobs are 5.5% more likely to vote Leave than similar financially illiterate individuals. However, they are also 13.3% more likely to vote Remain than similar financially illiterate individuals. Financially literate individuals with high incomes are 20.3% more likely to vote Remain in the Brexit referendum than similar financially illiterate individuals. Financially literate individuals with low incomes are more likely to vote Leave by 5.3% than similar financially illiterate individuals. However, they are also 10.1% more likely to vote Remain than similar financially illiterate individuals. These findings support hypothesis 1 that financially literate winners from economic openness are more likely to vote Remain than similar illiterate individuals. However, they do not entirely support hypothesis 4: of all financially literate losers from globalization, only routine workers and individuals on low incomes are more likely to vote Leave in the Brexit referendum than similar financially illiterate individuals. At the same time, all three groups of financially literate losers are more likely to vote Remain than similar financially illiterate individuals.

Figure 17 shows that a financially literate individual with high education is 11.3 % more likely to think that immigration is good for the British economy than a similar financially illiterate individual. If we look at losers from economic openness we can see that financially literate individuals with low education are, contrary to expectations, 4% less likely to think that immigration is bad for the British economy than similar financially illiterate individuals. They are also 10.4% more likely to think that immigration is good for the British economy than a financially illiterate respondent. Figure 19 suggests that financially literate workers performing non-routine jobs are 12.6% more likely to think that immigration is good for the British economy than a similar financially illiterate individual. Financially literate workers performing routine jobs are 2.7% more likely to think that immigration is bad for the British economy, but this is not significant at the 95% confidence
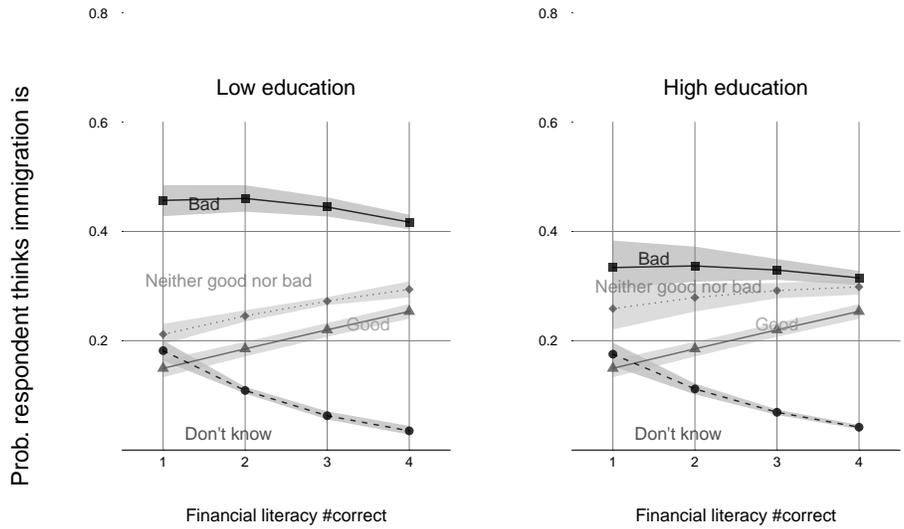
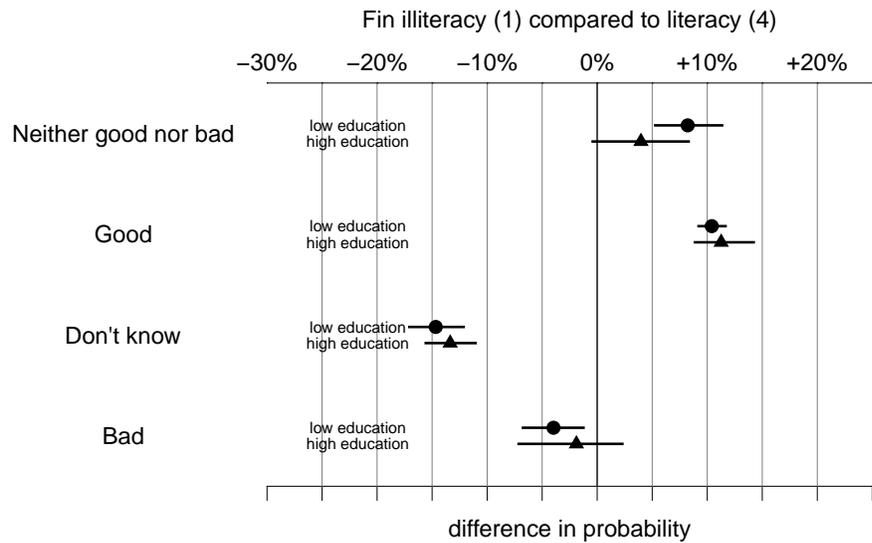Figure 16: Expected probabilities of thinking immigration is good/bad for UK economy - Education

