STRATHCLYDE

DISCUSSION PAPERS IN ECONOMICS

FINANCIAL LITERACY AND POLITICAL ORIENTATION IN GREAT BRITAIN

BY

ALBERTO MONTAGNOLI, MIRKO MORO, GEORGIOS A PANOS AND ROBERT E WRIGHT

NO 16-14

DEPARTMENT OF ECONOMICS
UNIVERSITY OF STRATHCLYDE
GLASGOW

Financial Literacy and Political Orientation in Great Britain

by

Alberto Montagnoli
University of Sheffield

Mirko Moro
University of Stirling

Georgios A. Panos
University of Glasgow

Robert E. Wright
University of Strathlclyde

September 2016

Abstract: This study examines the relationship between financial literacy and political orientation in Great Britain. Using novel data from the British Election Survey in 2014, we employ two distinct measures of political orientation, capturing individual self-assessment on a left-right axis and party preferences. We find that financially-literate individuals are some 11-19 percent more likely to orientate at the centre-left or the centre-right. Moreover, they are some 30 percent less likely not to know their political orientation. The results are robust when rich sets of public-attitude and public-value variables are accounted for. Financially-literate individuals are also more likely to have a stable political orientation over time and they are some 15-23 percent less likely to change attitudes radically towards the left or the right across different waves of the study. We interpret our findings as indicative that greater financial literacy is conducive to greater stability of moderate political views and orientation.

JEL Classification: D14; D63; D72; I24

Keywords: Financial literacy, political orientation, attitudes, polarization, Great Britain

Financial Literacy and Political Orientation in Great Britain

1. Introduction

A large body of literature examines the economic determinants of electoral outcomes and voting behavior (e.g., Alesina, 1988; Linn et al., 2010; *inter alia*). A strand of this literature focuses on the welfare effects of the rising polarization of the electorate. When ideology and polarization dominates competence or pragmatic considerations, electoral results lead to suboptimal outcomes or legislative stalemate (Krishna and Morgan, 2011; McCarty et al., 2016; Mian et al., 2014). A different set of studies concentrate on the impact that economic beliefs and knowledge exert on party preferences and political orientation (Colander, 2005; Klein and Stern, 2005). Our study contributes to the literature by bridging the gap between these two separated strands of the literature. We emphasize on the importance of basic economic knowledge, approximated by financial literacy, for individual political orientation. The basic idea behind our work is that the development of fundamental financial knowledge not only has a direct impact on a variety of financial decisions and economic outcomes at the individual level, but it may also determine the individual's political inclination in relation to economic policies (e.g. taxation and government expenditure).

The study of the determinants of financial literacy has gained particular traction after the financial crisis that caused the Great Recession of 2007-8. The reasons behind the financial crises are complex but it has been wildly acknowledged that the causes have to be shared among borrowers, lenders and regulators. Recent studies show that people's ability to process economic and financial information is linked to a broad set of positive private and social outcomes. Lusardi and Mitchell (2014) thoroughly review this evidence,

emphasizing on outcomes related to financial planning, wealth accumulation, management of credit positions and pensions, inter alia. Such behaviour can be thought to be conducive to overall financial stability. Starting from this premise, this study contributes to the political economy literature by asking two specific research questions: (a) Is there a link between financial literacy and political orientation? (b) Are financially literate individuals more likely to have stable political preferences? We test these propositions accounting for a rich set of individual characteristics, such as education, income, personality traits, along with variables approximating for public attitudes and public values.

This study uses information extracted from the financial literacy module of the British Election Study (BES) 2014, which was administered to a representative subsample of more than 5,000 British individuals. The survey includes questions on political orientation, alongside a set of individual characteristics, such as income, education, age, gender, marital status, personality traits, risk attitudes[1]. In order to capture political orientation we use a standard self-assessed political left-right scale and group the answers in 6 categories (*Don't know*, *Left*, *Centre-left*, *Centre*, *Centre-right*, and *Right*).[2] The survey offers weights that render our samples representative of the whole population. Financial literacy questions included in the survey are the three primary financial literacy questions employed in the literature (Lusardi and Mitchell, 2014) and capture the understanding of interest rates, inflation and risk diversification.

Multinomial probit estimates show that financially-literate individuals are some 11-19 percent more likely to orientate at the centre-left or the centre-right. Moreover, they are some 30 percent less likely not to know their political orientation. The results are robust

[1] The British Election Study is an internet-based survey collected by Yougov and run by a consortium of British Universities.

[2] As a robustness checks, we will also derive a categorical variable (from left to right) that combines the information about individual's favourite party and party orientation as judged by the same individual.

when rich sets of public-attitude and public-value variables are accounted for. Financially-literate individuals are also more likely to have a stable political orientation over time and they are some 15-23 percent less likely to change attitudes radically towards the left or the right across different waves of the study. Financial literacy affects political preferences independently from economic factors, such as education and income, and from a rich set of individual characteristics, including personality traits, risk attitudes, country of birth and region of residence. These findings are robust to different definitions of political orientation as the dependent variable.

We argue that our findings can be interpreted as indicative that financial literacy could be seen as conducive to political attitudes against populist manifestos – typically linked with extreme political agendas – that might have recessive effects on the economy (e.g. autarchic policies or policies which may have negative inflationary effects). We test this more directly by showing that financial literacy observed in wave 2 is a strong predictor of stable individual political orientation across follow-up waves available. Moreover, we present estimates in which the dependent variable is the radical change in political orientation over the period 2014-2015, i.e. by more than two units in the 0-10 scale, with financial literacy being observed in early 2014. The empirical analysis shows that they are some 15-23 percent less likely to change attitudes radically towards either the left or the right across different waves of the study.

The remainder of this study is organized as follows. *Section 2* provides the background, offering conceptual insights from the relevant literature. Then, *Section 3* presents the data and summary statistics. *Section 4* presents the empirical strategy and the estimates and *Section 5* concludes.

2. Background

The literature on political and party preferences has mainly focused on the relationship between variables such as income, gender, education with political orientation (conservative or progressive values) and party preferences (Democratic vs Republicans, Labour vs Tories). Much of the political science work on the determinants of political orientation is based on the idea that social norms, acquired from parents and family, are primarely influenced by environmental situations and cultural contexts. A vast number of studies have been employed to model turnout and political partecipation. For instance McLeod *et al.* (1999) look at the impact of social factors, such as community integration, mass and interpersonal communication, in predicting two types of local political participation. Lake and Huckfeldt (1998) also emphasize on the role of social capital and social networks for political participation.

A thorough review of the literature on individual determinants of political orientation is provided by Fowler *et al.* (2008). Contrary to what one might expect, values inherited from parents and family do not seem to play an important role in shaping political preferences. Moreover, studies examining the impact of socioeconomic factors such as age, education find that the explanatory power of political-attitude models increases only marginally when these variables are incorporated in the analysis. For instance, Plutzer (2002) utilizes a model with 32 variables, but this is able to explain only 31 percent of the variance in political participation. As summarized by Hibbing *et al*. (2014, p. 298) "*political orientation does not seem to be the automatic result of parental socialization and socio-demographic circumstances*".

Looking at the income of individuals in the USA and the United Kingdom, social science research has documented its correlation with the probability of the individual to

have more right-wing views (e.g., Gelman et al. 2007; Evans and Tilley, 2012). More recently Powdthavee and Oswald (2014) compare individuals before and after an exogenous shock to income and wealth and find that winners tend to move to the right of the political spectrum. Interestingly, using data from the United Kingdom, Rockey (2014) presents evidence suggesting that education is an "anti-polarizing" factor, i.e., individuals who are more educated are more likely to take centrist positions.

Recent researh in political psychology has taken advantage of the well established big five personality traits (extraversion, agreeableness, openness, conscientiousness and neuroticism) to try to explain the differences in political orientations. The underlying idea is that sympathizers for the left and the right parties tend to occupy different individual and social environments. For example Mondak *et al.* (2010) propose a framework to predict participation in politics based on individual personality traits. They stress the idea that the environment which shapes the individual's political participation is influenced by environmental factors, but these are strongly interlinked with and influenced by personality traits. Gerber *et al.* (2010) also present evidence linking personality traits with individual political orientation. The authors predict that *conscientiousness* makes individuals more likely to lean on the right both on economic and social issues. *Openness* would exert the opposite effect. *Agreeableness* would make the individual lean on the left on economic issues but right on social issues. In contrast, *emotional stability*, which is the opposite of *neuroticism*, exerts opposite effect. No effect is predicted for *extroversion*. Overall, the results support the idea that overall *conscientiousness* explains conservatism, while *openness* is associated with liberal ideas.

Empirical evidence has put forward the idea that political preferences may be influenced by macroeconomic factors; Di Tella and MacCulloch (2009) use data from the

World Values Survey and argue that individuals living in countries with a high level of corruption then to ask for more regulation and the left-wing is likely to be on the rise. Krishna and Morgan (2011) show that polarization can be suboptimal if voters tend to choose ideology versus competence. Focusing on the episodes of financial stability, there is robust evidence that political polarization is higher after a financial crisis (Mian et al., 2014) and the aftermath of these type of events is characterized by an increase in support for the far-right parties (Funke *et al.* 2015). For instance, in the U.S. this polarization culminated with the political *impasse* observed during autumn/winter of 2011 in the Congress over the Treasury's debt ceiling debate. Some commentators also make the case that the recent EU referendum results in the UK can be traced back to polarization with the "*success of the Leave campaign as being the convergence of the political far left (the railing at bankers) and far right (the attacks on immigrants)*"[3].

