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FINANCIAL LITERACY AND ATTITUDES TO REDISTRIBUTION

BY

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

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**DEPARTMENT OF ECONOMICS
UNIVERSITY OF STRATHCLYDE
GLASGOW**

Financial Literacy and Attitudes to Redistribution

Alberto Montagnoli, Mirko Moro, Georgios A. Panos[†],
and Robert E. Wright*

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Abstract:

This study combines novel financial-literacy data with measures of attitudes to redistribution from the British Election Study. We find a significant negative relationship between financial literacy and attitudes in favour of government intervention for income redistribution. The effect is robust to several specifications, samples, longitudinal models and instrumental variable regressions. Falsification tests show that these results are independent of generic attitudes towards other types of inequality/discrimination, e.g. based on gender, race or sexual orientation. An inquiry into the mechanisms of the effect indicates that the *homo oeconomicus* effect does not exert an impact on attitudes to redistribution for the less financially literate.

JEL Classification: D14; D31; I24.

Keywords: Financial literacy, redistribution, inequality, attitudes, Great Britain

[†] Corresponding author: Georgios.Panos@glasgow.ac.uk

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* Montagnoli: University of Sheffield. Moro: University of Stirling. Panos: Adam Smith Business School, University of Glasgow. Wright: University of Strathclyde Business School. We thank colleagues at the Universities of Glasgow, Strathclyde, Stirling and Sheffield and conference participants in the Financial Management Association, the DynIper and the IMAEF 2016 conferences for valuable comments.

[P]eople train themselves to reduce and sometimes more than fully overcome any tendency towards undervaluation. The analysis in this ... allows people to maximize the discounted value of present and future utilities partly by spending time and other resources to produce "imagination" capital that helps them better appreciate future utilities.

Gary Becker (1996)

1. Introduction

Government intervention to redistribute and limit income inequality is at the heart of the policy dialogue in several countries around the world (Jones, 2015; Sturm and De Haan, 2015). Individual attitudes towards redistribution and government intervention are conducive to the formation of tax and transfer systems. Economic models have focused on the impact of current and expected income, future prospects and mobility in affecting the demand for redistribution at the individual level. The evidence suggests that the degree of redistribution desired by an individual is negatively correlated with income, wealth and future economic prospects. However, some variables employed in the literature, such as current and future income and education, are imperfect proxies for ‘economic motives’ in that they do not completely capture the full range of determinants of attitudes to redistribution.

The recent literature on financial literacy has shown that people’s ability to process economic and financial information is linked with better financial planning, wealth accumulation, management of credit positions and pensions (Lusardi and Mitchell, 2014). Our study adheres to this literature by examining the impact of financial literacy on attitudes towards income redistribution. The choice of the tax and transfer system have direct consequences on current and future individual financial positions. Hence, our hypothesis is that financial literacy is an important determinant of redistributive attitudes. The development of financial literacy may also change an individual’s view on the social value of income equality, independently from own economic circumstances. This is in similar spirit to the conjecture that economics education may lead people to behave in a more self-interested manner in the dictator game, hold more positive attitudes toward greed and agree more with normative statements in favour of self-interest (e.g., Wang et al., 2011).

We use two distinct representative samples for Great Britain and Scotland, respectively, from the British Election Study (hereafter *BES*). The *BES* is an online questionnaire survey, which is collected by Yougov and managed by a consortium of British Universities. The survey includes a number of questions on social attitudes and, following consultations with the authors of this study, a customized pilot module on financial literacy. The questions included in the survey are the three

primary financial literacy questions employed by the literature in capturing the understanding of interest rates, inflation and risk diversification (e.g. [Lusardi and Mitchell, 2014](#)).

In 2014 and 2015, three waves of the BES were administered in Great Britain as a whole, while a fourth wave collected a boosted Scottish sample, with the motivation of tracking political and social perceptions following the referendum for Scottish independence of September 2014. Aiming for robustness, in our analysis we use the two samples of more than 5,000 individuals separately. The survey collectors have designed weights that render our samples representative of the whole population in Great Britain and Scotland, respectively. We employ answers to two distinct questions aiming to capture individual attitudes towards redistribution. The questions capture attitudes stated in two distinct ordinal scales, regarding the extent of agreement with the following two statements: “*Should the government try to make incomes more equal?*” and “*The government should redistribute income from the better off to those who are less well off*”. The survey also includes a very rich set of individual characteristics, such as personal and household income, education, age, gender, marital status, parental and family background, personality traits, risk attitudes, etc., which allow us to control for possible confounding factors.

Our analysis shows that individuals with a higher financial-literacy score are less supportive of redistributive policies and income equality in Great Britain and Scotland. The magnitude of the financial-literacy effect on the attitude towards redistribution is in the order of 25 percent, *ceteris paribus*. This magnitude stems from the marginal effects of financial literacy on the top and the bottom response categories of attitudes to redistribution in ordered probit models, controlling for a very rich set of other economic factors. This effect is economically important and it is robust to a number of functional forms, specifications and interactions between financial literacy and other socio-economic characteristics. In linear probability models, an additional correct answer to financially literacy questions leads to a negative effect of a magnitude between 9-13 percent on the probability to be supportive of “*government intervention to make incomes more equal*” and 3-8 percent on being in favour of “*the government redistributing income from the better off to the less well off*”.

Our identification assumption is that the financial-literacy variable is uncorrelated with omitted factors that are not controlled for, but are determinants for tax and transfer preferences. Our econometric models include a comprehensive set of socio-economic determinants discussed in the literature. In particular, we account for the effect of both education and income. These variables are

defined using both very specific categories/classes and their continuous variable counterparts, along with their interactions with financial literacy. In order to validate our results, we perform a series of robustness exercises and a falsification test. The latter test confirms that financial literacy is not a determinant of generic attitudes towards other types of inequality, i.e. regarding equal opportunities for females, ethnic minorities, gay and lesbians. In an effort to address endogeneity more directly, we experiment with different instrumental variables. Moreover, we present estimates from longitudinal models, in which there is variation within individuals in attitudes to redistribution and time invariant financial literacy. The sign, statistical and economic significance of the parameter of interest are confirmed.

In the final part of the analysis, we investigate whether the effect of financial literacy on attitudes to redistribution is an independent channel or if it is part of the other main channels, which are already identified by the literature as pivotal to the formation of attitudes to income redistribution. More explicitly, following [Corneo and Grüner \(2002\)](#), we identify and utilize proxies for three other major explanatory factors. First, attitudes towards redistribution can be driven by pure economic self-interest (*homo oeconomicus* effect). Second, departing from 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. (*public value* effect). Third, individuals form such attitudes based the consideration that governmental redistribution affects the quality of their social environment (*social rivalry* effect). Our analysis presents supportive evidence of the idea that these effects are indeed primary drivers in explaining attitudes towards redistributive policies. However, our estimates in models with interaction terms between financial literacy and the three mechanisms, along with estimates from separate samples of individuals with high and low financial literacy, show that the *homo oeconomicus* effect exerts an insignificant impact on attitudes to redistribution for the less financially-literate individuals. In contrast, it remains statistically and economically significant for the more financially-literate individuals. We interpret this novel finding as preliminary evidence in favour of financial literacy being a major cognitive ability that is conducive to rational economic behaviour, via relevant attitude formation.

The remainder of this study is organized as follows. *Section 2* presents the background of our study by reviewing the relevant literature. *Section 3* presents the British Election Study, the variable definitions and relevant summary statistics. Then, *Section 4* presents the empirical strategy and the main results. *Section 5* presents and discusses the results of our robustness exercises, the falsification

test and the estimates from instrumental variable regressions. Section 6 provides an inquiry into the possible mechanisms via which financial literacy can impact the demand for redistribution. Finally, Section 7 concludes.

2. Background

This section provides an overview of the literature on individual attitudes toward redistribution. Moreover, it provides a conceptual discussion on how financial literacy can play a key role in shaping individual's attitude towards government's redistribution policies.

2.1 *Attitudes for redistribution*

Economy theory on redistribution stems from the original works of [Romer \(1975\)](#), [Roberts \(1977\)](#) and [Meltzer and Richard \(1983\)](#), in which the focus is on the median voter's utility derived from income. The key idea is that, with rising inequality, the distance between median and mean income increases, since the distribution is skewed to the right and the median lies below the mean. Hence, the median voter extracts a higher level of utility from income redistribution as inequality rises. Overall, the net benefit derived from redistribution is inversely correlated to income. [Alesina and Angeletos \(2005\)](#) and [Benabou and Tirole \(2006\)](#), among others, expand the theoretical framework so that other factors, such as fairness and expected social mobility, are accounted for. They show that if a society believes that income is driven by effort, as opposed to luck, birth or social connections, then this society would have a lower propensity towards redistributive policies. In other words, fairness and social mobility can account for large differences between redistributive policies.