Figure 17: First differences in probability of thinking immigration is good/bad for UK economy - Education
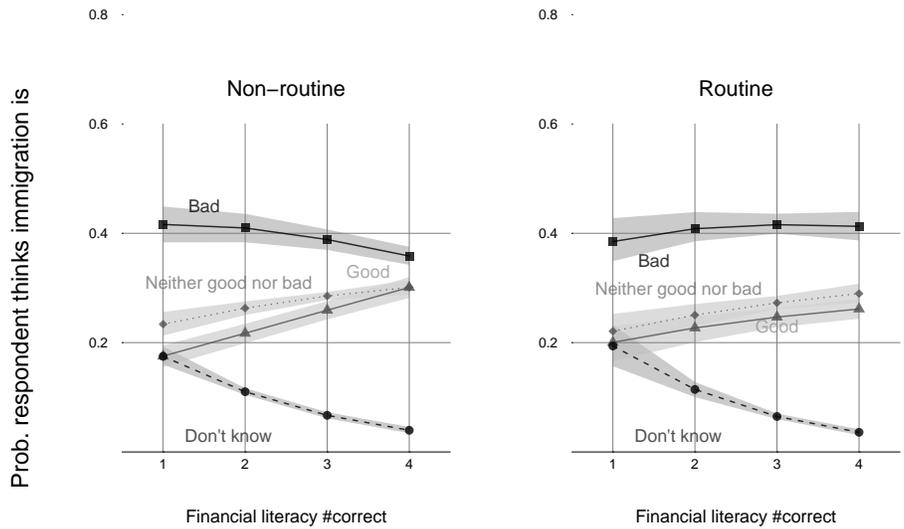
Figure 18: Expected probabilities of thinking immigration is good/bad for UK economy - Routine vs non-routine occupations
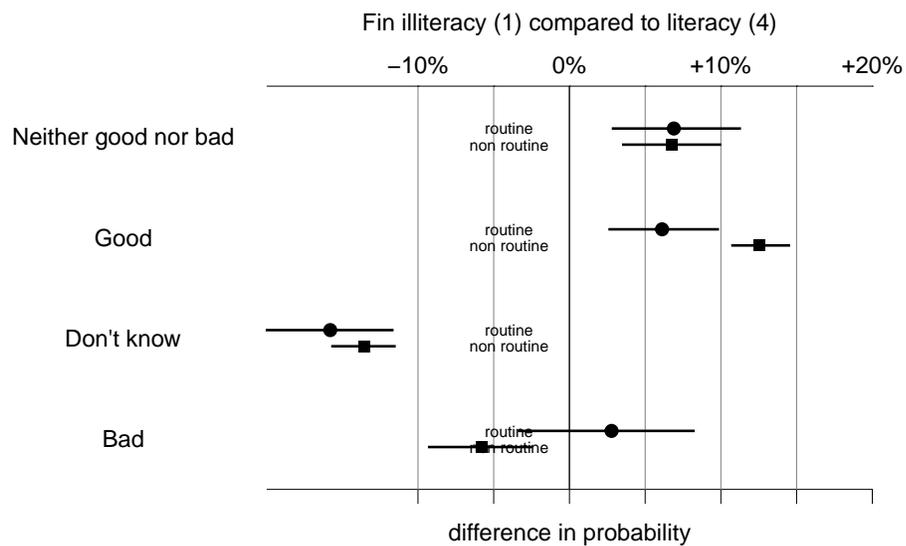

Figure 19: First differences in probability of thinking immigration is good/bad for UK economy - Routine vs non-routine occupations
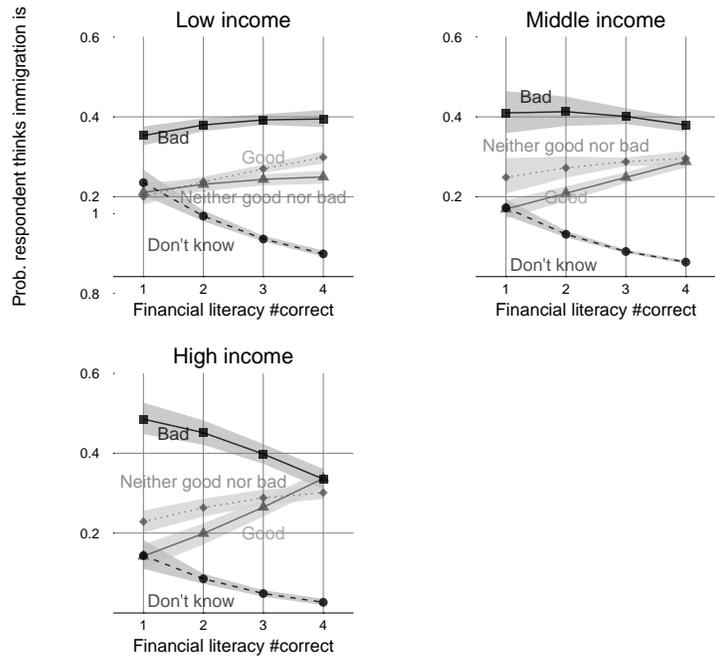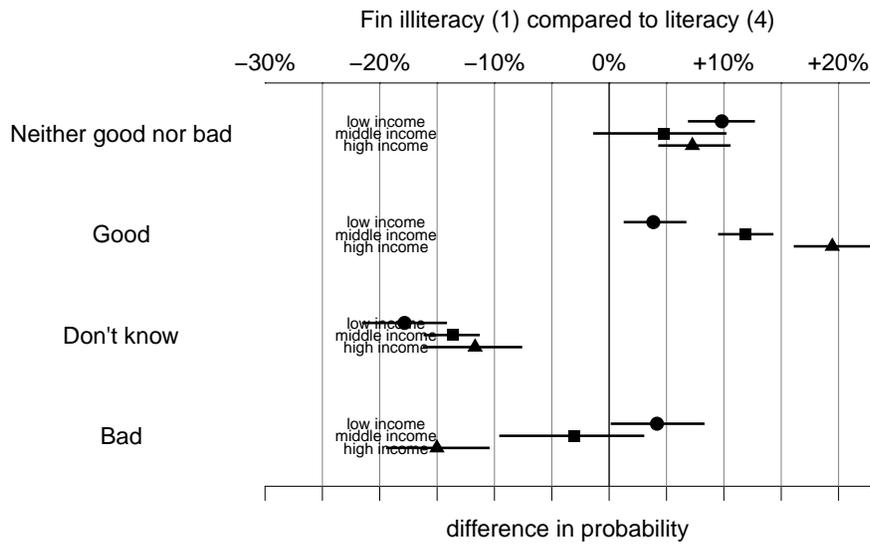
Figure 20: Expected probabilities of thinking immigration is good/bad for UK economy - Income