This study is the first to examine financial literacy as a predictor of political orientation and the stability of political attitudes. Financial literacy is often defined as "*the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being*" (Hung *et al.* 2009). We can expect that its acquisition and development render political debates and party manifestos – so often centered on economic and financial matters – easier to read and interpret. Our key line of thought is that financial literacy is an important economic variable that may change one's own views on different aspects, including party preferences and political orientation. A first hypothesis is that financial literacy should move individuals away from populist views that may have destabilizing economic and financial consequences. This, for instance, would be policies

[3] See Wolfang Keller and Hale Utar on Vox CEPR's Political Portal: http://voxeu.org/article/globalisation-and-polarisation-wake-brexit.

which could lead to high level of inflation, possible shortages or goods, capital flight and in extreme cases, "*demonetization of the economy*" (Dornbusch and Edwards 1991, p. 11). Financially literate individuals may be more concerned about financial stability in order to safeguard the performance of their assets and to mitigate the risks associated with investment, e.g. on pension funds.[4] It is well documented that one of the problems that led to the financial crisis was excessive leverage brought about by households relying too much on debt to satisfy consumption needs. Financial literacy has been found to be negatively related to overindebtedness. For instance, Ricaldi *et al.* (2013) show how financial literacy deficiencies can explain naïve consumer choice among credit card users.

Our work relates to some previous literature relating training in economics and political preferences. However, this strand of the literature has not reached any universally accepted conclusion. On one hand, Colander (2005) shows that individuals with a graduate training in economics tend to have more conservative beliefs. Similarly Fischer *et al.* (2016) find that individuals who have studied economics tend to have "*an unambiguous pro-market influence on political attitudes*". On the other, Klein and Stern (2005) using a survey of AEA members show that only 8% of economists could be classified as libertarian. Financial literacy is a concept distinct from graduate economics training, as it is related to the basic understanding of the fundamental notions of finance. Our intuition suggests that financial literacy could shape individual political orientation. The following section tests this hypothesis.

[4] "Financial stability is a condition in which an economy's mechanisms for pricing, allocating, and managing financial risks (credit, liquidity, counterparty, market, etc.) are functioning well enough to contribute to the performance of the economy" (Schinasi, 2004: p. 10).

3. Data and Summary Statistics

In order to examine the relationship between financial literacy and political orientation, we use data from wave 2 of 'The British Election Study' (*hereafter* BES) conducted in 2014. The BES is conducted twice a year, but the financial literacy question was asked in wave 2. We will benefit from the inclusion of later waves to our dataset to study the second research question about the stability of political orientation and radical changes towards political polarization. The British Election Study contains information on both financial literacy and political orientation, alongside a rich set of individual characteristics. The survey was conducted by Yougov – a market research company -- and is managed by a consortium of UK Universities. Although the BES includes more than 25,000 individuals, the financial literacy module was administered to a representative subset of some more than 5,000 respondents. In the analysis that follows, the total amount of observations depends on the model estimated and ranges from 3,315 to 5,292.

We study individual's political orientation using two categorical dependent variables. First, we rely on a standard left-right political spectrum question. This variable is commonly used in the political science and economics literature. The question is as follows:

> *"In politics people sometimes talk of Left and Right. Where would you place yourself on the following scale?"*

The respondent can choose any value on a scale from 0 to 10, where 0 is denoted as "Left" and 10 "Right". Each respondent is also given the option to opt out by answering "Don't Know". Given that some categories on the 11-point scale are not well-represented, we construct a dependent variable "Left-right orientation" that takes 6 categories:

- *Left*, when an individual choses the values of either 0 or 1 on the 11 point scale;

- *Centre-left,* for respondents who select 2 or 3;
- *Centre*, if the respondents choose the median values of 4, 5 and 6;
- *Centre-right,* if 7 and 8 are selected
- *Right* when the individual the values of 9 or 10, and the residual category
- *Don't Know*

To ensure robustness, we generate a second categorical variable that captures individual's orientation on the left-right political spectrum. This variable is derived combining answers from two questions. The first asks the preferred party:

> *"Do you generally consider yourself as Labour, Conservative, Liberal Democrat, or what?*

Each respondent is shown a list that includes the Scottish National Party (SNP), Plaid Cymru (Welsh party), United Kingdom Independence Party (UKIP), Green Party, British National Party (BNP) and the residual category "Other party". Each respondent can also choose "None" and "Don't know". Then, a follow-up question asks respondents to place each party on a scale from 0 ("Left") to 10 ("Right")*:*

> *"In politics people sometimes talk of left and right. Where would you place the following parties on this scale?"*

We combine these two variables so that we obtain a single categorical variable. There are 6 mutually exclusive categories, as follows:

- *Left*, a respondent is classified as being left-wing if in the first question she identified with a party that she classified as being "Left" [0,1] in the second question;
- *Centre-left*, if she considers her favourite party a Centre-left party [2,3];
- *Centre*, if she classifies her favourite party as Centre [4-6];
- *Centre-right,* if the preferred party was placed in the Centre-right [7,8] by the respondent;

- *Right* if her party is at the other end of the spectrum [9,10] or she expressed a preference towards the BNP;
- *None/Others*.

The two dependent variables are highly correlated, but their categories do not perfectly overlap with each other (the correlation coefficient is 0.5). *Figure 1* plots the distribution of individuals across the political spectrum using the two categorical variables described above. Few individuals appear to have polarized political orientations – either left or right – and most are placed in the Centre of the political scale. In Panel A of the figure, some 6% of individuals assess themselves to be politically oriented on the left, with another 6% assessing their political orientation as being on the right. Some 18% assess themselves as centre-left, some 30% as being on the centre, and another 23% as centre-right. 17% of the respondents did not know or answer regarding their political orientation. That figure drops to 12% using the second hybrid definition, as exhibited in Panel B of the figure. The figures in the panel are: 8% at the left, 17% at the centre-left, 25% at the centre, 26% at centre-right, and 13% on the right.

In both our political orientation definitions, there are more centre-right individuals than centre-left. It is worth noting that the proportion of respondents who do not provide their political orientation is larger when using the first definition, i.e. the self-assessment on the 0-10 scale of the spectrum from left to right, compared to the second hybrid definition which is based on party affiliation accompanied by party placement at the left-right spectrum.

Our key independent variable is financial literacy, measured primarily as the number of correct responses in the key three relevant questions which capture understanding interest rates, inflation and risk diversification. As suggested by Lusardi and Mitchell (2014,

p.10), these questions capture "(i) numeracy and capacity to do calculations related to interest rates, such as compound interest; (ii) understanding of inflation; and (iii) understanding of risk diversification." These are the basic skill required to make long-term decisions on the level of savings and investment.

The first question asks: *"Suppose 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 respondent has three possible answers: "More than £102", "Exactly £102", "Less than £102", "Don't know", "Prefer not to say".

The second question asks: *"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 five possible answers are: "More than today", "Exactly the same as today", "Less than today", "Don't know", "Prefer not to say".

The third question asks: *"Which one of the following do you think is the riskier asset to invest in?"* Here the possible answers are "An individual share in a company", "A portfolio of different company shares"; "The risk is the same in both cases"; "Don't know"; "Prefer not to say".

The correct responses to the three questions are combined to form an index for financial literacy. ***Table 1*** presents the snapshot of the level of financial literacy in Great Britain in 2014. About 40% of the people surveyed answered correctly to all three questions while about 11% responded incorrectly to all questions. The question with the highest number of correct responses was the numeracy question on understanding interest rates,

with 81.3% of the interviewees responding correctly. 69.1% of the respondents understand inflation correctly, while the question assessing the understanding of risk diversification received only 48.7% of correct answers. Some 28% of the respondents answered the risk question incorrectly, with a remaining 23.4% answering that they do not know the correct answer. The bottom panel of *Table 1* provides an international comparison between Great Britain and another five countries, namely the USA, the Netherlands, Germany, Japan and Australia. Financial literacy in Great Britain (40.2%) appears higher than that in Japan (27%) and the USA (30.2%). It is similar to Australia (42.7%). Financial literacy scores are higher in the Netherlands (44.8%) and in Germany (53.2%), compared to Great Britain.

4. Empirical Analysis

This section presents the empirical strategy and analysis of the relationship between political orientation and financial literacy.

4.1 Empirical strategy

We estimate the following specification for political orientation:

$$P_i = \beta_1 (FL_i) + \beta_2 X_i + \beta_3 A_i + \theta_r + \varepsilon_i, \quad (1)$$

where: P_i is a categorical variable for the political orientation for individual i, FL_i is a variable capturing financial literacy, in terms of the number of correct responses in the three questions presented in the previous section. Then, $\mathbf{X}_i$ is a vector of individual characteristics, θ_r, is a fixed effect for region of residence. In additional specifications, we control for attitudinal characteristics (A_i).

4.2 Multinomial probit estimation

Since our dependent variable has six potential categories, we study political orientation by estimating multinomial probit regressions of political orientation on the

financial literacy index. We use two definitions of political orientation: a categorical variable that codes self-reported political orientation on the left-right axis and another hybrid version based on party identification jointly with perception of party orientation. In every regression we include a vector of economic, socio-demographic and individual characteristics, and fixed effects for region of residence as shown in the *Appendix Table A1*. The multinomial probit model is the suitable model to estimate for political orientation. Compared to the multinomial logit, it benefit from not suffering from the *Independence of Irrelevant Alternatives (IIA)* assumption. For voting and political choice models, omitting that assumption is of realistic benefit. [5] A further advantage of using multinomial probit models to study the relationship between polarization and financial literacy lies with the ability to use all the information available, including answers from those respondents who are unable (or unwilling) to place on the political spectrum or identify with any party in particular.

Table 3 and its follow-up tables present marginal effects of financial literacy on political orientation, and their robust standard errors. The reported marginal effects are averaged over the entire distribution, and not at the means of the independent variable (they are *average marginal effects*). In other words, the reported estimates measure the change in the probability of choosing a category ("Don't know", "Left", "Centre-left", etc.) associated with answering an additional financial literacy question correctly. In order to provide an idea of the economic importance of financial literacy in predicting that choice, we also report the ratio between the average marginal effect and the predicted probability for the same category. This percentage effect of financial literacy should be contrasted to

[5] For instance, the assumption would signify that omitting the category for those who did not answer would involve the proportionate allocation of responses from the omitted category to the remaining categories, based on their observed frequencies.

the percentage point effect on the predicted probability, which is represented by the marginal effect. Panel A of *Table 3* shows estimates when the dependent variable is self-assessed political orientation and Panel B reports marginal effects when the scale is derived using the orientation of the most preferred party as judged by each individual.