The empirical literature on redistribution can be divided in broadly two branches. The first and older branch examines attitudes towards redistribution across countries, using aggregate data. The measures typically employed to capture inequality and attitudes in favour of redistribution involve the Gini coefficient and the fraction of median to mean income ([Persson and Tabellini, 1994](#); [Perotti, 1996](#); and [Shelton, 2007](#); *inter alia*)¹. Overall, the empirical evidence at the macroeconomic level does not favour the impact of economic inequality on redistribution. A possible explanation

¹ More recently, using survey data from the International Social Security Programme across 38 countries, [Kerr \(2014\)](#) shows that a short-term increase in inequality is unlikely to prompt a vicious cycle, in which support for redistribution declines thereby promote a further increase in inequality.

for this pattern is the fact that there are more than one possible mechanisms affecting the relationship between attitudes to redistribution and inequality. It is empirically challenging to capture all these mechanisms at once and at the macroeconomic level.

More recently, the second strand of the literature employs microeconomic data and identification strategies that aim to disentangle the impact of distinct determinants of attitudes towards redistribution. [Alesina and Giuliano \(2011\)](#), [Alesina and La Ferrara \(2005\)](#) and [Fong \(2001; 2006\)](#) emphasize on the role of current and expected income and social status. Then, [Andreoni and Miller, \(2002\)](#) and [Fong and Oberholzer-Gee \(2011\)](#) highlight the role of altruism, while [Gruber and Hungerman, \(2007\)](#) examine the role of religion in shaping attitudes to redistribution.

[Corneo and Grüner \(2002\)](#) propose a conceptual framework that aims to categorize the possible channels through which attitudes to redistribution can be explained. Specifically, they identify three primary competing mechanisms.

- First, individuals are driven by self-interest and their preferences are entirely shaped by their rank in the income scale (*homo oeconomicus* effect). Specifically, attitudes against redistribution are inversely related to the net gain that the individual obtains from governmental redistribution and/or to the individual's rank on the income scale (e.g. [Meltzer and Richards, 1981](#); [Benabou and Ok, 2001](#)).
- Second, the *public value* effect states that attitudes towards redistribution are not correlated to the level of income. Instead, they are more likely to be formed based on endowments, such as ethics, that an individual is born with².
- Third, according to the *social rivalry* effect, redistributive attitudes are formed based on consideration of the living standards relative to one's peers, e.g. neighbours. In this framework, factors such as the social class composition of the population in the area in which an individual lives and/or marital status are pivotal to the formation of social attitudes.

The framework by [Corneo and Grüner \(2002\)](#) suggests empirical proxies for these three effects, along with a series of relevant hypotheses that can be tested empirically. However, the follow-up evidence is mixed. For instance, [Fong \(2001\)](#) attributes an insignificant effect to the proxy of self-interest on shaping attitudes towards redistribution. [Luttmer \(2001\)](#) finds that financial self-

² This point is discussed in [Piketty \(1998\)](#) and [Alesina and Angeletos \(2005\)](#), *inter alia*. [Alesina et al. \(2001\)](#) propose a model, in which the individual's utility is dependent on the utility of members of other ethnic groups. They conclude that the individual's awareness of ethnic heterogeneity could be the driver of the difference in views on income redistribution across socio-economic groups.

interest is not the only determinant of attitudes towards welfare spending, but other factors, such as loyalty to one's racial group, play an important role. In addition, using data from the General Social Survey for the period 1978-2000 to examine the role of identity markers, [Keely and Tan \(2008\)](#) find that only race, gender, age, and socioeconomic class are important determinants for income redistribution. More recently, [Luttmer and Singhal \(2011\)](#) suggest that culture could be a key determinant in explaining differences in such attitudes across Europe and the United States.

2.2 The link between financial literacy and attitudes to income redistribution

The potential link between financial literacy and the prevalence of social attitudes, such as those towards inequality and redistribution, is unexplored in the economics literature. In the related literature on cognitive ability and economic outcomes, [Hanushek and Woessmann \(2008\)](#) conclude that cognitive skills, both minimal and high-level, rather than mere school attainment are powerfully related to individual earnings, the distribution of income and economic growth. The authors find complementarity between the role of skills and the quality of economic institutions on economic growth. [Heckman et al. \(2006\)](#) find that a low-dimensional vector of cognitive and non-cognitive skills explains a variety of labour market and behavioural outcomes, e.g. a variety of risky behaviours. Non-cognitive skills strongly influence schooling decisions and also affect wages, *ceteris paribus*. Schooling, employment, work experience, and choice of occupation are affected by latent non-cognitive and cognitive skills.

In a meta-analysis of studies in social psychology, [Schoon et al. \(2010\)](#) find that that social background, cognitive ability, education, and own social status influence perceptions of society. However, the empirical evidence on the relationship between cognitive ability and social attitudes has been relatively mixed in social psychology. Using data from foreign students and applicants in colleges in the United States, [Stankov \(2009\)](#) shows that conservatism scores and cognitive ability are negatively correlated. However, [Deary et al. \(2008\)](#) find that people with higher childhood intelligence are more likely to take part in rallies and demonstrations, sign petitions, and express a greater interest in politics. Moreover, they are more likely to vote, particularly for the liberal parties. [Onraet et al. \(2015\)](#) conclude that cognitive ability is an important factor in the genesis of ideological attitudes and prejudice and thus should become more central in theorizing and model building. Their studies generally reveal lower cognitive ability to be associated with stronger endorsement of right-wing ideological attitudes and greater prejudice. However, this relationship has remained widely unrecognized in literature.

This section tries to fill in the gap by laying out the conceptual channel through which financial literacy could affect individual attitude towards redistribution. As mentioned above, in the economic literature, such attitudes depend on economic factors (e.g. [Romer, 1975](#); [Meltzer and Richards, 1981](#)). Our argument is that financial literacy is one of the most important, albeit overlooked, economic variables. The commonly accepted definition, based on the US President's Advisory Council on Financial Literacy ([PACFL, 2008](#)), introduces financial literacy as “*the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being*” ([Hung et al. 2009](#)). In other words, financial literacy is about using cognitive ability for optimal financial planning, which results in greater private benefits. Thus, particularly in the environment of developed economies, entailing a rather sound welfare state, one should expect financial literacy to be associated with less favourable attitudes to redistribution.

In this context, [Jappelli and Padula \(2013\)](#) sketch a life-cycle model of consumption, in which the level of financial literacy is endogenously determined. Individuals are modelled as rational agents who choose how much to save and how much to invest in financial literacy. The prediction is that financial literacy is strongly positively correlated with future wealth. Moreover, in an illuminating recent study, [Lusardi et al. \(2016\)](#) suggest that differences in financial knowledge, formed endogenously early in life, can explain about 40 percent of retirement wealth inequality in the United States. The inference, supported by the evidence found in [Jappelli \(2010\)](#), is that there is a strong negative correlation between the average level of financial literacy within a country and how generous social security systems are. A more elaborate idea is that individuals with a higher level of financial literacy have higher expected income and may be driven by self-interest. In contrast, an individual with a low level of financial literacy might have lower expected income and therefore be in favour of more progressive tax systems (e.g. [Meltzer and Richards, 1981](#); [Banabou and Ok, 2001](#)). Hence, financial literacy should matter for attitudes towards redistribution, even when controlling for the levels of income and educational attainment.

[Figure 1](#) presents an international comparison using weighted country-level averages on attitudes to redistribution and financial literacy. Expressions of attitudes to redistribution stem from two distinct questions in wave 6 of the World Values Survey, one question from the International Social Survey Programme (2014), and three distinct questions from the 2014 Eurobarometer survey. Financial literacy country averages stem from the S&P financial literacy survey (2014). The figures are weighted by GDP per capita (PPP-current international \$) from the World Development Indicators. All 6 panels of [Figure 1](#) show a negative relationship between average financial literacy

and favourable attitudes to redistribution across countries. Thus, the inspection of the country-level data from three distinct sources seems to validate the expectation that financial literacy is negatively related to attitudes in favour of income redistribution.

[INSERT FIGURE 1 ABOUT HERE]

Linking the evidence above with the classification proposed by [Corneo and Grüner \(2002\)](#), one can classify the following interacting mechanisms, via which financial literacy could affect the expression of attitudes to redistribution. Firstly, financial literacy could interact with the *homo oeconomicus* channel, i.e. more financial literate individuals could emphasize more on self-interest and own rank in the income distribution. For instance, [van Rooij et al., 2012](#) find a positive relationship between the level of financial literacy and the level of net worth. In a seminal work, [Becker \(1996\)](#) posits the concept of ‘personal capital’ and suggests that forward-looking individuals recognize that their current choices and experiences affect their personal capital in the future. Moreover, they are able to recognize that future utility depends on future personal capital. In that spirit, [Becker and Mullighan \(1997\)](#) suggest that higher wealth is related to higher patience. One can conceive financial literacy as mediating that cognitive ‘recognition’ process and, thus, be negatively related to the demand for redistributive policies.