Figure 21: First differences in probability of thinking immigration is good/bad for UK economy - Income

level and hence the effect is not distinguishable from zero. Furthermore, they are 6.1% more likely to think that immigration is good than similar financially illiterate individuals. Figure 21 suggests that financially literate individuals with high incomes are 19.5% more likely to think that immigration is good for the British economy than a similar financially illiterate individual. Financially literate individuals with low incomes are 4.1% more likely to think that immigration is bad for the British economy than similar financially illiterate individuals. However, they are also 3.8% more likely to think that immigration is good for the British economy than a financially illiterate respondent. These findings support hypothesis 2 that financially literate winners from economic openness are more likely to think that immigration is good for the British economy than similar illiterate individuals. However, they do not entirely support hypothesis 5: of all financially literate losers from globalization, only individuals on low incomes are slightly more likely to think that immigration is bad for the British economy than similar financially illiterate individuals, and all three groups are actually more likely to think that immigration is good than similar financially illiterate individuals.

Figure 23 shows that a financially literate individual with high education is 28.5% more likely to think that free trade with the EU is good for the British economy than a similar financially illiterate individual. If we look at losers from economic openness we can see that financially literate individuals with low education are, contrary to expectations, less likely, by 9.4%, to think that free trade is bad for the British economy than similar financially illiterate individuals. They are also 32.5% more likely to think that free trade is good for the British economy than a financially illiterate respondent. Figure 25 suggests that a financially literate worker performing a non-routine job is 32.6% more likely to think that free trade is good for the British economy than a similar financially illiterate individual. Financially literate workers performing routine jobs are not, as predicted, more likely to think that free trade is bad for the British economy, they are actually 8.5% less likely to think free trade is bad than similar financially illiterate individuals. Furthermore, they are 27.3% more likely to think that free trade is good than similar financially illiterate individuals. Figure 27 suggests that financially literate individuals with high incomes are 28.1% more likely to think that free trade is good for the British economy than a similar financially illiterate individual. Financially literate individuals with low incomes are 10.9% less likely to think that free trade is bad for the British economy than similar financially illiterate individuals. Furthermore, they are
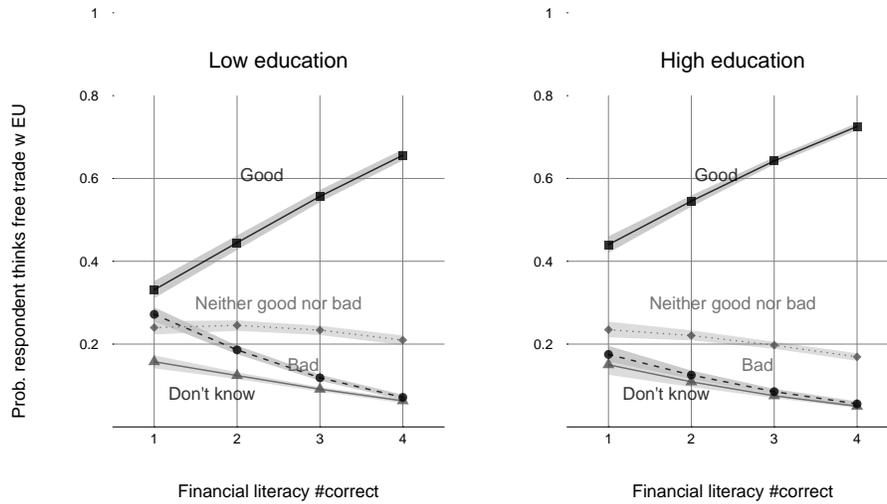
Figure 22: Expected probabilities of thinking free trade with EU good/bad - Education
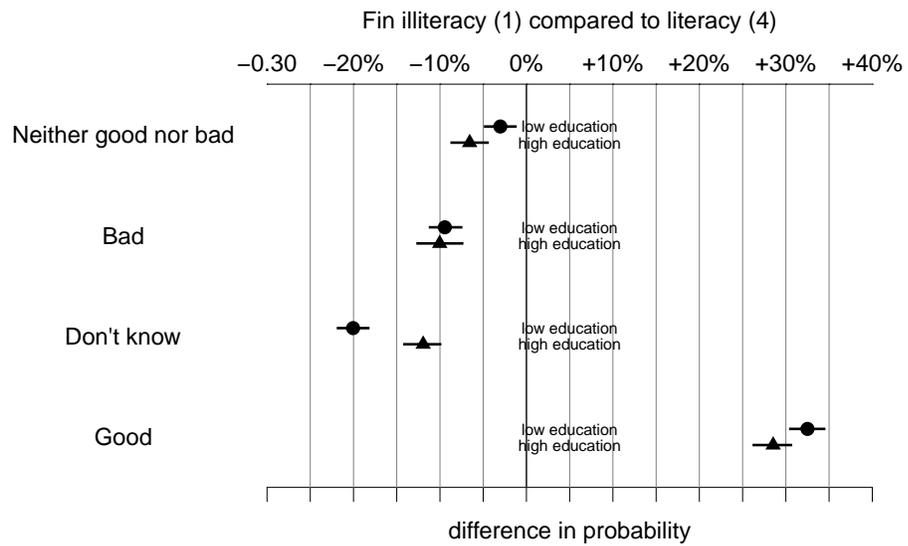