The estimates in both panels of *Table 3* present a very consistent finding. Financial literacy is not associated with political polarization. The average marginal effects of financial literacy on the probability to belong to either category "Left" or "Right" are small and not statistically significant at any conventional level. An additional correct answer to financial literacy questions increases the likelihood of being "Centre-left" or "Centre-right" by 16.6 percent and 18.2 percent, respectively, in Panel A. In Panel B, the magnitudes of the marginal effects on the probability to be centre-left and centre-right become 11.4 percent and 18.7 percent, respectively. In both panels, there is a somewhat significant negative association of financial literacy with the probability of belonging to the centre. The magnitude of the effect is -5.6 percent in Panel B and the effect is significant at the 10% level. The effect is of a -10 percent magnitude in Panel B, significant at the 5% level. Interestingly, the probability of not placing a choice on the left-right axis is notably decreasing as financial literacy increases. The magnitude of these effects is large, corresponding to 30 percent in the first panel and 34.3 percent in the second panel. Thus, financially-literate individuals are more likely to express a certain political orientation, either in terms of a placement in the left-right axis or in terms of a particular party affiliation, also placed in the left-right spectrum at the party level.

Noting the pattern of financial literacy being associated with higher expressions of party preference in the centre-left and the centre-right, we examine the robustness of this pattern when accounting for a set of some key variable capturing individual attitudes in

public matters. Specifically, we incorporate the following variables in the specification of the multinomial probit model previously described: (i) attitudes in favour of redistribution, measured on a 0-10 scale, when 0 captures "*Government should be less concerned about equal incomes*" and 10 captures "*Government should try to make incomes equal*"; (ii) attitudes in favour of immigration, based on the following question: **"***Do you think immigration is good for Britain's economy?*" Answers range between 1, i.e. *Bad for economy*, and *7*, signifying *Good for economy*. Finally, we incorporate variables capturing attitudes against equality at three different levels. The three variables are based on the question: "*Please say whether you think these things have gone too far or have not gone far enough in Britain: Attempts to give equal opportunities to...*". (iii) Gays and lesbians; (iv) women; and (v) ethnic minorities. In all three variables, responses range between *1*, i.e. *Not gone nearly far enough* and *5*, i.e. *Gone much too far*.

Table 4 reports the marginal effects from our main multinomial probit model for political orientation, controlling for the five main attitudinal variables regarding public affairs. The results show interesting associations in the expected directions for the attitudinal variables. Namely, attitudes in favour of redistribution are positively related to placing on the left and negatively related to placing on the right. So are attitudes in favour of immigration. In contrast, attitudes against gay equality and against ethnic equality negatively related to placing on the left and positively related to placing on the right. There is a modest positive association between being against gender equality and placing on the centre-right in Panel A. This becomes stronger in Panel B and further extends to placing on the right.

Importantly, in both panels of Table 4, the effect of financial literacy on the probability of placing on the centre-left and the centre-right remains statistically significant

and of a large magnitude. Specifically, financially literate individuals are some 13.8 percent more likely to be placed on the centre-left and some 10.4 percent more likely to be placed on the centre-right, compared to being placed in other categories. There is a large negative effect on the probability of not placing oneself anywhere on the political spectrum and a small negative effect of financial literacy on the probability of being in the centre (5.6 percent). The magnitude of the effects is very similar in Panel B of the table, in which the hybrid measure of political orientation is used as the dependent variable.

Furthermore, Table 5 presents an alternative specification of our multinomial probit model which incorporates 3 proxy variables for public values. The specified empirical strategy here follows Corneo and Grüner (2002). Specifically, we generate three proxies for:

(a) the *homo oeconomicus* effect (*hereafter* HOE), which essentially involves the generation of a proxy of the individual's net pecuniary gain from governmental redistribution. The idea is that the support in favour of e.g. the more redistributive policies can be inversely related to an individual's position in the income scale. We generate a proxy by merging the full version of the British Election Study, i.e. entailing some 34,398 individuals with data on median personal income for each of the 650 parliamentary constituencies in the United Kingdom[6]. We impute the 8,185 missing values on personal income by obtaining predicted values from Mincerian regressions on the remaining 25,785 observations. [7] Then, the *HOE* is obtained as the difference between the logarithm of personal income minus the logarithm of median income in the parliamentary constituency.

[6] Data on median personal income by parliamentary constituency stem from the Office for National Statistics: http://www.ons.gov.uk/ons/datasets-and-tables/index.html?pageSize=50&sortBy=none&sortDirection=none&newquery=income+by+constituency&content-type=Reference+table&content-type=Dataset

[7] The list of explanatory variables involves: the logarithm of age, the years of education, gender, marital status, the logarithm of household size, labour market activity, last known employment status, ethnicity,

(b) In our setting, the SRE could arise when individuals form political attitudes based the consideration that governmental redistribution affects the quality of their social environment. Cole et al. (1992) shows that it social competition for some goods that can endogenously generate a concern for relative consumption. We assume that within each local authority of Great Britain it is possible to identify the social value people associate with different status level. The social value of a given social class can be thought of as the average contribution to their social environment made by people with that status (e.g. determined by education and/or income). Following Corneo and Grüner (2002), using such a definition of social classes, we assume that "*a marginal increase in the government's reduction of economic inequality increases the amount of social contact between neighbouring classes without affecting the contact with more distant classes*"[8].

The *social rivalry effect* (SRE) is then computed in the following steps:

(1) We generate a *social rivalry proxy* by aggregating over variables capturing the extent to which an individual disagrees (i.e. the reversed scale, measured from 1 to 5, where 5 indicates complete disagreement) with the following five statements: "*Government should redistribute income from the better off to those who are less well off*", "*Big business takes advantage of ordinary people*", "*Ordinary working people do not get their fair share of the nation's wealth*", "*There is one law for the rich and one for the poor*", "*Management*

immigrant status, home ownership, urban region, government office region of residence and social class (4 categories).

[8] "*Increasing the degree of political redistribution therefore changes the average quality of social contacts of class k individuals in two ways. First, their milieu will consist of an increased fraction of class k-1 individuals, which tends to decrease the expected utility from social interactions proportionally to* $DVD_k = V_k - V_{k-1}$*, which is termed the downward value differential for individuals of class k. Second, their social environment will be made up by an increased portion of individuals from class k+1, which improves the quality of social life of class k individuals in proportion to* $UVD_k = V_{k+1} - V_k$*, the upward value differential of class k*" (Corneo and Grüner, 2002: p. 88). Then, the social rivalry effect can be defined as: $SRE_k = DVD_k - UVD_k$.

will always try to get the better of employees if it gets the chance", and "*Politicians only care about people with money*".

(2) We generate *personal income deciles*, at the local authority level[9], using the full BES sample, with the 10^{th} category representing higher income. Then, we use the 8 educational categories, as in the Appendix Table A1. Based on the categories of the two variables we generate 18 status classes, i.e. using an aggregation of the ordered income and educational categories. The assumption is that higher income and higher education amount to higher social status. The two can substitute each other, but individuals with both higher education and higher income will be at the top of the social status ladder. If the income classes are monotonically ordered, so that class k+1 is richer than class k, then each class $k\epsilon[2, 17]$ has two neighbouring classes, k-1 and k+1.

(3) Then, we generate the *average social rivalry score* (V_k) by local authority and status class at the full BES sample. So, if there are 18 status classes denoted by k=1, . . . , 18, people inside class k are associated with a social value V_k. There are 637 distinct values for V_k.

(4) Then, by collapsing the dataset at the 637 data points for V_k and sorting at local authority and status class (i.e. V_k, capturing neighbouring classes at the local level), our SRE variable is computed as: $SRE=2*V_k-(V_{k-1}+V_{k+1})$.

(c) The generation of a proxy *public value effect* (PVE) requires data on individual beliefs about success factors or data on the mobility experience of individuals. We take the former approach by generating the summation over two questions regarding success factors. Specifically, both questions ask individuals to express the extend with which they

[9] There are some 380 local authorities at the BES.

agree or disagree, on a scale from 1 (completely disagree) to 5 (completely agree) with the following two statements: (i) When someone is unemployed, it's usually through no fault of their own; and (ii) In business, bonuses are a fair way to reward hard work. Departing from Arrow's (1963) view that individuals may be endowed with a social welfare function that expresses their preferences over resource allocations to all individuals in society, one can infer that an individual's political orientation may reflect such a social welfare function. Corneo and Grüner (2002) explain that, departing from the same fundamental values of a 'veil-of-ignorance', individuals may entertain idiosyncratic beliefs about the contributions of, e.g., family background and individual effort to personal economic success[10].

It is worth noting that for the purposes of our analysis we normalize the three proxies using a zscore for purposes of comparability of the effects produced. Our results in Table 5 show that, expectedly, all three effects are more positively related to centre-right orientation. In the case of the PVE, there is also a positive relationship with individuals identifying with the right. In contrast, lower PVE and SRE score are negatively related to the likelihood of identifying with the left and the centre-left. The marginal effects of changes in the three normalized variables are large in magnitude and there are robust patterns using either of the two political-orientation definitions of the two panels of Table 5.

Importantly, the significant effect of financial literacy in the previously observed categories remains along with its large magnitude. Hence, higher financial literacy, in the form of one additional correct response, exerts a 17 percent effect on the probability of affiliating with either the centre-left or the centre-right. There is no significant effect on the

[10] Piketty (1995) argues that experiential learning about the roles of family background and individual effort to personal economic success, generates a link own experience of upward income mobility and an individual's degree of political conservatism.

probability of associating with the centre or the right. In panel B, there is a negative effect of affiliating with the left, which is significant at the 10% level. Financially literate individuals remain some 29-33 percent less likely not to know what their political orientation is. Hence, the previously established effect of financial literacy remains when controlling for rich sets of public attitude and public value characteristics.