In a normative setting, this emphasis is similar to attributing a higher importance on the role of effort, as an incentive to achieve a specific financial goal. The financially literate individual is more likely to attribute a personal economic success to both real and perceived level of effort. This level of effort would necessarily decrease the level of demand for redistribution. This idea is in line with the original model on redistribution, proposed by [Meltzer and Richards \(1981\)](#), in which individuals have various levels of productivity. Since own wage is related to productivity, individuals who are not in the position to earn a higher wage than the median income will choose not to work. This line of thought seems to find some support on the works of [Alesina and La Ferrara \(2005\)](#), [Fong \(2001\)](#) and [Krawczyk \(2011\)](#). They show that individual attitudes to redistribution are inversely correlated to the individual’s belief that future success is determined by effort and talent. In contrast, those individuals who place more emphasis on the role of luck and social connections (e.g. help from others) generally do not oppose redistribution.

A recent strand of the redistribution literature assigns weights to the importance of beliefs, context and culture, as drivers that are independent from economic factors ([Luttmer and Singhal, 2011](#)). The interesting inference is that an individual with a high level of financial literacy should rely less on social beliefs derived from exogenously predetermined factors like family economic

background, ethnicity, country's history and religiosity or on personal characteristics like gender and age. However, this is not to say that financial literacy should be independent of any public value effect. The prediction here is that the acquisition of financial literacy may induce beliefs and values regarding the benefits of equality in the same way that some theories conjecture that studying economics leads individuals to hold more positive views on self-interest (Wang et al., 2011).

A third possible channel though which financial literacy may come into play is via the interaction with the *social rivalry* effect. Financial literacy could improve the accuracy of a subjective evaluation of own position within the income distribution, thus reducing biases (Cruces et al., 2013). In that spirit, insights from Rayo and Becker's (2006) view of conspicuous consumption goods as potentially durable goods and Rayo and Becker's (2007a; 2007b) evolutionary theory of happiness, based on endogenous reference points, can explain why high levels of consumer debt can occur even among financially literate individuals.

Finally, it is important to highlight that the definition of financial literacy proposed here has a pure personal financial planning aspect and ignores any other potential effects or aggregate considerations. If, however, financial literacy embeds also strong elements of economic literacy then one can expect negative views on redistribution to arise from other reasons. Individuals with a high level of economic knowledge may believe that a high level of inequality can have positive spillover effects on growth. The rationale is that it can provide an incentive to both innovation and entrepreneurship (Lazear and Rosen, 1981), or it may increase saving and investment given that wealthier individuals have a higher propensity to save (Kaldor, 1957)³.

3. Data and Summary Statistics

We use waves 1, 2 and 4 of the British Election Study 2015 (hereafter *BES*). The *BES* is an internet panel study, collected by Yougov⁴. Wave 1 provides us with the basic socioeconomic information

³ An opposite view could suggest that a homo oeconomicus might also recognize that inequality may have long-term negative consequences on growth, because it may reduce the accumulation of human capital and could bring economic and political instability, which in turn reduces investment (e.g. Galor and Moav, 2004; Aghion, Caroli, and Garcia-Penalosa, 1999; Alesina and Perotti, 1996). Hence, we should expect that an individual who has been trained in economics (but is not necessarily more financially literate) is more averse to conservative policies. This would make the expected direction of the relation ambiguous.

⁴ The data is available at: <http://www.britishelectionstudy.com/data-objects/panel-study-data/>. The British Election Study 2015 is managed via a consortium of the University of Manchester, The University of Oxford, and The

and was collected in February-March 2014 and Wave 2, which provides us with the financial literacy information, in May-June 2014. There were 30,219 respondents in Wave 2 and 26,870 respondents who also took Wave 1 (overall retention 88.9%). Wave 4, which involve a boosted Scottish sample with financial-literacy information, was collected on March 2015. It stems from online interviews with 31,323 individuals and again a very high retention rate from wave 1. The resulting dataset offers weights constructed at the regional level. Financial literacy questions were included in the survey of BES as a “*playground item*”, following consultation between the authors of this study and the data collectors. The playground contains items that are only asked to subsets of respondents, primarily in England, but in the case of our questions these were also asked in Scotland and Wales in a subsample that does not oversample in the two regions. Hence, the three financial-literacy questions were asked in a representative sub-sample of 5,712 respondents in Wave 2 and a boosted sub-sample of 5,387 Scottish respondents in Wave 4. Although the BES includes more than 30,000 individuals in each wave, the financial literacy modules that we used in this paper was administered to two representative subsets of respondents⁵.

We conduct our analysis using items from two separate samples for robustness purposes: a standard sample of Great Britain (which includes England, Wales and Scotland) from wave 2 and a separate (boosted) sample of Scotland. The latter were interviewed at a different time (wave 4) for reasons related to the conduct of the referendum for Scottish independence of September 2014. The total amount of observations used depends on the outcome variable used and is around 5,000 observation for both the sample for Great Britain and the Scottish sample. In our robustness section, we also utilize a longitudinal version of the BES data, stemming from waves 1-9 (wave 9 was

University of Nottingham. The Scientific Leadership Team is comprised of Professors Ed Fieldhouse, Jane Green, Hermann Schmitt, Geoff Evans and Cees van der Eijk. The team is supported by researchers Dr Jon Mellon and Kathryn Simpson, and also by BES 2015 consultant Professor John Curtice (University of Strathclyde). The BES 2015 is working in close collaboration with colleagues within the Universities of Manchester, Oxford and Nottingham, and is partnering with a wide variety of affiliated datasets and projects (and proposed projects) to link BES voter data to other data on election candidates and campaigns. Neither the BES collectors nor managers bear any responsibility for the analysis and interpretations presented in our study.

⁵ The representativeness of the two sub-samples, to which financial literacy questions were administered, was ensured and confirmed by the data collectors. Moreover, the [Appendix Table A1](#) provides a comparison between the full sample and the used sub-samples in wave 2 and wave 4. For the former, it also provides a comparison with wave 5 (2013-2014) of the *Understanding Society* survey, the major UK longitudinal representative household survey, funded primarily by the Economic and Social Research Council (ESRC) and by a consortium of UK government departments. The weighted summary statistics indicate that the two financial literacy sub-samples are representative and map well the full *BES* samples for Great Britain. Moreover, the weighted averages with respect to most representative characteristics are very close to those of wave 5 (2013-2014) of the *Understanding Society* survey.

collected in September 2016), although the financial literacy questions were only asked in waves 2 (Great Britain sample) and 4 (Scottish sample).

For our dependent variables, we rely on two specific questions as indicators of the support that individuals give to redistribution. The first question (hereafter RD_1) asks: “*Some people feel that government should make much greater efforts to make people’s incomes more equal. Other people feel that government should be much less concerned about how equal people’s incomes are. Where would you place yourself on this scale?*” The respondent is provided with an ordinal response scale to choose from, ranging between zero and ten. We use the reversed version of the scale, in which zero explicitly represents the view that “*Government should be less concerned about equal incomes*” and ten explicitly represents the view that “*Government should try to make incomes equal*”. The second question (hereafter RD_2) asks: “*How much do you agree or disagree with the following statements? Government should redistribute income from the better off to those who are less well off*”. The respondents can choose among “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree”, “Strongly agree”, and “I don't know”⁶.

Table 1 presents the summary statistics for the distribution of the responses for attitudes to redistribution. Panel A presents the figures for the first redistribution question (RD_1). In the first row, it is shown that for 10.4% of the British respondents, the government should not try to make incomes more equal. The figure amounts to 6.3% in the Scottish sample. At the other side of the spectrum, it is shown that 13.6% and 24.6%, in Great Britain and Scotland, respectively, are strongly in favour of redistribution. If we consider the middle of the distribution of the British sample, we notice that about 28% of the interviewees report to be in favour or mildly in favour of redistribution (6-9 on the scale), while 30% think that the government should be less concern about equal incomes (1-4 on the scale). Some 17.5% state they are at point 5 of the 0-10 scale or that they do not know where they stand in the scale. Similar percentages are recorded for the Scottish sample, with 13.6% placing themselves in the middle of the scale. Panel B of Table 1 presents the figures for the second question identifying the attitude towards redistribution (RD_2). It is shown that 5.1% of the British respondents *strongly disagree* with the proposition that the government should redistribute income from the better off to the less well off. 18.3% *disagree*, 24.6% *neither agree nor disagree*, 32.7% *agree* and 19.3% *strongly agree* with the proposition. This contrasts with the 52% of the respondents, who are either in favour or strongly in favour of such redistribution. 20.8% state a value

⁶ For the purposes of our analysis, the few “Don’t know” responses are considered equivalent to “Neither agree nor disagree”. However, excluding these observations from the analysis, renders similar results and conclusions.

of 3 or do not know where to place themselves in the 0-5 scale. The figures for the boosted Scottish sample of wave 4 show that 3.8% strongly disagree, 12.9% moderately disagree, 20.5% neither agree nor disagree, 33.6% moderately agree and 29.0% strongly agree that the government should redistribute income from the better off to those who are less well off.