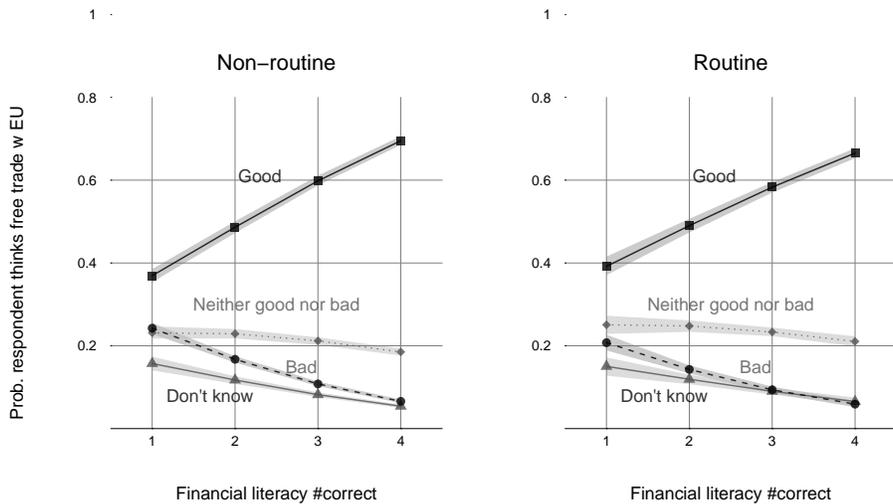Figure 23: First differences in probability of thinking free trade with EU good/bad - Education

Figure 24: Expected probabilities of thinking free trade with EU good/bad - Routine vs non-routine occupations
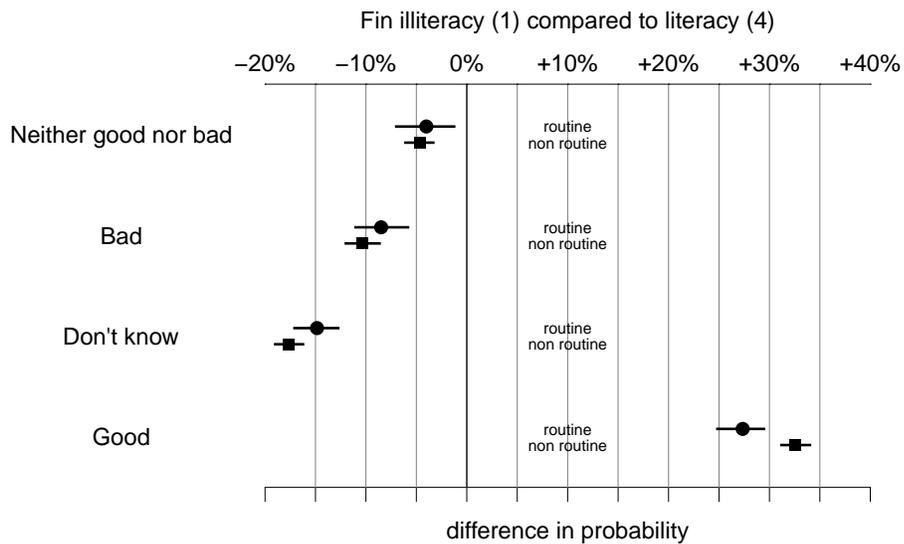