4.3 Stability of political orientation and radical change

Having established that financial literacy is unrelated to political polarization in the previous sections, we aim to expand our analysis to a more dynamic fashion, catering to concerns regarding the stability of political preferences, along with potential reverse causality considerations. Hence, we conduct three sets of exercises. We compute a rounded average of left-right orientation across the 6 waves of the BES and re-estimate using the rounded average and a 6-wave weight for the fewer individuals that remained in the BES panel in a way that renders it representative of the population. Then, we also compute the standard deviation of the left-right orientation across the 6 waves and estimate linear regressions with it as the dependent variable. Finally, we compute radical shifts in political orientation, defined as a change of more than or equal to 2 units in self-assessed political orientation, measured between 0 (left) and 10 (right) between wave 6 and wave 2. We also compute variables capturing a radical change to the left and a radical change to the right and use as the dependent variable.

Table 6 reports marginal effects from multinomial probit models where the answer to the self-assessed political orientation (the dependent variable in Panel A of Table 3) is averaged across the six available BES waves. The average is rounded to the nearest integer, so that multinomial probit model can be estimated. The specification controls for the same set of variables as in Table 3. This table confirms previous results: financial literacy is not

associated with political polarization, while it predicts well a preference towards the centre-left or centre-right of the political axis. Individuals who reply correctly to an additional financial literacy question are some 15.6 percent more likely to place themselves on the centre-left and some 12.5 percent more likely to place themselves on the centre-right, compared to the less financial literate. They are some 48.4 percent less likely to respond they do not know in all waves.

We now extend the analysis of our second research question, i.e. on the impact of financial literacy on the stability of political orientation. We use answers to the political orientation question from every wave and compute their standard deviation. A larger value indicates large swings in political orientation and vice versa. We estimate a weighted linear regression with the standard deviation as the dependent variable and the same set of control variables as in the previous specification. The weight use is the longitudinal weight for all 6 waves of the British Election Study. As a result we drop a good number of observations, compared to that in the analysis of the previous tables, including individuals residing in Scotland and Wales. The estimates are reported in the first column of *Table 7*. They show that an additional correct answer to the financial literacy questions is strongly and negatively associated with an increase in the standard deviation, i.e. to changes in the political preferences as expressed on the left-right axis. The magnitude of the effects is large, corresponding to some 12.7 percent change from the linear prediction for the standard deviation.

Columns 2-4 of Table 7 extend this line of analysis, by measuring changes in political orientation happening between waves 6 and 2. We take advantage of the quasi-panel nature of the dataset for the political orientation variables. We subtract the value observed in 2014 (wave 2) from the value observed in 2015 (wave 6). We then define as *radical change* a

dummy variable taking the value 1 if the difference between the two ways is greater than or equal to 2 or smaller than or equal to -2. Distinguishing between these two criteria, we also define radical changes to the right, i.e. greater than or equal to 2, and to the left, i.e. smaller than or equal to -2. We use these three variables, namely *radical change*, *radical left* and *radical right*, as dependent variables in the same specifications as before. Marginal effects for probit models are reported in Columns 2-4 of Table 7. Interestingly, we find a large significant association between financial literacy and within-individual radical changes overall, and in both the left and the right. Specifically, we find that more financially-literate individuals are some 20.3 percent less likely to express a radical change in political attitudes within a year. Moreover, they are some 14.9 percent less likely to radically change to the left and some 22.5 percent less likely to radically change to the right. We interpret these results as indicative that greater financial literacy is conducive to greater stability of moderate political views and orientation.

5. Concluding Remarks and Implications

The importance of financial literacy in modern economies cannot be overemphasized. Financial literacy has a clear public good element to it as it is linked with macro financial stability. So far the literature has indicated links between financial literacy and a number of desirable economic and financial behaviours. Our study is the first of its kind to show a comprehensive link between financial literacy and political orientation. In another study, conducted in parallel to ours, Panos and Wright (2015) find a negative effect of financial literacy on attitudes favouring devolution at the Scottish and the EU BRexit referendum.

Our study finds that financially-literate individuals are some 11-19 percent more likely to orientate at the centre-left or the centre-right. Moreover, they are some 30 percent

less likely not to know their political orientation. The results are robust when rich sets of public-attitude and public-value variables are accounted for. Financially-literate individuals are also more likely to have a stable political orientation over time and they are some 15-23 percent less likely to change attitudes radically towards the left or the right across different waves of the study. We interpret our findings as indicative that greater financial literacy is conducive to greater stability of moderate political views and orientation. One possible inference from our results is the policy efforts to improve the level of financial literacy in Great Britain could also be conducive to greater political participation and potentially fewer shifts to the radical left or the radical right. Such shifts have recently been documented both in the UK and elsewhere in Europe and the world. We find that efforts to enhance financial literacy could also be seen as conducive to the formation of a more critical and skeptical stance towards parties with largely populist economic policy agendas.

References

Alesina, Alberto, 1988. "Macroeconomics and politics". *NBER Macroeconomics Annual 1988*. Vol. 3, pp. 13-62.

Arrow, K., 1963. *Social Choice and Individual Values*. New York, NY: Wiley, and Sons.

Colander, D., 2005. "The making of an economist redux". *Journal of Economic Perspectives*. 19 (1), pp. 175–198.

Cole, H., Mailath, G., and A. Postlewaite, 1992. "Social norms, savings behavior and growth". *Journal of Political Economy*.100, pp. 1092–1125

Corneo, G. and H. P. Grüner, 2002. "Individual preferences for political redistribution". *Journal of Public Economics*. 83, pp. 83-107.

Di Tella, R. and MacCulloch, R., 2005. "Partisan social happiness". *Review of Economic Studies*, 72(2), pp.367-393.

Dornbusch, R. and S. Edwards, 1991. "The macroeconomics of populism". In: R. Dornbusch and S. Edwards (Eds). *The macroeconomics of populism in Latin America*. Chicago, IL: University of Chicago Press, pp. 7-13.

Evans, G. and J. Tilley, 2012. "How parties shape class politics: Explaining the decline of the class basis of political support". *British Journal of Political Science*, 42, pp. 137-161.

Fischer, M., Kauder, B., Potrafke, N. and H.W. Ursprung, 2016. "Support for free-market policies and reforms: Does the field of study influence students' political attitudes?" *European Journal of Political Economy*. (*Forthcoming*).

Fowler, J. H., Baker, L. A. and C. T. Dawes, 2008. "Genetic variation in political participation". *American Political Science Review*. 102(2), pp.233-248.

Funke, M., Schularick, M., and C. Trebesch, 2015. "Going to extremes: Politics after financial crises: 1870-2014". CESifo Working Paper Series 5553. CESifo Group Munich.

Gelman, A., Shor, B., Bafumi, J. and D. Park, 2007. "Rich state, poor state, red state, blue state: What's the matter with Connecticut?" *Quarterly Journal of Political Science*. 2, pp. 345-367.

Gerber, A. S., Huber, G. A., Doherty, D., Dowling, C. M. and Ha, S. E., 2010. "Personality and political attitudes: Relationships across issue domains and political contexts". *American Political Science Review*. 104(1), pp.111-133.

Hibbing, J. R., Smith, K. B., and J. R. Alford. "Differences in negativity bias underlie variations in political ideology". *Behavioral and Brain Sciences* 37(3), pp. 297-307.

Hung, A., Parker, A. M., and J. Yoong, 2009. "Defining and measuring financial literacy". RAND Working Paper Series WR-708.

Jappelli, Tullio, and Mario Padula, 2013. "Investment in financial literacy and saving decisions". *Journal of Banking and Finance*. 37(8), pp. 2779-2792.

Klein, D.B. and Stern, C., 2005. "Professors and their politics: The policy views of social scientists". *Critical Review*, 17(3-4), pp.257-303.

Krishna, V. and Morgan, J., 2011. "Overcoming ideological bias in elections". *Journal of Political Economy*, 119(2), pp.183-211.

Linn S, Nagler J, Morales M. A., 2010. "Economics, elections, and voting behavior". In: J. E. Leighley (Ed). *The Oxford Handbook of American Elections and Political Behavior*. Oxford, UK: Oxford University Press. pp. 375-396.

Lake, R. L. and R. Huckfeldt, 1998. "Social capital, social networks, and political participation". *Political Psychology*. 19(3), pp. 567-584.

Lusardi, A. and O. S. Mitchell, 2014. "The economic importance of financial literacy: Theory and evidence". *Journal of Economic Literature*, (52)1, pp. 5-44.

McCarty, N., Poole, K. T. and H. Rosenthal, 2016. *Polarized America: The dance of ideology and unequal riches*. MIT Press.

McLeod, J. M., Scheufele, D. A. and P. Moy, 1999. "Community, communication, and participation: The role of mass media and interpersonal discussion in local political participation". *Political Communication.* 16 (3), pp. 315–36.

Mian, A., Sufi, A. and F. Trebbi, 2014. "Resolving debt overhang: political constraints in the aftermath of financial crises". *American Economic Journal: Macroecono*mics, 6(2), pp.1-28.

Mondak, J.J., Hibbing, M.V., Canache, D., Seligson, M.A. and M.R. Anderson, 2010. "Personality and civic engagement: An integrative framework for the study of trait effects on political behavior". *American Political Science Review*. 104(1), pp. 85-110.

Morton, R., Tyran, J.-R., and E. Wengström, 2011. "Income and ideology: How personality traits, cognitive abilities, and education shape political attitudes". Department of Economics, University of Copenhagen, Discussion Papers No. 11-08.

Panos, G and R.E. Wright, 2105, "Financial Literacy and Political Attitudes in Great Britain". Unpublished, Department of Accounting and Finance, University of Glasggow

Piketty, T., 1995. "Social mobility and redistributive politics". *Quarterly Journal of Economics*. 110(3), pp. 551–585.

Plutzer, E., 2002. "Becoming a habitual voter: Inertia, resources, and growth in young adulthood". *American Political Science Review*. 96(1), pp. 41–56.

Powdthavee, N and A J Oswald, 2014. "Does money make people right-wing and inegalitarian: A longitudinal study of lottery winners". Warwick University Economics Working Paper 1039, February.

President's Advisory Council on Financial Literacy (PACFL), 2008. Annual Report to the President.