[INSERT TABLE 1 ABOUT HERE]

3.1 Financial literacy in Great Britain

The financial literacy question, which were introduced at the *BES*, follow [Lusardi and Mitchell \(2014, p.10\)](#) and capture: (i) numeracy via capacity to do calculations related to interest rates, such as understanding basic interest compounding; (ii) understanding of inflation; and (iii) understanding of risk diversification. These three concepts have been robustly shown to be the essential basic skills required to make long-term decisions regarding the level of savings and investment. Hence, our resulting financial-literacy index is based on the three questions, which have become standard in the literature.

- 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 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 five possible answers are: “More than today”, “Exactly the same as today”, “Less than today”, “Don’t know”, “Prefer not to say”.
- The final question is “*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”, “Don’t know”, “Prefer not to say”.

The responses to the three questions are combined to form an index, ranging from 0 (no correct answers) to 3 (all correct answers). [Table 2](#) gives a snapshot of the level of financial literacy in Great Britain and Scotland in 2014. In *Panel B*, about 40.2% of the people surveyed answered correctly to all three questions while about 10.8% responded incorrectly to all questions. Some 30% and 20% answered correctly to two questions and to one out of three questions, respectively. The figures are

very similar for the boosted Scottish sample of Wave 4, with 37.3% of the respondents answering correctly to all three questions, 31.1% and 19.1% answering correctly to two and to one of the questions, respectively. 12.5% of the Scottish interviewees answered incorrectly to all three questions. Similar to other financial-literacy surveys around the world (*Panel D*), about a third of individuals in both samples responded that they do not know the answer in at least one out of the three questions.

[INSERT TABLE 2 ABOUT HERE]

Panel C shows that the question with the highest number of correct responses was regarding compound interest, with 80% of the interviewees responding correctly in both samples, while the question assessing the understanding of risk was answered correctly by 48.7% of individuals in Great Britain and 46.6% of individuals in Scotland. 69% of the sample in Great Britain and 65.8% of the sample in Scotland responded correctly to the inflation question. *Panel D of Table 2* presents an international comparison of financial literacy between Great Britain, Scotland and countries for which there exist representative surveys utilizing the same three questions. The figures in the table for countries other than Great Britain are from the references in the literature review by [Lusardi and Mitchell \(2014\)](#). Financial literacy in Great Britain and Scotland is shown to be comparable to countries such as Australia and the Netherlands, higher than the USA, Japan and New Zealand and lower than Germany. Strikingly, the figures for correct responses in the three questions are very similar between the United Kingdom, the Netherlands and Australia.

3.2 Socioeconomic characteristics at the British Election Study

The British Election Study comprises of a rich set of questions related to individual and household characteristics. *Table 3* gives an overview of the data for the sample from Great Britain in wave 2 (column 1) and for the Scottish sample (column 4). The table also provides the averages of the main variables for two subsets of individuals. Columns 2 and 5 present means for individuals with a high level of financial literacy, i.e. two or three correct responses in the three questions (hereafter *FLH*). Then, columns 3 and 6 present the means for the individuals with a low level of financial literacy, i.e. zero or one correct responses in the three questions (hereafter *FLL*). The asterisks next to the highest average denote the level of significance in mean difference between *FLH* and *FLL*.

[INSERT TABLE 3 ABOUT HERE]

49.4% of the GB sample and 47.7% of the Scottish sample are males. The average age is 47 years with 12.7 years of education in both samples. 60.2% of the respondents in the GB sample and 35.4% of the Scottish respondents live in urban regions⁷. Fractions close to 60% are married in both samples. The vast majority of the sample is of a white ethnic group, i.e. 91% of the GB sample and 96.5% of the Scottish sample. The average individual has a personal income of about £21,000 (about £16,500 in the Scottish sample) and a household income of £32,350 (£29,603 in the Scottish sample). 30.7% of the individual interviewed are home owners (27.6% in Scotland) while 28.5% have a mortgage (29.4% in Scotland). 14.8% of the GB sample have experienced a negative income shock in the last year, while that figure for the Scottish sample is 9.9%.

Regarding family background, 5.8% of the sample in Great Britain and 4.7% in Scotland come from an entrepreneurial family. 18.4% have attended a private school at some point in their past (11.6% in Scotland). With respect to labour market status, 7% of the sample (4.8% in Scotland) are self-employed, 37.8% (35.6%) are full-time employees, 11.5% (13.8%) are part-time employees, 3.5% (4.3% in Scotland) are unemployed, 5.9% (7.9%) are students, 22.8% (20.9%) are retired and 11.5% (14.8%) are inactive. 15.4% in Great Britain and 2.9% in Scotland are trade union members.

The weighted t-tests for mean differences in columns 4 and 8 reveal that *FLH* individuals are less likely to be in favour of income redistribution, compared to *FLL* individuals, as they provide lower scores in both measures RD_1 and RD_2 and in both the sample for Great Britain and Scotland. The more financially literate are more likely to be males, of older age, married, less likely to have young children and of white ethnic group. The *FLH* have more than one additional year of education, compared to the *FLL*. The *FLH* have higher personal and household income, compared to the *FLL*. They are more likely to be home owners and to have a mortgage. They are less likely to have experienced a negative income shock during the last year. They are more likely to stem from an entrepreneurial family in Scotland and less likely to have attended a private school in Great Britain. With respect to personality traits, the *FLH* are more likely to score higher on agreeableness, conscientiousness, openness, and score lower with respect to extraversion and neuroticism, compared to the *FLL*.

⁷ The definition of an urban region stems from a geocoding matching process of the 376 local authority regions in the GB sample [54 local authority regions in the Scottish sample] with urban audit core city data, available from the Office for National Statistics at: https://geoportal.statistics.gov.uk/datasets/57285cffe42344ad95a98d9ab9298da5_0

4. Empirical strategy and results

The summary statistics of Table 3 have already indicated that more financially-literate individuals tend to report less favourable attitudes towards income redistribution. In this section, we formalize the examination of this relationship, by estimating models of attitudes to redistribution for our two primary measures. We estimate specifications of the following form for attitudes towards redistribution:

$$RD_{in} = \beta_1 (FL_i) + \beta_2 X_i + \theta_r + \varepsilon_i, \quad (1)$$

where: RD_i denotes attitudes towards redistribution for individual i , FL_i is a variable capturing financial literacy, X_i is a vector of individual characteristics, θ_r is a fixed effect for region of residence and ε_i is the usual error term. As previously described, the measures of attitudes towards redistribution (RD_{in}) stem from two distinct questions, which render two separate ordinal outcomes (n). The first one (RD_{i1}) captures individual demand for direct government intervention to make incomes more equal, while the second one (RD_{i2}) asks whether the participant believes that the government should redistribute income from the better off to the less well off. The vector X_i includes a rich set of individual characteristics such as personal and household income, education, age, gender, marital status, household size, number of children at preschool and school age, occupation status (whether self-employed, full or part-time employed, unemployed, inactive, student or retired), trade union membership, ethnic group, country of birth (Scotland, Wales, Northern Ireland, Republic of Ireland, Commonwealth, European Union, Rest of the World), home ownership, mortgage, whether the respondent has experienced an income shock last year, attitudes to risk, i.e., a risk-taking index from 1 (very unwilling to take risks) to 4 (very willing to take risks), a political-orientation index, i.e. an ordinal variable ranging from 0 (indicating the far left) to 10 (indicating the far right), a social-desirability index, i.e. a count variable ranging from 0 (low) to 4 (high)⁸, a dummy variable indicating religiosity, the big 5 personality traits and whether the individual lives in an urban area. Finally, it includes two variables capturing family background, i.e. whether the individual had a father who was an entrepreneur and whether the individual attended a private school at some point in the past. In an attempt to isolate the effect of financial literacy from potential confounding factors,

⁸ The social desirability measurement is provided by the survey as a count outcome, which stems from the aggregation of agreement or disagreement with four statements: “*I always smile at people every time I meet them*”, “*I always practice what I preach*”, “*If I say to people that I will do something, I always keep my promise no matter how inconvenient it might be*”, and “*I would never lie to people*”. The individual is asked to agree or disagree with the ones that apply to him/her.

we take advantage of the richness of the survey and experiment with different functional forms, specifications and interactions of financial literacy with income, education and age⁹.