Figure 25: First differences in probability of thinking free trade with EU good/bad - Routine vs non-routine occupations
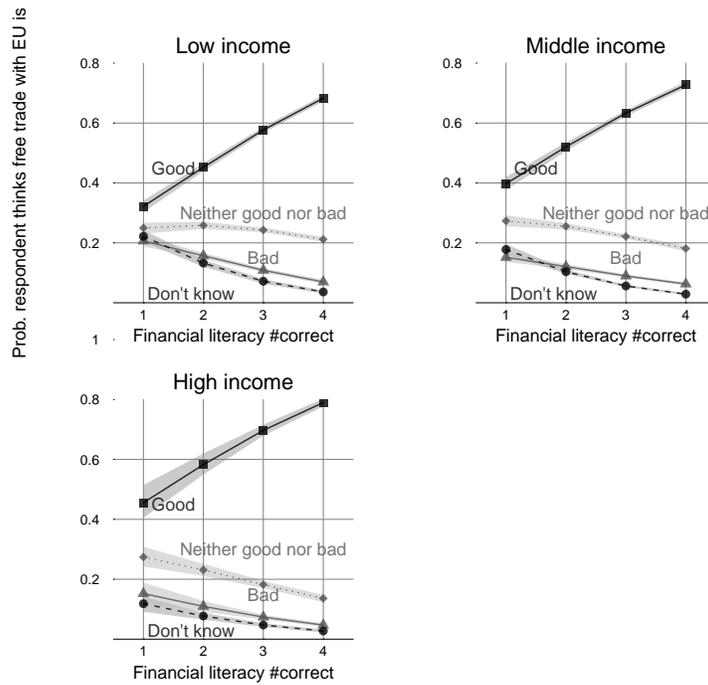
Figure 26: Expected probabilities of thinking free trade with EU good/bad - Income
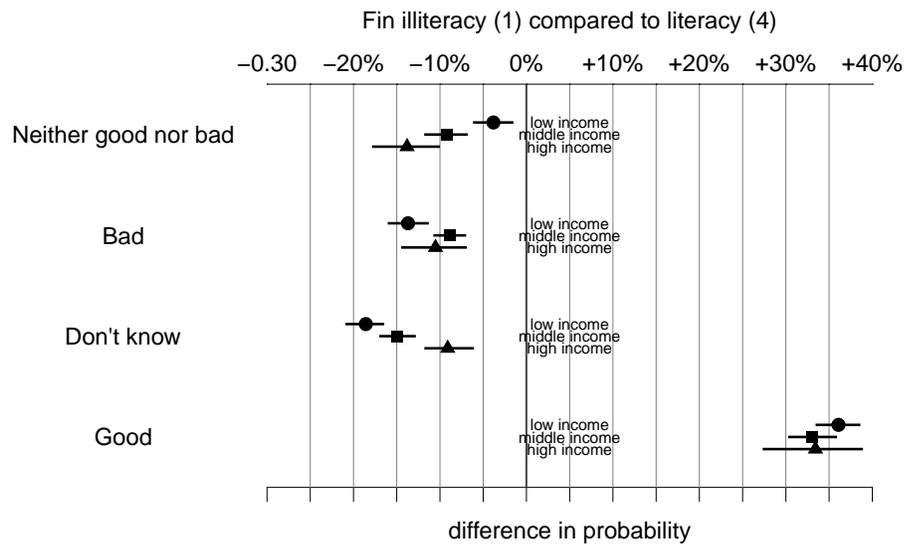

Figure 27: First differences in probability of thinking free trade with EU good/bad - Income

also 33.5% more likely to think that free trade is good for the British economy than a financially illiterate respondent. These findings support hypothesis 3 that financially literate winners from economic openness are more likely to think that free trade is good for the British economy than similar illiterate individuals. However, they do not support hypothesis 6: financially literate losers from globalization are not more likely to think that free trade is bad for the British economy than similar financially illiterate individuals. They are actually more likely to think that free trade is good than similar financially illiterate individuals.

6.2 Financial literacy and globalization measured by the Chinese import shock

Secondly, to partially address the endogeneity concerns and the issues with self-reported measures of economic condition, I again estimate Equation 1 for the three different dependent variables. However, this time I interact financial literacy with an objective indicator of globalization, as measured by the Chinese import shock. Hence, I test first whether financially literate winners from economic openness, i.e. individuals living in areas less exposed to the Chinese import shock, 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. Secondly, I test whether financially literate losers from economic openness, i.e. those living in areas highly exposed to the Chinese import shock, 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.

Figure 29 shows that a financially literate individual living in an area not highly exposed to the Chinese import shock is 18.7 % more likely to vote Remain in the Brexit referendum than a similar financially illiterate individual. Looking at losers from economic openness we can see that financially literate individuals living in areas highly exposed to the Chinese import shock are slightly more likely, by 1% to vote Leave in the Brexit referendum than similar financially illiterate individuals, however, this is not significant at the 95% confidence level and hence the effect is not distinguishable from 0. They are also 8.9% more likely to vote Remain than a financially illiterate
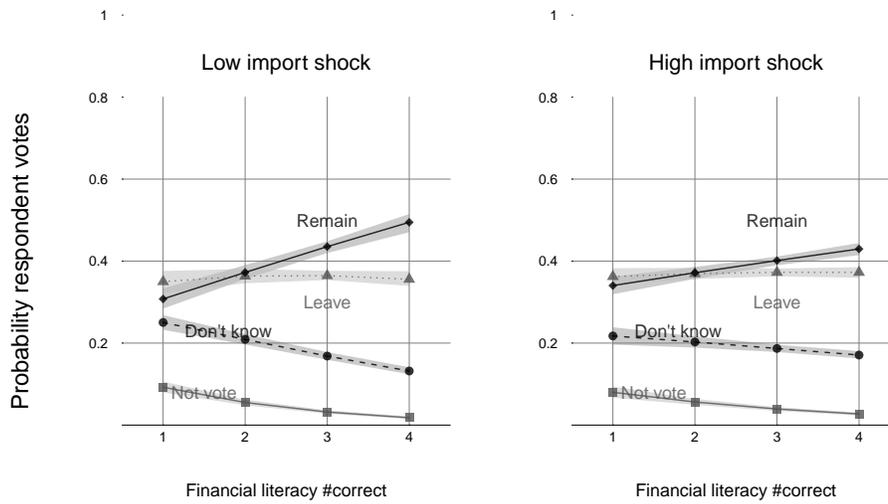
Figure 28: Expected probabilities of voting Remain or Leave in Brexit referendum - Import shock
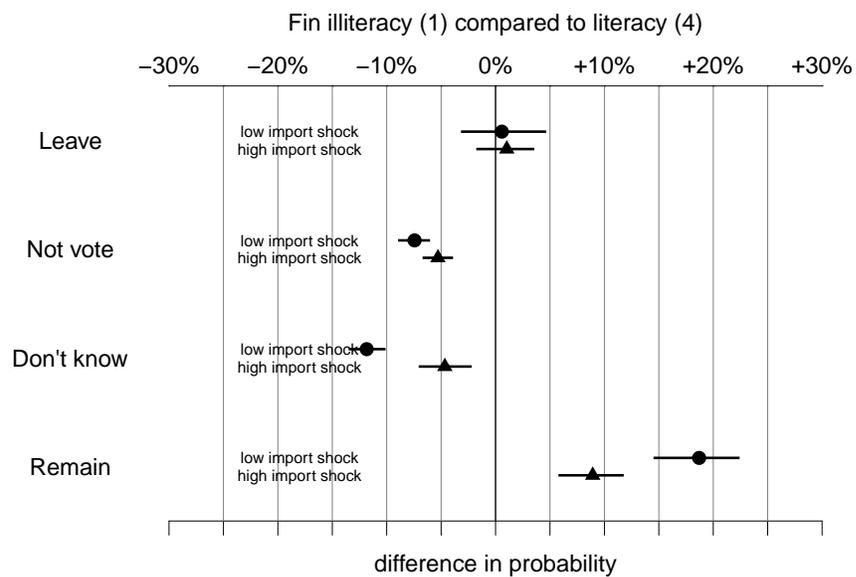