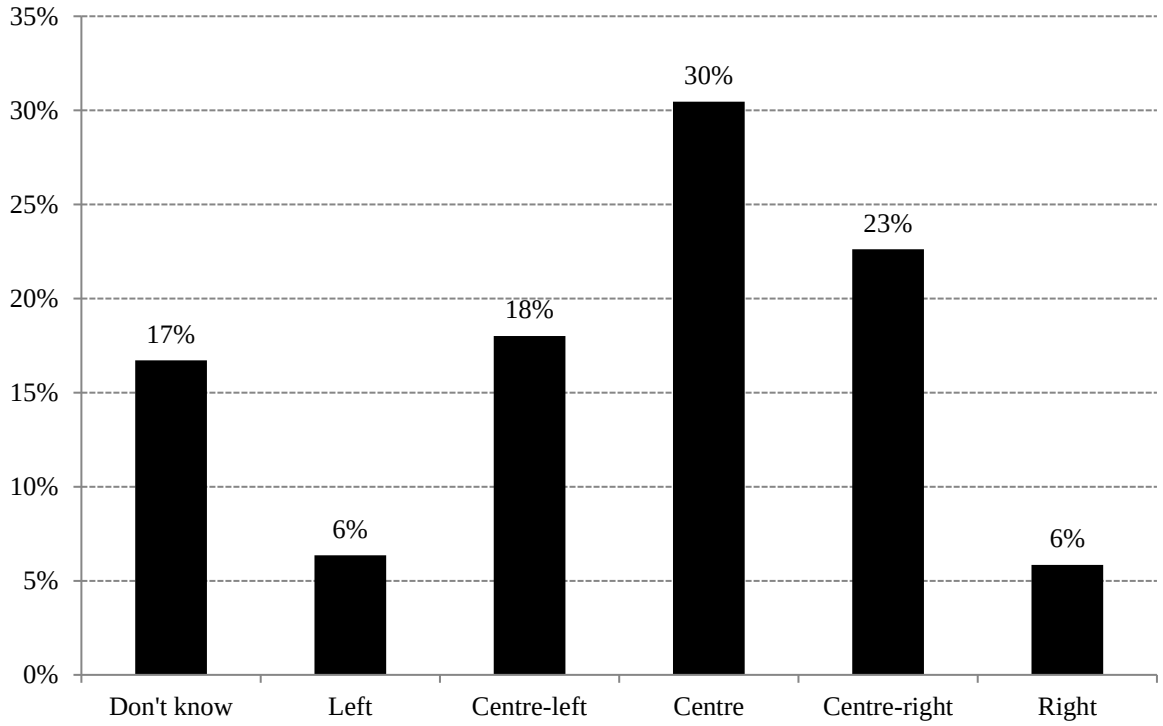
Ricaldi, L., Finke, M. S. and S. J. Huston, 2013. "Financial literacy and shrouded credit card rewards". *Journal of Financial Services Marketing*. 18(3), pp.177-187.

Rockey, J. 2014. "Who is left-wing and who just thinks they are?" *University of Leicester Working Paper No. 09/23*.

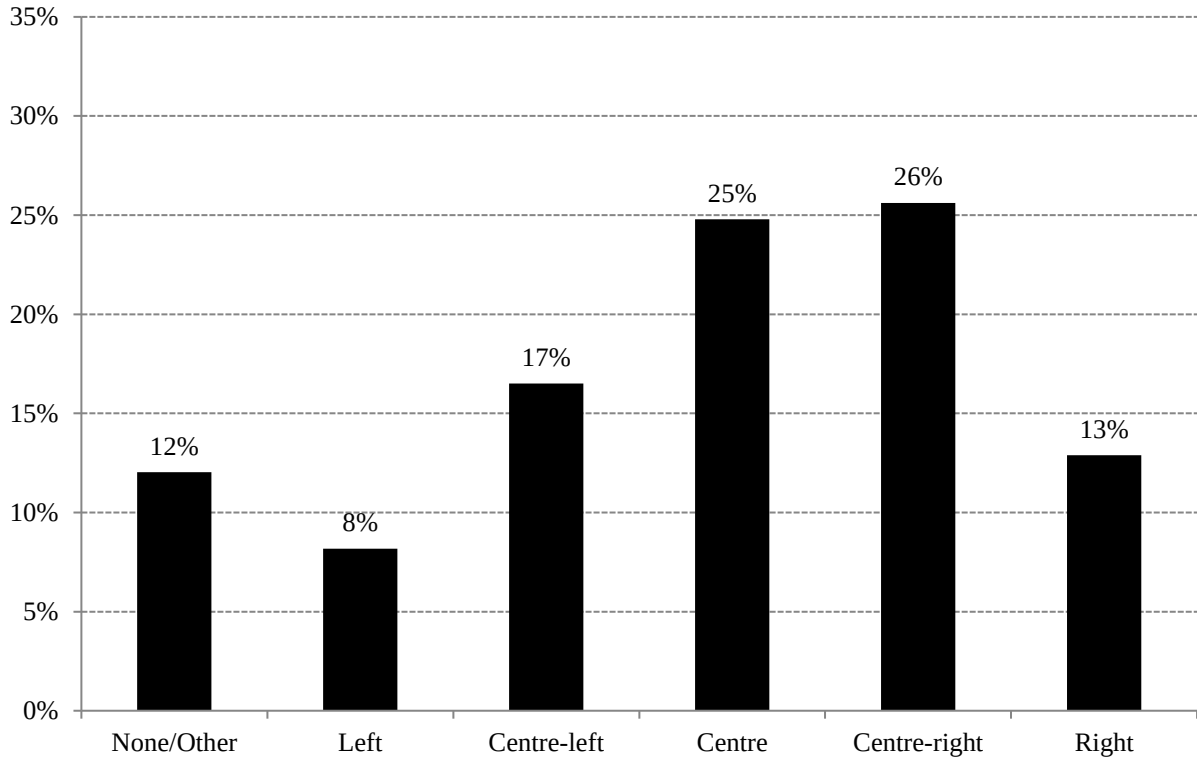
Schinasi, G. J., 2004. "Defining financial stability". *IMF Working Paper*, WP/04/187.

Figure 1
Political orientation

Panel A: Left-right orientation self-assessment



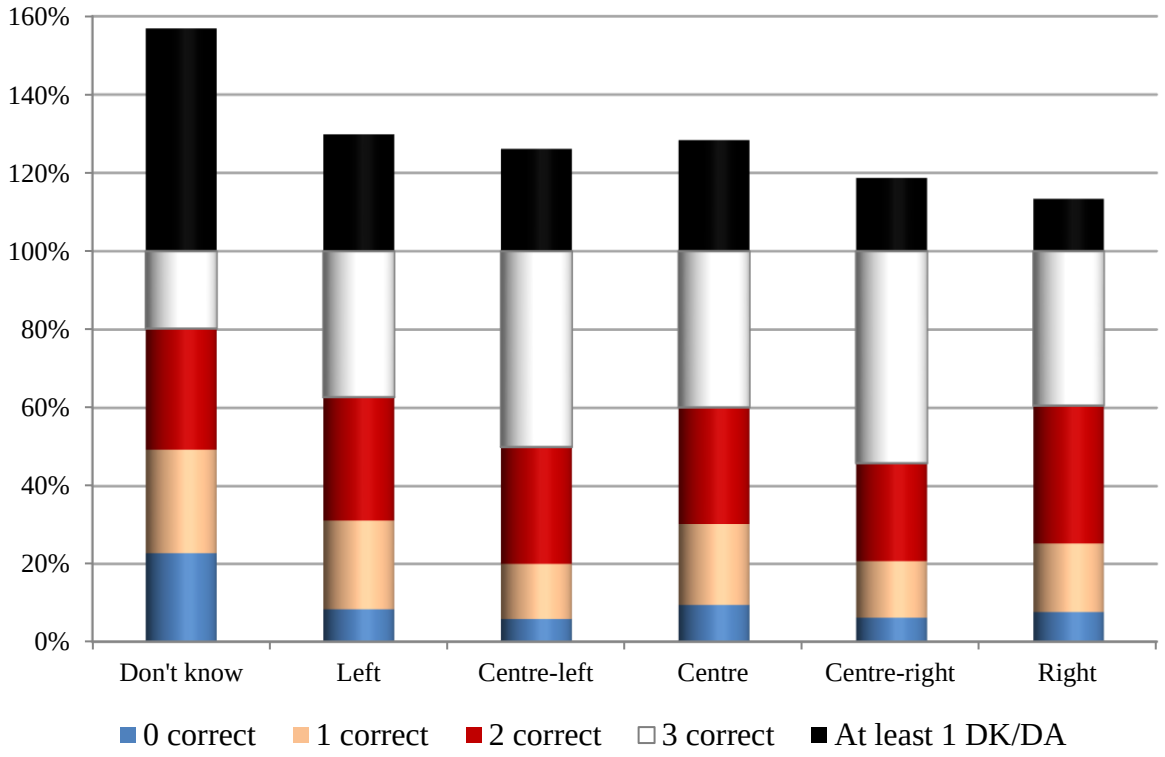
Panel B: Left-right orientation based on party identification and party-orientation assessment