For robustness purposes, equation (1) is estimated using both OLS and ordered probit to account for the ordinal nature of the two dependent variables. All estimates presented are weighted using representative sampling weights and entail robust standard errors. These two estimation methods yield very similar results. For exposition purposes, all our main tables presented estimates using weighted least squares. The *Appendix Table A3* presents two sets of ordered probit estimates for Great Britain and Scotland, respectively, to establish robustness and present the full specification. All remaining estimates using ordered probit are available upon request. *Table 4* and *Table 5* present in short the weighted least squares estimates for Great Britain and Scotland, respectively. Panels A and B of both tables present the estimates of the effect of financial literacy on the two outcome variables, RD_1 and RD_2 , respectively. Specifically, in Panel A, the dependent variable is an index ranging from 0 to 10 on whether the ‘*Government should make incomes more equal*’. In Panel B, the dependent variable is an index ranging from 1 to 5 on whether the ‘*Government should redistribute to the less well off*’. Each column presents a different specification of equation (1). The bottom of the table indicates the set of control variables used in each specification.

In columns 1 and 7 of *Table 4*, we present the simplest variant of the model, in which the specification only includes our financial-literacy measure, i.e. the number of correct responses in the three questions. This specification does not entail any other control variables. Then, in the remaining columns, we incorporate control variables for confounding factors such as education, income, age and other individual characteristics. This exercise facilitates the inspection of the robustness of our main finding, i.e. taking into account of the impact of confounding factors, and also helps establish the magnitude of the financial-literacy effect on attitudes to redistribution. The relationship between financial literacy and the attitude towards redistribution is negative and statistically significant at the 1% level, suggesting that financial literacy is associated with attitudes against redistribution. Specifically, an additional correct response to a financial literacy question is associated with -0.537 (more than half a point) on the 10-point scale for the first measure, RD_1 . The magnitude of the relationship is also economically significant, when compared to the linear prediction of the model of 5.147. The magnitude of the effect is -10.4 percent, when dividing the

⁹ The *Appendix Table A3* provides the weighted pairwise correlation matrix for some of the key variables in our analysis.

coefficient with the linear prediction of the model. In the estimate shown for RD_2 (column 7 of Panel B), the effect is highly statistically significant but smaller, i.e. equivalent to -4.4 percent.

[INSERT TABLE 4 ABOUT HERE]

As shown in the literature, financial literacy is highly likely to be correlated with variables such as income, age and education, inter alia (e.g. [Lusardi and Mitchell, 2014](#)). The remaining columns of the two panels include the full set of control variables, shown in Appendix Table A3. Moreover, they present exercises with different specifications on income, education and age, so as to emphasize that the main effects are not the outcome of an interaction effect between financial literacy and these variables. Columns 2 (RD_1) and 8 (RD_2) include individual characteristics, along with personal income, education and age groups as dummy variables. Specifically, these groups involve 15 categories for personal income, 9 categories for education and 7 age groups. The significant negative effect of financial literacy remains, at a magnitude of -8.7 percent for RD_1 and -3.4 percent for RD_2 . The magnitudes of the two effects remain almost identical when including the continuous versions of the three variables in columns 3 and 9, namely the years of education and the logarithms of age and personal income¹⁰.

One may argue that the effect of financial literacy on attitudes to redistribution stems from unobserved household income or is some combination of household and personal income. For instance, some individuals with high financial literacy might decide for a vocational job that earns less if their partner/spouse's occupation can compensate for the lower earnings. Columns 4 and 10 include a third order polynomial in the logarithm of personal income, a second order polynomial in household income, in order to account for potential nonlinearity in their effect. Moreover, they include an interaction term between the logarithms of personal and household income, in order to account for their possible combinations within households. The effect of financial literacy in columns 4 and 10 becomes slightly smaller, but is still statistically significant at the 1% level. In

¹⁰ The categorical variable for personal income has been transformed to a continuous variable by assigning to respondents the midpoint value of their selected income class, with the maximum value being £125,000 for individuals stating "More than £100,000". The missing values of personal income for about 20% of both samples have been imputed using Mincerian-type regressions of the logarithm of personal income. The list of independent variables includes the logarithms of age, years of education, gender, marital and family status, occupation, ethnicity, migrant status, home ownership, urban region, region of residence and self-declared social class (4 dummy variables capturing: none, working, middle and other social class). Educational attainment has been converted into years of schooling on the basis of how many years are required to attain a certain qualification on average in the United Kingdom.

column 4 it is in the magnitude of -7.8 percent and in column 10, it is an effect of -3.1 percent magnitude.

Furthermore, in order to show that financial literacy is not picking up any education effects, we interact financial literacy with years of education in the specification of columns 5 and 11. The coefficient reported is the main effect of financial literacy, so – despite its effect having more than twice the magnitude of the effects of the previous columns – its size cannot be directly compared with the other coefficients. However, its significance at the 1% level is notable, because it suggests that financial literacy impacts attitudes to redistribution, in a manner that is completely disentangled from the effect of education. It is worth noting that the effect of the interaction term between financial literacy and years of education is positive, significant and of a small magnitude (not shown). Finally, in order to isolate the effect of financial literacy from all potential confounding factors, in columns 6 and 12 we present a fully saturated model, in which financial literacy is interacted with years of education, the logarithm of personal income and the logarithm of age. The coefficient reported shows the main effect of financial literacy and is negative, significant and of a magnitude of -12.0 percent for RD_1 and -5.7 percent for RD_2 . The effect of the multiple interaction term is positive, significant and of a small magnitude (not shown).

All the specifications for the two measures provide strong support to the idea that a higher level of financial literacy is related to weaker attitudes towards redistribution. An additional correct response to the three financial literacy questions decreases the likelihood to agree with the statements that the “*Government should try to make incomes more equal*” and that the “*Government should redistribute income from the better off to those who are less well off*” by about 0.5 points on the 10-point scale, and 0.1 points on the 5-point scale, respectively. Based on the linear predictions of the models, these effects are equivalent to about -10 percent and -5 percent, respectively.

Similar conclusions can be drawn from the inspection of [Table 5](#), which presents the weighted least squares estimates for the boosted Scottish sample of Wave 4, for both outcome variables. For parsimony, we present three specifications only, i.e. those of column 2, 4 and 6 of Table 4. The coefficients are all negative and statistically significant at the 1% level. Their effect is in magnitudes between -3.9 and -5.9 percent for RD_1 , and between -1.9 and -4.2 percent for RD_2 , respectively. We

interpret these results for the Scottish sample as a further confirmation of the robustness of our main finding¹¹.

[INSERT TABLE 5 ABOUT HERE]

In the remainder of our analysis, we use the specification of column 2 of Table 4 as our main specification, i.e. the specification that includes income, education and age dummy variables, along with the full set of individual characteristics and region fixed effects. A reasonable line of analysis involves the utilization of a model that takes into account the ordinal nature of the response categories of our two measures of attitudes to redistribution. Hence, we estimate a weighted ordered probit regression to account for the ordinal nature of the response variables¹². *Table 6* reports average marginal effects (AME), the predicted probability and the financial literacy effect (i.e. the ratio between the average marginal effect of financial literacy and the predicted probability of each response category in the model, expressed in percentage terms). We do this for both outcome variables, i.e. for RD_1 and RD_2 , and on both the GB sample (in Panel A) and the Scottish sample (in Panel B). In addition, *Figure 2* plots the average marginal effects and their 95% confidence intervals, in order to facilitate the inspection of the effects. These estimates reinforce our previous findings, but also adhere an important insight regarding the heterogeneity in the magnitude of the effects. In particular, financial literacy exerts a sizeable negative impact on the probability of strongly agreeing with redistributive policies. For the GB sample, the probability of answering ‘Yes’ to the first statement declines by -0.032, while the probability of answering ‘No’ increases by 0.027. Given the predicted probabilities of 0.135 and 0.106, for the top and the bottom category, the magnitude of the marginal effect of financial literacy is in the order of -24 percent for the top category and -25.8 percent for the bottom category. The magnitude of these effects for the Scottish sample is in the order of -12.6 percent for the top category and 19 percent for the bottom category.

[INSERT TABLE 6 ABOUT HERE]

¹¹ *Appendix Figure A1, A2, A3* and *A4* show how the impact of financial literacy on attitudes to redistribution varies across education, income, age, and political orientation/party voting respectively. In all four figures, the evident message is that the negative effect exerted by financial literacy is quite homogenous over income, education, age and by political orientation. Interestingly, opposition to government intervention to redistribute or make incomes equal is stronger for individuals with high financial literacy but low education. Similar homogeneity can be found when looking at income groups, whereby financial literacy makes someone less in favour of government intervention to make incomes more equal no matter what level of income for RD_1 . For individuals with higher financial literacy and higher income, the opposition to redistribution is stronger for RD_2 in both the GB and the Scottish sample. There is also a negative interaction effect of financial literacy with age and with “*right*” political orientation. The latter effect is less evident when interacting financial literacy with actual party voting. The political parties have been ordered from left to right in the 4 plots at the bottom of the figure.

¹² The Appendix Table A3 presents all coefficients and robust standard errors from weighted ordered probit models of the specifications of columns 2 and 8 in *Table 4* and columns 1 and 4 in *Table 5*.