Figure 29: First differences in probability of voting Remain or Leave in Brexit referendum - Import shock
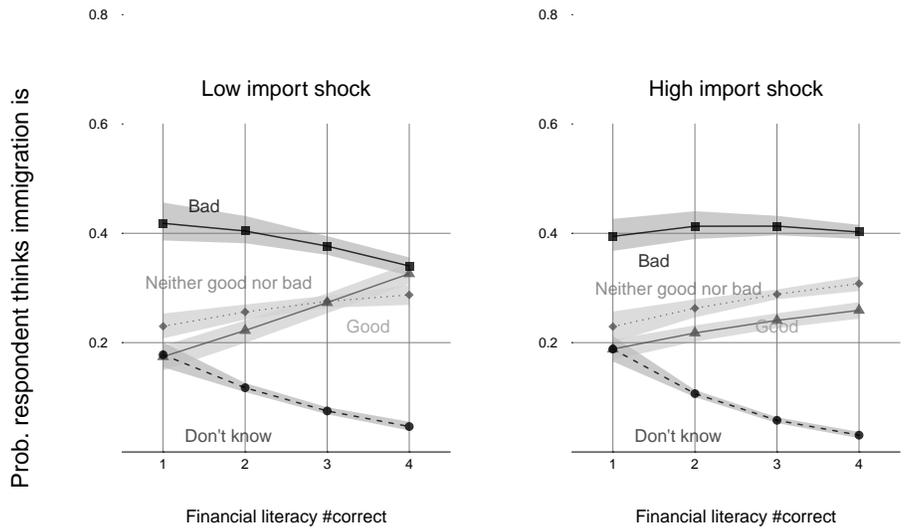
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Figure 30: Expected probabilities of thinking immigration is good/bad for UK economy - Import shock
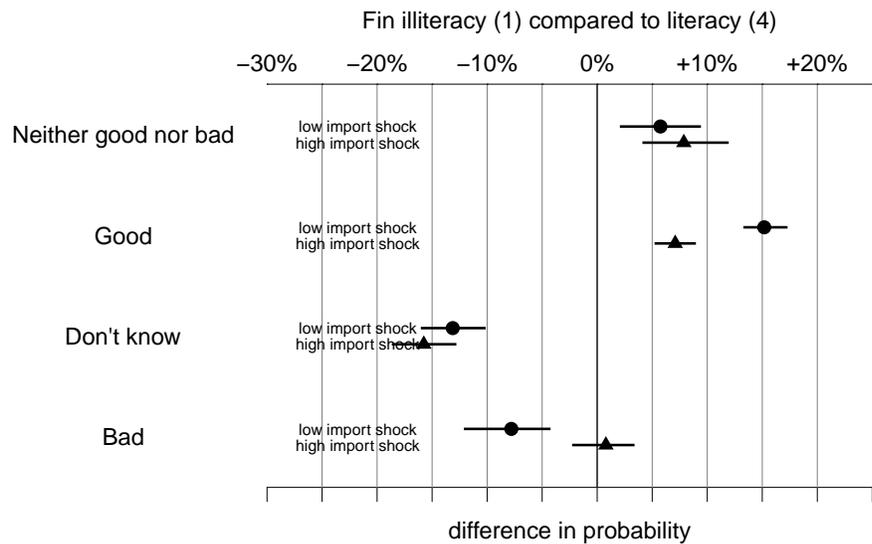