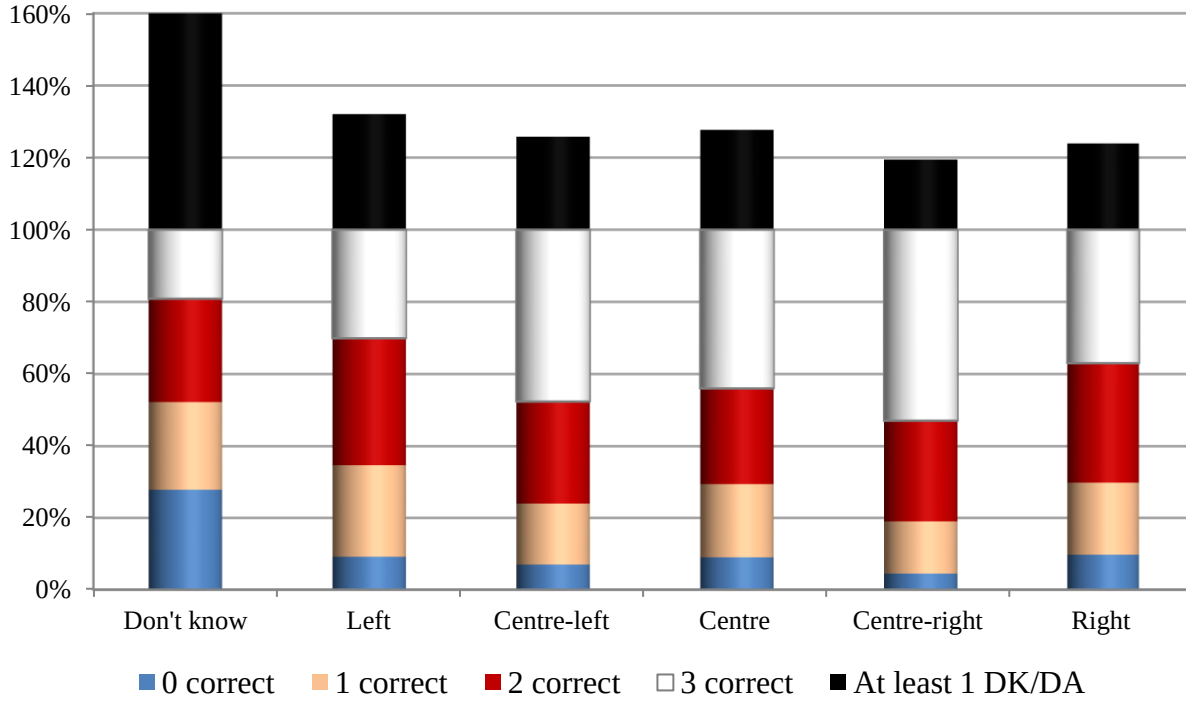
Notes: Weighted figures for Great Britain from Wave 2 of the British Election Study

Figure 2
Political orientation and financial literacy

Panel A: Left-right orientation self-assessment



Panel B: Left-right orientation based on party identification and party-orientation assessment



Notes: Weighted figures for Great Britain from Wave 2 of the British Election Study

Table 1
Financial literacy in Great Britain: 2014

Panel A: Financial literacy measures

	#Correct	*#Wrong*	*#DK/DA*	*At least one "Don't know"*
Number of responses	1.99	0.49	0.52	31.25%

Panel B: Primary financial literacy measure

	All 3	*2*	*1*	*0*
#Correct responses	40.22%	29.45%	19.55%	10.78%

Panel C: Distribution of financial-literacy responses

	Correct	*Incorrect*	*Don't know*	*Refuse*
Interest rate	81.32%	8.88%	9.80%	3.10%
Inflation	69.09%	12.48%	18.43%	3.18%
Risk diversification	48.68%	27.93%	23.38%	2.41%

Panel D: International comparison

Country	*Survey year*	*Interest rate*	*Inflation*	*Risk*	*All 3 correct*	*At least 1 "Don't know"*
USA	2009	64.9%	64.3%	51.8%	30.2%	42.4%
Netherlands	2010	84.8%	76.9%	51.9%	44.8%	37.6%
Germany	2009	82.4%	78.4%	61.8%	53.2%	37.0%
Japan	2010	70.5%	58.8%	39.5%	27.0%	61.5%
Australia	2012	83.1%	69.3%	54.7%	42.7%	41.3%

Notes: Weighted averages from the British Election Survey (2014) are presented in Panels A, B and C. The international comparison in Panel D uses figures presented in Lusardi and Mitchell (2014).

Table 2
Summary statistics

	(1) Mean	(2) St Dev	(3) Min	(4) Max
Male	49.4%	(0.50)	0	1
Age	47.45	(16.60)	18	113
Years of education	12.66	(4.39)	0	20
Married	58.5%	(0.49)	0	1
Single	22.6%	(0.42)	0	1
Widowed/divorced/separated	10.5%	(0.31)	0	1
Household size	2.56	(1.25)	1	8
Has young children	21.4%	(0.41)	0	1
Urban region	60.2%	(0.49)	0	1
White	91.0%	(0.29)	0	1
Personal income[±]	21,042.0	(16,517.8)	2,500.0	125,000.0
Household income[±]	32,350.2	(23,140.0)	2,500.0	175,000.0
House owner	30.7%	(0.46)	0	1
Has mortgage	28.5%	(0.45)	0	1
Income shock	14.8%	(0.36)	0	1
Risk-taking	2.54	(0.69)	1	4
Social desirability	1.94	(1.13)	0	4
Religious	55.2%	(0.50)	0	1
Employed	56.3%	(0.50)	0	1
Student	5.9%	(0.23)	0	1
Inactive	11.5%	(0.32)	0	1
Unemployed	3.5%	(0.18)	0	1
Retired	22.8%	(0.42)	0	1
Self-employed	11.3%	(0.32)	0	1
Private sector	39.4%	(0.49)	0	1
Public sector	28.4%	(0.45)	0	1
Third sector	4.4%	(0.21)	0	1
Other work	5.8%	(0.23)	0	1
No work	2.9%	(0.17)	0	1
Union member (current or past)	44.8%	(0.50)	0	1
Agreeableness	6.06	(1.75)	0	10
Conscientiousness	6.75	(1.80)	0	10
Extraversion	4.16	(2.09)	0	10
Neuroticism	3.76	(2.13)	0	10
Openness	5.50	(1.64)	0	10

Notes: Weighted averages from Wave 2 of the British Election Study. [±] The averages presented for the income variables are based on taking the middle of each category and imputing for missing values, using Mincerian-type regressions.

Table 3
Political orientation and financial literacy

	Don't Know	*Left*	*Centre -left*	*Centre*	*Centre -right*	*Right*
Panel A: Dependent variable – Left-right orientation						
	(1)	(2)	(3)	(4)	(5)	(6)
Fin. literacy: #Correct responses	-0.059***	0.002	0.028***	-0.013	0.040***	0.001
	[0.007]	[0.004]	[0.007]	[0.009]	[0.008]	[0.004]
Predicted probability	*0.197*	*0.053*	*0.169*	*0.308*	*0.220*	*0.054*
%Financial literacy effect	*-30.0%*	*3.8%*	*16.6%*	*-4.2%*	*18.2%*	*1.9%*
No. of observations			5,292			
Log-likelihood			-8,880.6			
Panel B: Dependent variable – Left-right orientation derived from party identity and party orientation						
	(7)	(8)	(9)	(10)	(11)	(12)
Fin. literacy: #Correct responses	-0.036***	-0.008	0.020**	-0.016*	0.047***	-0.008
	[0.005]	[0.005]	[0.008]	[0.009]	[0.009]	[0.006]
Predicted probability	*0.105*	*0.087*	*0.175*	*0.254*	*0.252*	*0.127*
%Financial literacy effect	*-34.3%*	*-9.2%*	*11.4%*	*-6.3%*	*18.7%*	*-6.3%*
No. of observations			5,292			
Log-likelihood			-8,238.3			

Notes: * p<0.10, ** p<0.05, *** p<0.01. Average marginal effects after multinomial probit regressions. Robust standard errors are presented in brackets. All specifications include individual characteristics and dummy variables for education, age and personal income.

Table 4
Left-right orientation: Specification with public-attitude variables

	Don't know	*Left*	*Centre-left*	*Centre*	*Centre-right*	*Right*
Panel A: Dependent variable – Left-right orientation						
	(1)	(2)	(3)	(4)	(5)	(6)
Fin. literacy: #correct responses	-0.033***	0.003	0.025***	-0.018*	0.025***	-0.003
	[0.007]	[0.004]	[0.008]	[0.010]	[0.009]	[0.004]
Attitudes in favour of redistribution	0.003	0.010***	0.017***	0.004	-0.028***	-0.007***
	[0.002]	[0.002]	[0.002]	[0.003]	[0.002]	[0.001]
Attitudes in favour of immigration	-0.027***	0.006**	0.028***	0.006	-0.005	-0.007***
	[0.004]	[0.003]	[0.004]	[0.006]	[0.005]	[0.002]
Attitudes against gay equality	-0.015*	-0.015**	0.001	0.001	0.015*	0.014***
	[0.008]	[0.006]	[0.009]	[0.011]	[0.009]	[0.005]
Attitudes against gender equality	0.001	0.003	-0.015	-0.007	0.022**	-0.004
	[0.008]	[0.006]	[0.010]	[0.012]	[0.010]	[0.005]
Attitudes against ethnic equality	-0.001	-0.013**	-0.023**	-0.008	0.028***	0.017***
	[0.008]	[0.005]	[0.009]	[0.012]	[0.009]	[0.006]
Predicted probability	*0.145*	*0.056*	*0.181*	*0.319*	*0.24*	*0.059*
%Fin. Literacy effect	*-22.8%*	*5.4%*	*13.8%*	*-5.6%*	*10.4%*	*-5.1%*
No. of Observations			4,537			
Log-likelihood			-7,003.0			
Panel B: Dependent variable – Left-right orientation derived from party identity and party orientation						
	(7)	(8)	(9)	(10)	(11)	(12)
Fin. literacy: #correct responses	-0.011**	-0.005	0.018**	-0.026**	0.031***	-0.008
	[0.005]	[0.006]	[0.009]	[0.010]	[0.010]	[0.007]
Attitudes in favour of redistribution	0.002	0.007***	0.017***	0.013***	-0.028***	-0.011***
	[0.001]	[0.002]	[0.002]	[0.003]	[0.003]	[0.002]
Attitudes in favour of immigration	-0.012***	0.001	0.022***	0.013**	-0.009*	-0.014***
	[0.003]	[0.004]	[0.005]	[0.006]	[0.005]	[0.004]
Attitudes against gay equality	0.001	-0.009	-0.013	-0.01	0.040***	-0.009
	[0.006]	[0.007]	[0.011]	[0.011]	[0.011]	[0.007]
Attitudes against gender equality	-0.004	-0.001	-0.008	-0.021*	0.021**	0.014*
	[0.006]	[0.008]	[0.011]	[0.012]	[0.010]	[0.007]
Attitudes against ethnic equality	-0.007	-0.014**	-0.015	-0.009	0.011	0.035***
	[0.005]	[0.007]	[0.010]	[0.012]	[0.011]	[0.008]
	-0.011	-0.005	0.018	-0.026	0.031	-0.008
Predicted probability	*0.070*	*0.088*	*0.184*	*0.261*	*0.268*	*0.128*
%Fin. Literacy effect	*-15.7%*	*-5.7%*	*9.8%*	*-10.0%*	*11.6%*	*-6.3%*
No. of Observations			4,093			
Log-likelihood			-6,597.9			