A similar pattern emerges in Panel B for RD_2 , i.e. financial literacy decreases the probability to strongly agree that the government should redistribute income from the better off to those who are less well off by -14.2 percent and raises the probability to strongly disagree with that statement by 21 percent. An identical pattern prevails when looking at the marginal effects of financial literacy on RD_2 in the Scottish sample, with magnitudes in the order of -9.4 percent and 17.2 percent for the top and the bottom category, respectively. The impact of financial literacy on attitudes to redistribution is of a smaller magnitude in the Scottish sample.

Figure 2 visualizes the probability changes across each outcome category. The average marginal effects are all statistically significant, with the exception of category 5 for RD_1 in the GB sample. There is a robust negative trend emerging when considering both samples and measures. The negative effect is non-linear and much higher for the bottom and the top category of RD_1 . This is also the case for RD_2 , with the negative effect being the highest for the top response category. The figure confirms that the higher the individual's level of financial literacy the lower is the probability that the individual will have a negative attitude towards the role of government in redistributing income. This plot makes more evident the larger impact that financial literacy exerts on the extreme responses ('Yes', 'No' and 'Strongly Agree' or 'Strongly Disagree'). However, the marginal effects for financial literacy are all significant and of sizeable magnitudes for the all the remaining categories. In order to mitigate the concern that nearby larger values in the ordered probit do not necessarily correspond to a lower preference for redistribution, we have also estimated generalized ordered probit regressions. The *Appendix Figure A5* plots the marginal effects from these regressions, with the non-parallel line assumption imposed for the effect of financial-literacy. The robustness of our findings is confirmed. The plot indicates that the negative effect of financial literacy on attitudes to redistribution is stronger and significant for those in the categories 3, 5, 9 and 10 for RD_1 and categories 2 and 5 RD_2 ¹³.

[INSERT FIGURE 2 ABOUT HERE]

¹³ The results are very similar when relaxing the non-parallel line assumption for all independent variables in the context of a generalized ordered probit model (results available upon request).

5. Falsification, instrumental variables and longitudinal models

A potential concern in the analysis so far is that financial literacy may be correlated with the error term in Eq. (1) via omitted factors measuring generic preferences against equality or attitudes towards equal opportunity. As a falsification exercise, we test whether financial literacy is independent of generic attitudes towards other types of inequality/discrimination. We do so by estimating models of attitudes against equal opportunities to the following groups (a) gay and lesbian, (b) females and (c) ethnic minorities. Specifically, we use the following question from the BES: “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 ethnic minorities.*
- *Attempts to give equal opportunities to women.*
- *Attempts to give equal opportunities to gays and lesbians*

The response categories are five: “Not gone nearly far enough”, “Not gone far enough”, “About right”, “Gone too far”, “Gone much too far”. If our financial-literacy variable is well defined – and the model well specified – we should not expect it to be systematically related to any of the generic attitudes to inequality. Panel A of [Table 7](#) reports estimated coefficients of financial literacy from separate weighted least squares regressions on the GB sample and on the boosted Scottish sample. All the coefficients are small in size and statistically insignificant, confirming that financial literacy is not capturing feelings of general aversion to equality. We interpret the outcome of this falsification exercise as a validation of our strategy.

[INSERT TABLE 7 ABOUT HERE]

The second falsification exercise consists of running our main specification, i.e. that of column 2 of Table 4, using the number of incorrect responses to the financial literacy question and the number of “Don’t know” and “Prefer not to say” (instead of number of correct responses). These estimates are presented in Panel B of Table 7 using our two redistribution variables as outcomes (RD_1 and RD_2). Interestingly, the estimates confirm the validity of our financial literacy measure. As the number of incorrect answers increases, the likelihood of being in favour of redistribution and income equality also increases. The effects are of similar sign and magnitude when the number of “Don’t know/Don’t answer” is used as a proxy of financial illiteracy. We interpret the estimates of Panel B as a validation of our primary financial literacy measure used.

Finally, in Panel C of Table 7, we distinguish between the three financial literacy components, by jointly incorporating dummy variables for a correct response to the interest question, the inflation question and the risk question. Then, we incorporate dummy variables for a wrong response to each of the three questions, along with a “don’t know” response to each of the questions. The estimates of Panel C confirm that all three financial literacy components exert a negative and statistically significant impact on attitudes to redistribution. The magnitudes of the effects are similar in column 15. It is worth noting that the interest question does not exert a significant impact on attitudes to redistribution in the Scottish sample. Overall, it appears that the components of financial literacy exert a predictive role on attitudes to redistribution.

Another concern in our estimates so far is related to the potential endogeneity of financial literacy. In order to mitigate such a concern, we experiment with instrumental variable regressions in *Table 8*. The choice of valid instruments for financial literacy is tedious, stemming from the limited availability of suitable exclusion restrictions as instruments at the *BES*. For this reason, the first estimates reported are based on the method proposed by [Lewbel \(2012\)](#). In his approach, the method is applied without traditional instruments. In particular, the first-stage exclusion restriction is generated by the control variables, which we know are heteroskedastic. The greater the degree of heteroskedasticity in the error process, the higher will be the correlation of the generated instruments with the included endogenous variable.

Aiming for robustness, these estimates are accompanied by three more sets of instrumental variable regressions, using traditional instruments as exclusion restrictions. The first instrument used stems from answers regarding daily newspaper readership, and the choice of a newspaper that an individual most often reads on a daily basis. Among the sixteen options offered¹⁴, only five newspapers entailed a dedicated personal finance section in the year 2014, namely *The Daily Telegraph*, *The Financial Times*, *The Guardian*, *The Independent*, and *The Times*. We define a dummy variable, named *P.F. section*, taking the value 1 if the respondent frequently reads one of the five newspapers with dedicated personal finance sections. Our second instrumental variable, named *FinEdu*, stems from the studying “*Engineering, Mathematics or Natural sciences*” or “*Economics or business*” at the most recent degree/diploma¹⁵. This is a broad definition of financial

¹⁴ The Express, The Daily Mail / The Scottish Daily Mail, The Mirror / Daily Record, The Daily Star / The Daily Star of Scotland, The Sun, The Daily Telegraph, The Financial Times, The Guardian, The Independent, The Times, The Scotsman, The Herald (Glasgow), The Western Mail, Other local daily morning newspaper, Other Newspaper, None.

¹⁵ The original question is: “What subject area did you study in your most recent degree/diploma (at university etc.) or what subject area are you studying now (if you are still studying)?”

education on subject that are likely to involve stronger numeracy skills and mathematical ability. Intuitively, this can be thought to be highly correlated with financial literacy and less likely to be correlated with the unobserved determinants of attitudes to redistribution. Finally, in a fourth specification we use both our instrumental variables, jointly, as exclusion restrictions.

The instrumental-variable regression estimates are presented in Table 8. The battery of tests confirms that the instruments are strong, i.e. the F-test of the excluded instruments is well above the rule-of-thumb of 10 and the Kleibergen-Paap rk Wald statistic is large. The results confirm our previous findings, in that the estimated coefficients are negative and statistically significant. It is worth noting that [Lewbel's \(2012\)](#) method provides estimates in which the size is comparable with our previous estimates, while the other specifications with exclusion restrictions produce larger negative coefficients. However, it is worth noting that even these estimates are not unreasonably large. Hence, even in the moderate estimates, stemming from the method of [Lewbel \(2012\)](#), the instrumental variables approach used confirms the validity of our finding of a strong negative relationship between financial literacy and attitudes to income redistribution.

[INSERT TABLE 8 ABOUT HERE]

Our final line of inquiry in this section involves the utilization of longitudinal models for attitudes to redistribution. The BES survey has conducted nine waves so far in different quarters of the period 2014-2016. The longitudinal information on RD_1 is for waves 1, 2, 3, 4, 6 and 7. The time-varying information on RD_2 stems from waves 1, 6 and 7. One difficulty in employing fixed effects models stems from the fact that the majority of the information on our independent variables is time-invariant. Most importantly, financial literacy was only asked in wave 2 for the GB sample and in wave 4 for the boosted Scottish sample. The only variables with time-varying information are age, labour market status, political orientation, risk taking, union membership, social desirability, having children at pre-school age and experiencing a negative income shock during the last year. Hence, we are able to generate two panel datasets of six waves for RD_1 and three waves for RD_2 . In [Table 9](#), we estimate random effects GLS regressions for our two attitudinal measures. Moreover, we also estimate pooled weighted least squares regressions, with standard errors clustered at the individual level. Finally, we estimate attitudinal change models via weighted least squares, in which the dependent variable is the difference in RD_1 between wave 2 and wave 7, and, then, the respective difference in RD_2 .