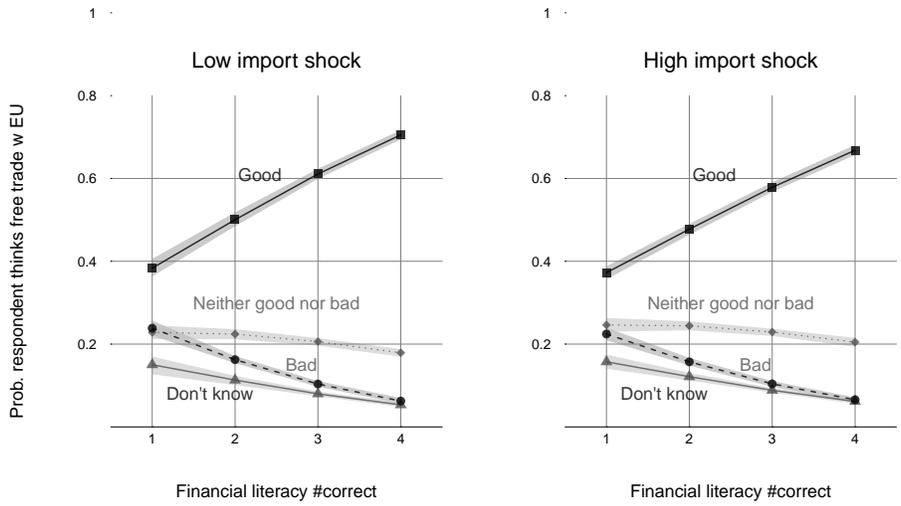Figure 31: First differences in probability of thinking immigration is good/bad for UK economy - Import shock

Figure 32: Expected probabilities of thinking free trade with EU good/bad - Import shock
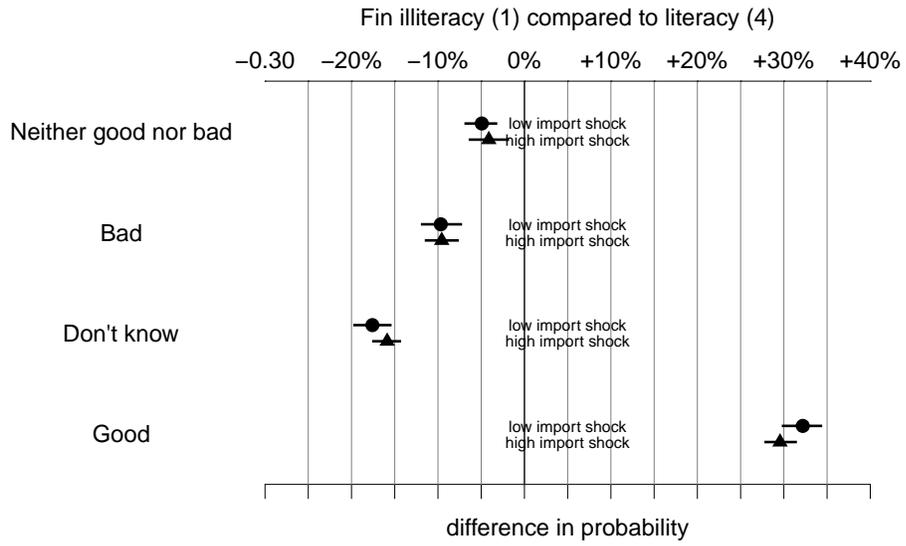

Figure 33: First differences in probability of thinking free trade with EU good/bad - Import shock

respondent. Figure 31 shows that a financially literate individual living in an area not highly exposed to the Chinese import shock is 15.2 % more likely to think that immigration is good for the British economy than a similar financially illiterate individual. Financially literate individuals living in areas highly exposed to the Chinese import shock are 0.8% more likely to think that immigration is bad for the British economy than similar financially illiterate individuals, however, this is not significant at the 95% confidence level and hence the effect is not distinguishable from 0. They are also 7.1% more likely to think that immigration is good for the British economy than a financially illiterate respondent. Finally, figure 35 shows that a financially literate individual living in an area not highly exposed to the Chinese import shock is 32.2% more likely to think that free trade with the EU is good for the British economy than a similar financially illiterate individual. Financially literate individuals living in areas highly exposed to the Chinese import shock are, contrary to expectations, less likely, by 11.3%, to think that free trade is bad for the British economy than similar financially illiterate individuals. They are also 28.1% more likely to think that free trade is good for the British economy than a financially illiterate respondent.

The main 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 hypotheses 1 to 3 and suggests that financially literate winners from more economic openness are more likely recognize its economic benefits. 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 hypotheses 4 to 6 and raises some interesting questions. Given data availability, we can only speculate as to the mechanisms through which this may be happening. One possibility is that more economic and financial literacy helps a potential loser from more openness abandon their short-term economic interests in favor of the long-term benefit, changing their time horizons. 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[71]. 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,

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71. Lahav, Rosenboim, and Shavit 2015.

and not to trade or immigration, as one study suggests this has been the case in the U.S.[72]. 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 suggest that people at the lower end of the social ladder concentrate spending on more traded sectors[73]. Future research should address these questions more thoroughly, potentially looking at the relationship between financial literacy and discount factors.

6.3   Financial literacy and social policy preferences

Finally, another concern is that financial literacy may be correlated with some omitted variable measuring progessive and liberal attitudes. Hence, a preference for economic openness would not be the result of a more accurate cost and benefit analysis, but it would merely be the result of a more progressive and liberal mindset. If this were true indeed, then we would expect financially literate individuals to be progressive not only about economic policies, but also about social policies. As a result, I test the model also on attitudes towards equal opportunities for gays and lesbians.

Findings suggest that financially literate individuals are 4% more likely to think that attempts to give equal opportunities to gays and lesbians have been just about right, they are 2% more likely to think that they have not gone far enough, but they are also 3.4% 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, and they are actually slighly more likely to think that these attempts have gone way too far, but this is not statistically significant at the 95% confidence level .This suggests that financially literate individuals are not necessarily more socially progressive than financially illiterate individuals, and hence it is unlikely that financial literacy is actually capturing an omitted variable measuring more progressive and liberal attitudes in general.