* p<0.10, ** p<0.05, *** p<0.01

Table 5
Left-right orientation: Specification with public-value variables

	Don't know	*Left*	*Centre-left*	*Centre*	*Centre-right*	*Right*
Panel A: Dependent variable – Left-right orientation						
	(1)	(2)	(3)	(4)	(5)	(6)
Fin. literacy: #correct responses	-0.057***	0.003	0.028***	-0.012	0.037***	0.001
	[0.007]	[0.004]	[0.007]	[0.009]	[0.008]	[0.004]
HOE	-0.022	-0.016	0.012	-0.022	0.052**	-0.005
	[0.023]	[0.012]	[0.022]	[0.029]	[0.023]	[0.013]
PVE	0.009	-0.026***	-0.040***	-0.017*	0.060***	0.015***
	[0.007]	[0.004]	[0.007]	[0.009]	[0.008]	[0.004]
SRE	0.009	-0.012***	-0.015**	-0.007	0.026***	-0.001
	[0.007]	[0.004]	[0.006]	[0.008]	[0.007]	[0.003]
Predicted probability	*0.195*	*0.054*	*0.166*	*0.31*	*0.221*	*0.054*
%Fin. Literacy effect	*-29.2%*	*5.6%*	*16.9%*	*-3.9%*	*16.7%*	*1.9%*
No. of Observations			5,219			
Log-likelihood			-8,639.3			
Panel B: Dependent variable – Left-right orientation derived from party identity and party orientation						
	(7)	(8)	(9)	(10)	(11)	(12)
Fin. literacy: #correct responses	-0.035***	-0.010*	0.021**	-0.015	0.046***	-0.008
	[0.005]	[0.005]	[0.008]	[0.009]	[0.009]	[0.006]
HOE	-0.003	0.026	0.009	-0.051*	0.032	-0.012
	[0.017]	[0.020]	[0.025]	[0.030]	[0.026]	[0.020]
PVE	-0.005	-0.006	-0.038***	-0.044***	0.072***	0.021***
	[0.006]	[0.006]	[0.008]	[0.008]	[0.008]	[0.006]
SRE	0.003	-0.004	-0.009	-0.012	0.026***	-0.005
	[0.005]	[0.005]	[0.007]	[0.008]	[0.007]	[0.006]
Predicted probability	*0.106*	*0.084*	*0.174*	*0.255*	*0.253*	*0.128*
%Fin. Literacy effect	*-33.0%*	*-11.9%*	*12.1%*	*-5.9%*	*18.2%*	*-6.3%*
No. of Observations			4,634			
Log-likelihood			-8,017.1			

Notes: * p<0.10, ** p<0.05, *** p<0.01. HOE stands for *homo oeconomicus* effect, PVE stands for *public value* effect, and SRE stands for *social rivalry* effect. All three variables are normalised for comparability.

Table 6
Left-right orientation across all 6 waves (rounded average)

	Don't Know	*Left*	*Centre -left*	*Centre*	*Centre -right*	*Right*
	(1)	(2)	(3)	(4)	(5)	(6)
Fin. literacy: #correct responses	-0.044***	0.004	0.026***	-0.014	0.033***	-0.006
	[0.006]	[0.005]	[0.009]	[0.014]	[0.012]	[0.005]
Predicted probability	*0.091*	*0.036*	*0.167*	*0.383*	*0.265*	*0.058*
%Fin. Literacy effect	*-48.4%*	*11.1%*	*15.6%*	*-3.7%*	*12.5%*	*-10.3%*
No. of Observations			3,051			
Log-likelihood			-4,440.0			

Notes: * p<0.10, ** p<0.05, *** p<0.01. Marginal effects after multinomial probit regressions. Robust standard errors are presented in brackets.

Table 7
Polarization: Change in political orientation

	Radical change	*Radical left*	*Radical right*	*S.D.*[6]*(left-right)*
	(1)	(2)	(3)	(4)
Fin. literacy: #correct responses	-0.033***	-0.011*	-0.020**	-0.098***
	[0.011]	[0.007]	[0.008]	[0.022]
Linear prediction	*0.1627*	*0.0767*	*0.0867*	*0.7731*
%Financial literacy effect	*-20.3%*	*-14.9%*	*-22.5%*	*-12.7%*
No. of observations	2,385	2,385	2,385	2,655
Log-likelihood	-1,012.3	-581.5	-665.0	-2,566.8

Notes: * p<0.10, ** p<0.05, *** p<0.01. Columns 1-3 refer to extreme polarization, i.e. a change by more than or equal to 2 units overall, on the left and on the right, respectively. The dependent variable in Column 4 is the standard deviation of the left-right self-assessment across the six waves.

Appendix Table A1

Political orientation and financial literacy: Left-right self-assessment - Full estimates from Table 3

	None/ Other	*Left*	*Centre-left*	*Centre*	*Centre-right*	*Right*
	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy: number of correct responses	-0.059***	0.002	0.028***	-0.013	0.040***	0.001
	[0.007]	[0.004]	[0.007]	[0.009]	[0.008]	[0.004]
Personal income: missing	0.045*	-0.015	-0.03	-0.048	-0.008	0.056***
	[0.026]	[0.014]	[0.027]	[0.036]	[0.030]	[0.020]
-"-: £0-£4,999 per year	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: £5,000-£9,999	0.018	-0.016	0.021	-0.039	-0.044	0.059***
	[0.029]	[0.015]	[0.032]	[0.040]	[0.035]	[0.022]
-"-: £10,000-£14,999	0.023	0.008	-0.005	-0.02	-0.069**	0.063***
	[0.031]	[0.015]	[0.031]	[0.040]	[0.034]	[0.022]
-"-: £15,000-£19,999	0.028	-0.001	-0.046	-0.049	0.014	0.054**
	[0.030]	[0.017]	[0.031]	[0.042]	[0.034]	[0.022]
-"-: £20,000-£24,999	-0.008	-0.003	0.009	-0.036	-0.014	0.053**
	[0.032]	[0.015]	[0.032]	[0.043]	[0.036]	[0.023]
-"-: £25,000-£29,999	0.001	-0.005	-0.017	-0.041	0.016	0.048**
	[0.035]	[0.017]	[0.033]	[0.044]	[0.036]	[0.024]
-"-: £30,000-£34,999	-0.086**	-0.018	0.018	-0.024	0.039	0.070***
	[0.040]	[0.018]	[0.035]	[0.049]	[0.038]	[0.025]
-"-: £35,000-£39,999	0.009	-0.016	0.009	-0.019	-0.009	0.026
	[0.050]	[0.022]	[0.040]	[0.055]	[0.046]	[0.029]
-"-: £40,000-£44,999	-0.032	-0.031	-0.07	-0.003	0.035	0.102***
	[0.049]	[0.026]	[0.045]	[0.058]	[0.049]	[0.028]
-"-: £45,000-£49,999	-0.101*	0.015	0.005	-0.044	0.079	0.045
	[0.055]	[0.028]	[0.047]	[0.064]	[0.052]	[0.030]
-"-: £50,000-£59,999	-0.015	-0.081***	0.026	0.013	-0.012	0.070**
	[0.056]	[0.029]	[0.043]	[0.062]	[0.049]	[0.029]
-"-: £60,000-£69,999	-0.114	-0.048	-0.075	0.081	0.043	0.112***
	[0.078]	[0.032]	[0.072]	[0.082]	[0.065]	[0.036]
-"-: £70,000-£99,999	0.019	-0.031	-0.098*	0.023	0.014	0.072**
	[0.073]	[0.029]	[0.054]	[0.078]	[0.059]	[0.031]
-"-: ≥£100,000	0.017	-0.828***	0.092*	0.276***	0.274***	0.169***
	[0.101]	[0.048]	[0.053]	[0.095]	[0.073]	[0.034]
Education: None	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: Level 1	-0.100***	0.005	0.03	0.034	0.03	0.001
	[0.035]	[0.019]	[0.038]	[0.047]	[0.042]	[0.018]
-"-: Level 2	-0.069***	-0.022*	0.071***	-0.017	0.038	-0.002
	[0.021]	[0.013]	[0.024]	[0.030]	[0.026]	[0.011]
-"-: Apprenticeship	-0.107*	-0.061	0.141***	-0.045	0.05	0.021
	[0.057]	[0.040]	[0.051]	[0.065]	[0.056]	[0.024]
-"-: Level 3	-0.019	0.01	0.022	-0.005	0.007	-0.015
	[0.048]	[0.026]	[0.046]	[0.057]	[0.045]	[0.023]
-"-: Level 4	-0.081***	-0.031**	0.081***	0.011	0.045	-0.025*
	[0.026]	[0.014]	[0.027]	[0.033]	[0.028]	[0.013]
-"-: University	-0.129***	-0.005	0.134***	0.004	0.024	-0.029**
	[0.025]	[0.012]	[0.027]	[0.033]	[0.029]	[0.014]
-"-: Graduate	-0.135***	0.003	0.165***	0.018	0.008	-0.057***
	[0.036]	[0.015]	[0.033]	[0.043]	[0.036]	[0.019]
Age: 15-25	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: 26-35	0.012	-0.030*	-0.038	0.065	0.011	-0.02
	[0.031]	[0.017]	[0.035]	[0.045]	[0.040]	[0.018]
-"-: 36-45	-0.02	-0.028	-0.032	0.073	0.036	-0.029
	[0.032]	[0.017]	[0.035]	[0.046]	[0.040]	[0.020]