[INSERT TABLE 9 ABOUT HERE]

The estimates in Table 9 confirm our finding, by further establishing a significant negative relationship between financial literacy in wave 2 (wave 4 for the Scottish sample) and attitudes to redistribution across six waves for RD_1 and three waves for RD_2 . The magnitude of the effects is similar to that of our cross-sectional models. Moreover, the models of column 5 and 6 (11 and 12 for the Scottish sample) find very large negative relationships between financial literacy and attitudinal change against redistribution between waves 2 and 7, greater than -25 percent for RD_1 and between -11.9 and -32.4 percent for RD_2 . The longitudinal analysis confirms that the negative relationship established is not due to omitted time-invariant factors that are uncorrelated with the independent variables in the context of the random effects model. Moreover, the findings are reinforced by the large negative association between financial literacy and attitudinal change against redistribution across waves.

6. Mechanisms

In the previous sections, we established that the link between attitude towards redistribution and financial literacy is robust to the choice of economic controls and to different samples, functional forms, specifications and models. Although this result has important implications *per se*, it is of primary importance to dissect the potential mechanisms through which financial literacy may impact attitudes for income equality and redistribution. In particular, our interest lies on whether the previous link between financial literacy and redistributive policies can be captured by any of the traditional channels proposed in the literature or if financial literacy mitigates or amplifies any of these mechanisms.

To this end, we utilize the categorization proposed by [Corneo and Grüner \(2002\)](#), introduced in Section 2. This involves a set of three specific mechanisms by which the agents form their views on public policies, as below:

a) The *homo oeconomicus* effect (hereafter *HOE*): This 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 more than 30,000 individuals with data on median personal income for each of

the 650 parliamentary constituencies in the United Kingdom¹⁶. We impute the 8,185 missing values on personal income by obtaining predicted values from Mincerian regressions on the remaining 25,785 observations.¹⁷ Then, the *HOE* is obtained as the difference of the logarithm of personal income minus the logarithm of median income in the parliamentary constituency.

b) The *public value* effect (hereafter *PVE*): The generation of a proxy *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 extent with which they 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 success¹⁸.

c) The *social rivalry* effect (hereafter *SRE*): 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. \(1992\)](#) show that social competition for some goods 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

¹⁶ 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>

¹⁷ The list of explanatory variables involves: the logarithm of age, the years of education, gender, marital status, the logarithm of household size, occupational status, ethnicity, immigrant status, home ownership, urban region, government office region of residence and social class (4 categories).

¹⁸ [Piketty \(1995\)](#) argues that experiential learning about the role of family background and the role of individual effort to personal economic success, generates a link between own experience of upward income mobility and the individual's degree of political conservatism.

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”¹⁹.

The *SRE* is then computed in the following four 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: “*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 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 level²⁰, using the full *BES* sample, with the 10th 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 $k \in [2, 17]$ 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 $k=1, \dots, 18$, people inside class k are associated with a social value V_k . There are 637 distinct values for V_k .
- 4) Finally, 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: $SRE_k = DVD_k - UVD_k$, where $DVD_k = V_k - V_{k-1}$ is the downward value

¹⁹ “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: $SRE_k = DVD_k - UVD_k$.

²⁰ There are some 380 local authorities at the *BES*.

differential for individuals of class k and $UVD_k = V_{k+1} - V_k$ is the upward value differential of class k . Hence: $SRE = 2 * V_k - (V_{k-1} + V_{k+1})$.

It is worth noting that for the purposes of our analysis we normalize the three proxies using a z-score for purposes of comparability of the effects produced. Our empirical strategy in this section involves examining the impact of the three mechanisms, along with financial literacy. We further aim to disentangle these channels for individuals with high and low financial literacy (*FLH* and *FLL*, respectively) as defined in the data section, by introducing relevant interaction terms and producing estimates for the two sub-samples of *FLH* and *FLL*.

Table 10 presents our estimates regarding the mechanisms of formation of attitudes towards redistribution for our RD_i measure. In column 1, all three mechanisms, namely the HOE, the PVE and the SRE, exert a negative effect on attitudes to redistribution. The magnitude of the effects is comparable to that in [Corneo and Grüner \(2002\)](#). The PVE effect appears to exert the largest negative impact among the three effects, with a coefficient twice as large as that of the other two mechanisms. Its magnitude is similar in size to our previous estimates of the financial literacy effect. In column 2, we introduce our financial literacy measure. The results show that accounting for the three mechanisms only slightly reduces the financial-literacy effect from -0.449 in Table 4 to -0.427. However, the relationship is still strongly statistically significant at the 1% level, indicating that financial literacy is capturing aspects that are orthogonal to these standard proxies. The magnitude of the coefficients of the three mechanisms remains virtually unaffected when controlling for financial literacy. In Column 3, we further distinguish between the *DVD* and the *UVD* components of the *SRE*. Expectedly, the *DVD* exerts a significant negative impact on RD_i and the *UVD* a symmetrical positive impact.

[INSERT TABLE 10 ABOUT HERE]

Column 4 introduces interaction terms between financial literacy and the three mechanisms proposed in the literature, in the following fashion (omitting the subscript i):

$$RD_n = \beta_1 FLH + \beta_2 X_i + \beta_3 (HOE * FLH) + \beta_4 HOE * (1 - FLH) + \beta_5 (PVE * FLH) + \beta_6 PVE * (1 - FLH) + \beta_7 (SRE * FLH) + SRE * (1 - FLH) + \theta_r + \varepsilon \quad (2)$$

The estimates in column 4 (and 10 for the Scottish sample) indicate significant terms for the interactions between *FLH*, *FLL* and *SRE* and *PVE*. Moreover, the interaction term between *HOE* and *FLH* is negative and significant. However, the interaction term between *HOE* and *1-FLH* (i.e. *FLL*) is statistically insignificant in both column 4 and 10. So is the interaction term between *SRE*

and FLL. Columns 5 and 6 (11 and 12 for Scotland) present estimates for the two sub-samples of *FLH* and *FLL*. Interestingly, the estimation for the two sub-samples indicates that the effect of the *HOE* is significantly large and negative for the *FLH*. However, it becomes statistically insignificant for the *FLL*. This is the case in both the GB and the Scottish sample estimations. The *SRE* effect also diminishes to insignificance for GB, although it is significant at the 10% level in the Scottish sample.

[INSERT TABLE 11 ABOUT HERE]

In *Table 11*, we repeat this exercise using RD_2 as the dependent variable. The same specifications as in Table 10 are estimated. In Table 11, the HOE becomes insignificant. However, the analysis using interaction terms and disaggregated samples suggests it is negative and significant for the FLH and insignificant for the FLL. The SRE is significantly negative for both groups in Table 11.

Overall, the results in this section indicate that both the PVE and largely the SRE exert a negative impact on attitudes to redistribution for both the high and the low financial literacy group. However, the HOE effect vanishes for the low-financial literacy individuals, while it is negative and significant among the high financial-literacy group. We interpret this evidence with caution, as a potential indication of a mediating role of financial literacy in the perception of the individual's net pecuniary gain from governmental redistribution. Individuals with high financial literacy are more likely to emphasize on self-interest and own rank in the income distribution. In the spirit of [Becker \(1996\)](#) forward-looking individuals may recognize that their current choices and experiences affect their personal capital in the future and that future utility depends on future personal capital. In that spirit, [Becker and Mullighan \(1997\)](#) suggest that higher wealth is related to higher patience. Thus, higher financial literacy may exert a mediating role in that cognitive 'recognition' process and, thus, reinforce attitudes against redistributive policies.

7. Concluding remarks and implications

This study examines the mediating role of financial literacy in the formation of attitudes against redistribution in Great Britain. We show that financial literacy exerts a statistically significant negative impact on attitudes in favour of the view that the government should actively intervene to make incomes more equal or redistribute from those better off to the worse off. Our analysis also

shows that the size of these effects is economically important and that financial literacy exerts an even stronger influence for individuals with polarized views on the matter of income redistribution. The effects are robust under various specifications, including a rich set of control variables and interactions with income, education and age. We show our results are robust when using instrumental variable regressions and longitudinal models. Financial literacy is shown to be unrelated to generic attitudes against inequality, with respect to gender, sexual orientation or ethnic group.

The importance of financial literacy in modern economies cannot be overemphasized. Financial literacy has a clear public good element to it, as it has been conceptually linked with macroeconomic financial stability. [Lusardi et al. \(2016\)](#) show that differences in financial knowledge formed early in life can explain some 40% of retirement wealth inequality in the United States. We find our findings are complementary to this recent insight, by suggesting that in addition to affecting current and future financial choices, financial literacy can affect views on ‘personal capital’ which can induce attitudes towards income redistribution, inequality and government intervention. Our analysis suggests that efforts to improve financial literacy in this realm can lead to lower demand for redistribution.