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72. Hicks and Devaraj 2015.
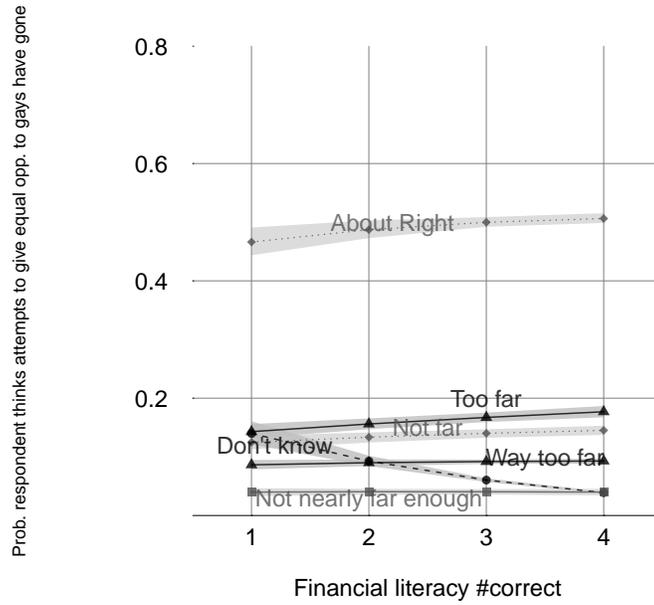
73. Fajgelbaum and Khandelwal 2016.

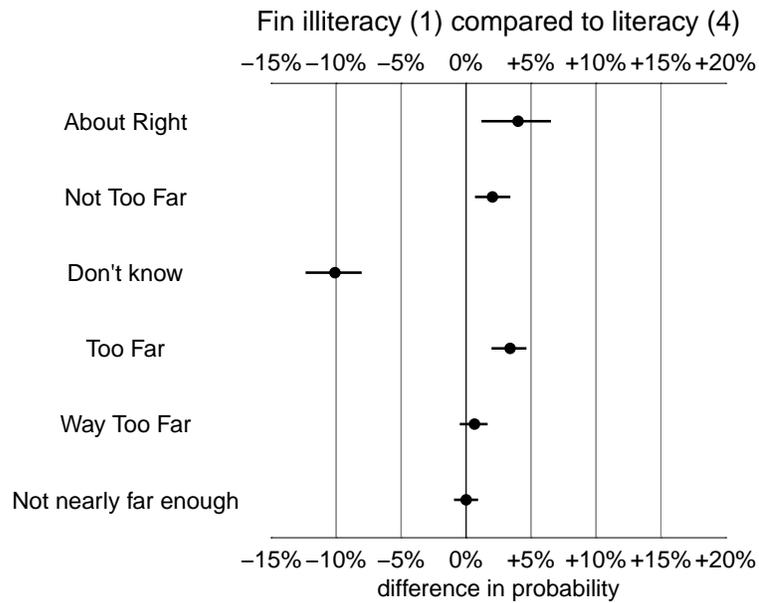Figure 34: Expected probabilities of thinking attempts to give equal opp. to gays have gone

Figure 35: First differences in probability of thinking attempts to give equal opp. to gays have gone

7 Conclusion

This paper investigates the relationship between financial literacy and individual economic policy preferences 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. However, 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, 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, i.e. 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 (except for financially literate routine workers and individuals on low incomes who are slightly more likely to vote Leave than similar illiterate individuals) are not, for the most part, 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 may help potential losers from more economic openness abandon their short-term interests in favor of the long-term benefits, effectively increasing their time horizons. Furthermore, the paper also partially addresses some endogeneity concerns. One regards the potential omitted variable of globalization,

which may be causing both preferences for economic openness and the decision to acquire financial literacy. This is partially addressed by introducing an objective measure of globalization in the model, the Chinese import shock, and controlling for it in all models. Furthermore, in order to address issues with self-reported measures of economic condition, the import shock measure is also interacted with financial literacy to test the potential differential effect between globalization winners and losers. Financially literate individuals, regardless of whether they live in areas highly exposed or not highly exposed to the Chinese import shock, are more likely to be in favor of economic openness. The second potential omitted variable concern regards the fact that some variable measuring progressive and liberal attitudes may explain both being financially literate and preferences for economic openness. In this case we should expect financial literacy to also be associated with more progressive social policy preferences. Hence, I test whether this is the case on attitudes towards gay and lesbian civil rights. Findings show that, although financially literate people are more likely to think that equal opportunities for gay and lesbians have not gone far enough, they are also more likely to think that they have gone too far, suggesting that they are not more likely to be more progressive and liberal on social matters, where it is unlikely that decisions would be made on a cost and benefit basis.

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 these hypotheses were confirmed by evidence cross-nationally, these findings would have at least three implications. First of all, they would provide new insights to the literature on determinants of economic policy preferences, such as those on free trade and immigration. Second, they could actually open the way for future experiments in different countries, these would allow us to tackle internal validity issues and to correctly estimate cause and effect within our sample of interest. Third, and most important, they could provide some long-term solutions for the current backlash against economic openness. If 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 term, providing economic and financial courses from early education, could potentially increase support for welfare-enhancing economic policies. Finally, future studies should also investigate further the causal mechanisms behind financially literate losers from globalization's preferences for economic openness and the potential role of discount factors.

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