Table A1 continued in next page

Table A1 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)
-"-: 46-55	-0.065**	-0.013	-0.015	0.056	0.059	-0.023
	[0.032]	[0.018]	[0.034]	[0.046]	[0.039]	[0.019]
-"-: 56-65	-0.116***	-0.012	-0.04	0.111**	0.064	-0.007
	[0.035]	[0.018]	[0.036]	[0.047]	[0.040]	[0.019]
-"-: 66-75	-0.194***	-0.001	0.018	0.083	0.083*	0.012
	[0.040]	[0.020]	[0.040]	[0.052]	[0.044]	[0.021]
-"-: >75	-0.265***	0.029	0.025	0.063	0.098*	0.050**
	[0.055]	[0.029]	[0.053]	[0.068]	[0.053]	[0.024]
Male	-0.121***	-0.009	0.002	0.072***	0.037**	0.019**
	[0.015]	[0.007]	[0.014]	[0.018]	[0.015]	[0.008]
Married/Cohabiting/Civil partnership	0.014	0.006	-0.006	-0.001	-0.008	-0.004
	[0.020]	[0.011]	[0.019]	[0.025]	[0.021]	[0.011]
Widowed/Divorced/Separated	0.011	-0.004	-0.028	0.027	-0.01	0.004
	[0.025]	[0.014]	[0.024]	[0.031]	[0.026]	[0.013]
Log(Household size)	-0.009	0.01	-0.013	0.016	-0.013	0.009
	[0.016]	[0.009]	[0.018]	[0.021]	[0.019]	[0.010]
Children at preschool and school age	-0.01	-0.004	-0.022	0.045*	-0.016	0.007
	[0.020]	[0.010]	[0.020]	[0.023]	[0.021]	[0.010]
Occupation: Student	-0.127***	0.021	0.110**	0.002	0.08	-0.087**
	[0.042]	[0.018]	[0.043]	[0.058]	[0.050]	[0.035]
-"-: Employed	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: Inactive	-0.054**	0.021*	0.001	0.021	-0.017	0.029**
	[0.022]	[0.012]	[0.023]	[0.030]	[0.025]	[0.013]
-"-: Unemployed	-0.052	0.01	0.103***	0.01	-0.074	0.002
	[0.037]	[0.021]	[0.036]	[0.050]	[0.046]	[0.025]
-"-: Retired	0.001	-0.009	-0.024	0.025	0.015	-0.007
	[0.021]	[0.011]	[0.021]	[0.027]	[0.022]	[0.010]
Last work: Self-employed	0.001	0.001	-0.005	-0.009	-0.005	0.017*
	[0.023]	[0.012]	[0.023]	[0.028]	[0.020]	[0.010]
-"-: Private sector	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: Public sector	-0.037**	0.019**	0.017	0.013	-0.017	0.005
	[0.016]	[0.009]	[0.015]	[0.020]	[0.017]	[0.008]
-"-: Third sector	-0.069**	0.023	0.091***	-0.054	0.033	-0.024
	[0.034]	[0.015]	[0.027]	[0.037]	[0.034]	[0.019]
-"-: Other	0.063**	-0.02	-0.062**	0.03	-0.009	-0.002
	[0.027]	[0.018]	[0.030]	[0.042]	[0.035]	[0.016]
-"-: Never worked	0.099***	-0.028	-0.038	0.049	-0.041	-0.042
	[0.037]	[0.023]	[0.047]	[0.055]	[0.054]	[0.029]
Trade union member (current or past)	-0.041***	0.034***	0.114***	-0.016	-0.079***	-0.013*
	[0.014]	[0.008]	[0.014]	[0.018]	[0.014]	[0.007]
Ethnicity: White	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: Black	0.202***	0.022	0.111	-0.03	-0.287***	-0.018
	[0.074]	[0.033]	[0.070]	[0.089]	[0.092]	[0.040]
-"-: Mixed	0.015	0.021	-0.004	-0.051	-0.01	0.029
	[0.069]	[0.027]	[0.056]	[0.070]	[0.067]	[0.027]
-"-: Asian	-0.036	0.042*	0.071*	0.063	-0.133**	-0.008
	[0.042]	[0.024]	[0.040]	[0.057]	[0.052]	[0.021]
-"-: Other	-0.049	0.005	0.062	0.062	-0.085*	0.005
	[0.049]	[0.024]	[0.044]	[0.051]	[0.044]	[0.022]
Country of birth: England	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: Scotland	-0.068	0.011	-0.05	0.041	0.034	0.031*
	[0.042]	[0.018]	[0.036]	[0.047]	[0.034]	[0.018]
-"-: Wales	-0.004	-0.044	0.004	0.024	-0.012	0.033
	[0.055]	[0.033]	[0.042]	[0.055]	[0.054]	[0.025]

Table A1 continued in next page

Table A1 continued from last page

	(1)	(2)	(3)	(4)	(5)	(6)
-"-: Northern Ireland	-0.199	-0.069	-0.144	0.247*	0.18	-0.014
	[0.127]	[0.044]	[0.089]	[0.127]	[0.113]	[0.051]
-"-: Republic of Ireland	-0.109	-0.099**	0.074	0.018	0.157**	-0.041
	[0.108]	[0.039]	[0.061]	[0.091]	[0.079]	[0.046]
-"-: Commonwealth	-0.039	0.001	-0.021	0.109*	-0.035	-0.014
	[0.057]	[0.025]	[0.046]	[0.061]	[0.051]	[0.028]
-"-: European Union	-0.078	0.006	0.02	0.107*	-0.078	0.023
	[0.050]	[0.023]	[0.042]	[0.061]	[0.054]	[0.023]
-"-: Rest of World	0.054	0.019	-0.026	-0.044	-0.015	0.012
	[0.053]	[0.024]	[0.067]	[0.059]	[0.052]	[0.027]
Home owner	-0.020	-0.026***	0.011	-0.022	0.026	0.031***
	[0.018]	[0.009]	[0.019]	[0.022]	[0.019]	[0.009]
Mortgage	0.018	-0.020**	-0.002	-0.02	0.01	0.015
	[0.018]	[0.009]	[0.016]	[0.023]	[0.020]	[0.010]
Has experienced income shock in last year	0.014	0.039***	0.040**	-0.011	-0.086***	0.003
	[0.018]	[0.009]	[0.018]	[0.023]	[0.020]	[0.009]
Risk-taker: 1 (Low) - 4 (High)	-0.031***	0.009	-0.008	0.005	0.019*	0.006
	[0.010]	[0.006]	[0.010]	[0.013]	[0.011]	[0.006]
Social desirability: 0 (Low) - 4 (High)	0.014**	0.004	-0.006	-0.002	-0.012*	0.002
	[0.006]	[0.003]	[0.006]	[0.008]	[0.006]	[0.003]
Religiousness	-0.029**	-0.031***	-0.054***	0.01	0.078***	0.027***
	[0.013]	[0.007]	[0.013]	[0.017]	[0.014]	[0.007]
BIG5: Agreeableness	-0.003	0.006***	0.010**	0.006	-0.011***	-0.008***
	[0.004]	[0.002]	[0.004]	[0.005]	[0.004]	[0.002]
BIG5: Conscientiousness	0.004	-0.005**	-0.004	-0.001	0.008*	-0.002
	[0.004]	[0.002]	[0.004]	[0.005]	[0.004]	[0.002]
BIG5: Extraversion	-0.002	-0.001	-0.001	-0.002	0.003	0.002
	[0.003]	[0.002]	[0.003]	[0.004]	[0.003]	[0.002]
BIG5: Neuroticism	-0.002	0.002	0.012***	-0.010**	-0.003	0.001
	[0.003]	[0.002]	[0.003]	[0.004]	[0.004]	[0.002]
BIG5: Openness	-0.011***	0.010***	0.008*	-0.002	-0.004	-0.002
	[0.004]	[0.002]	[0.005]	[0.005]	[0.004]	[0.002]
Urban region	-0.067***	0.020**	0.011	0.039**	-0.009	0.005
	[0.015]	[0.008]	[0.015]	[0.018]	[0.016]	[0.008]
Region: Northeast	0.056*	0.005	0.007	0.058	-0.078**	-0.049**
	[0.030]	[0.017]	[0.030]	[0.043]	[0.036]	[0.024]
-"-: Northwest	0.031	0.005	-0.007	0.062*	-0.055**	-0.036***
	[0.025]	[0.014]	[0.024]	[0.032]	[0.027]	[0.013]
-"-: Yorkshire & Humber	0.037	-0.028*	0.009	0.068**	-0.048	-0.038**
	[0.027]	[0.015]	[0.026]	[0.034]	[0.030]	[0.015]
-"-: East Midlands	-0.006	0.006	-0.051*	0.095**	-0.023	-0.02
	[0.030]	[0.017]	[0.030]	[0.039]	[0.033]	[0.015]
-"-: West Midlands	-0.023	-0.004	-0.025	0.123***	-0.047	-0.024*
	[0.027]	[0.015]	[0.026]	[0.034]	[0.029]	[0.014]
-"-: East England	0.001	0.001	-0.032	0.054	-0.008	-0.016
	[0.028]	[0.015]	[0.026]	[0.034]	[0.029]	[0.014]
-"-: Greater London	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]	[*Ref.*]
-"-: South East	-0.043*	0.006	-0.008	0.075**	-0.001	-0.029**
	[0.025]	[0.014]	[0.024]	[0.031]	[0.026]	[0.014]
-"-: South West	0.001	0.016	-0.047*	0.063*	-0.012	-0.02
	[0.029]	[0.015]	[0.028]	[0.036]	[0.029]	[0.015]
-"-: Wales	-0.047	0.069**	-0.053	0.136**	-0.019	-0.086***
	[0.065]	[0.029]	[0.049]	[0.063]	[0.059]	[0.028]
-"-: Scotland	-0.020	0.011	0.079	0.022	-0.082*	-0.01
	[0.056]	[0.024]	[0.049]	[0.060]	[0.049]	[0.027]
Number of observations			*5,292*			