We contribute to the economics literature by presenting some preliminary evidence that the homo oeconomicus effect is more likely to prevail for the more financial literate individuals, while it vanishes for their financially-illiterate counterparts. With most economic models relying on the premise of rational agents, any cognitive skills that are likely to induce such behaviour, such as financial literacy in our setting, are likely to be conducive to the validity and predictive power of these economic models. We contribute to the literature on public economics, by presenting one additional main channel to those proposed in the literature on the formation of public attitudes, namely financial literacy. We contribute to the literature on education economics. Our findings may potentially be taken into account when designing policy interventions, by including elements on economics of inequality with the objective to provide a broader view on the subject. Finally, from a socioeconomics perspective, efforts to improve financial literacy can be seen as conducive to the processes of social constructivism and open democracy.

References

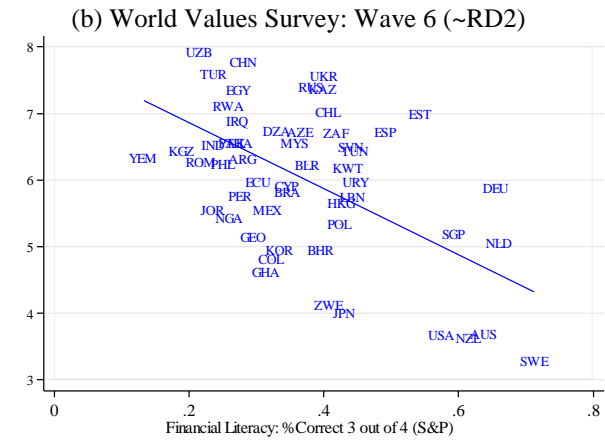
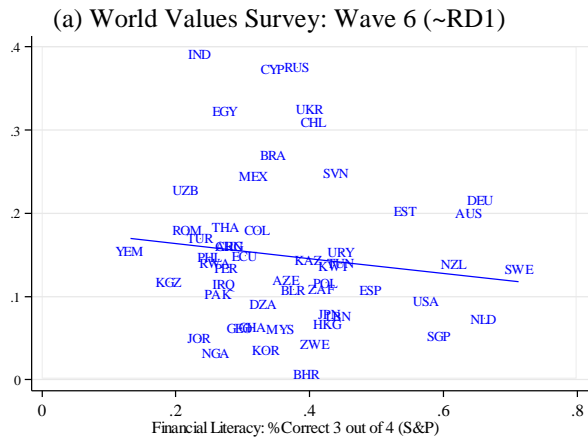
- Aghion, Philippe, Eve Caroli, and Cecilia Garcia-Penalosa, 1999. "Inequality and economic growth: the perspective of the new growth theories". *Journal of Economic literature*. Vol. 37, No. 4, pp. 1615-1660.
- Alesina Alberto, Edward Glaeser and Bruce Sacerdote, 2001. "Why doesn't the United States have a European-style welfare state?" *Brookings Paper on Economics Activity*. Fall, pp. 187-278.
- Alesina, Alberto, and George-Marios Angeletos, 2005. "Fairness and redistribution: US vs. Europe". *American Economic Review*. Vol 95, pp. 913-935.
- Alesina, Alberto, and Paola Giuliano. 2011. "Preferences for redistribution". In: A. Bisin and J. Benhabib (Eds.). *Handbook of Social Economics*. North Holland. pp. 93-132.
- Alesina, Alberto, and Eliana La Ferrara, 2005. "Preferences for redistribution in the land of opportunities". *Journal of Public Economics*. Vol. 89, pp. 897-931.
- Alesina, Alberto, and Roberto Perotti. "Income distribution, political instability, and investment". *European Economic Review*". Vol. 40, No. 6, pp. 1203-1228.
- Andreoni, James, and John Miller, 2002. "Giving according to GARP: An experimental test of the consistency of preferences for altruism". *Econometrica*. Vol. 70, No. 2, pp. 737-753.
- Arrow, K., 1963. *Social Choice and Individual Values*. New York, NY: Wiley, and Sons.
- Becker, Gary S., 1996. *Accounting for tastes*. Cambridge: MA, Harvard University Press.
- Becker, Gary S. and Casey B. Mulligan, 1997. "The endogenous determination of time preference". *Quarterly Journal of Economics*. Vol. 112, No. 3, pp. 729-758
- Benabou, Roland, and Efe A. Ok, 2001. "Mobility as progressivity: ranking income processes according to equality of opportunity". NBER Working Paper No. 8431.
- Benabou, Roland, and Jean Tirole, 2006. "Identity, dignity and taboos: Beliefs as assets." *Quarterly Journal of Economics*. Vol. 126, No. 2, pp. 805-855.
- Boarini, Romina, and Christine Le Clainche, 2009. "Social preferences for public intervention: An empirical investigation based on French data". *Journal of Socioeconomics*. Vol. 38, pp. 115-128.
- Cole, H., Mailath, G., and A. Postlewaite, 1992. "Social norms, savings behavior and growth". *Journal of Political Economy*. 100, pp. 1092-1125.
- Corneo, Giacomo, and Hans Peter Grüner, 2002. "Individual preferences for political redistribution". *Journal of Public Economics*. Vol. 83, pp. 83-107.
- Cruces Guillermo, Ricardo Perez-Truglia, and Martin Tetaz, 2013. "Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment". *Journal of Public Economics*. Vol. 98, pp. 100-112.
- Deary Ian J., Batty G. David, and Catharine R. Gale, 2008. "Childhood intelligence predicts voter turnout, voting preferences, and political involvement in adulthood: The 1970 British Cohort Study". *Intelligence*. Vol. 36, pp. 548-555.
- Fong, Christina M., Samuel Bowles, and Herbert Gintis, 2006. "Strong reciprocity and the welfare state". In: S.-C. Kolm and J. M. Ythier (Eds). *Handbook on the Economics of Giving, Altruism and Reciprocity*. Volume 2. Amsterdam: Elsevier. pp.1440-1464.
- Fong, Christina M., and Felix Oberholzer-Gee, 2011. "Truth in giving: Experimental evidence on the welfare effects of informed giving to the poor". *Journal of Public Economics*. Vol. 95, No. 5, pp. 436-444.
- Fong, Christina M., 2001. "Social preferences, self-interest and the demand for redistribution". *Journal of Public Economics*. Vol. 82, pp. 225-246.

- Galor, Oded, and Omer Moav, 2004. "From physical to human capital accumulation: Inequality and the process of development". *Review of Economic Studies*. Vol. 71, No. 4, pp. 1001-1026.
- Jappelli, Tullio, and Mario Padula, 2013. "Investment in financial literacy and saving decisions". *Journal of Banking and Finance*. Vol. 37, No.8, pp. 2779-2792.
- Jappelli, Tullio, 2010. "Economic literacy: An international comparison". *Economic Journal*. Vol. 120, pp. F429-F451.
- Jones, Charles I., 2015. "Pareto and Piketty: The macroeconomics of top income and wealth inequality". *Journal of Economic Perspectives*. Vol. 29, No. 1, pp. 29-46(18).
- Hanushek Eric A. and Ludger Woessmann, 2008. "The role of cognitive skills in economic development". *Journal of Economic Literature*. Vol. 43, No. 6, pp. 607-668.
- Heckman James J., Stixrud Jora, and Sergio Urzua, 2006. "The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior". *Journal of Labor Economics*. Vol. 24, No. 3, pp. 411-482.
- Hung, Angela, Andrew M. Parker, and Joanne Yoong, 2009. "Defining and measuring financial literacy". RAND Working Paper Series WR-708.
- Kaldor, Nicholas, 1957. "A model of economic growth". *Economic Journal*. Vol. 67, pp. 591-624.
- Keely, Louise C., and Chih Ming Tan, 2008. "Understanding preferences for income redistribution". *Journal of Public Economics*. Vol. 92, pp. 944-961.
- Kerr, William R., 2014. "Income inequality and social preferences for redistribution and compensation differentials". *Journal of Monetary Economics*. Vol. 66, pp. 62-78.
- Klor, Esteban F., and Moses Shayo, 2010. "Social identity and preferences over redistribution". *Journal of Public Economics*. Vol. 94, pp. 269-278.
- Krawczyk, Michal, 2010. "A glimpse through the veil of ignorance: Equality of opportunity and support for redistribution". *Journal of Public Economics*. Vol. 94, pp. 131-141.
- Kuziemko, Ilyana, Emmanuel Saez, Michael I. Norton, and Stefanie Stancheva, 2015. "How elastic are preferences for redistribution? Evidence from randomized survey experiments". *American Economic Review*. Forthcoming.
- Lazear, Edward P., and Sherwin Rosen, 1981 "Rank-order tournaments as optimum labor contracts". *Journal of Political Economy*. Vol. 89, No. 5, pp. 841-864.
- Lusardi, Annamaria, and Olivia S. Mitchell, 2014. "The economic importance of financial literacy: Theory and evidence". *Journal of Economic Literature*. Vol. 52, No. 1, pp. 5-44.
- Lusardi, Annamaria, Michaud Pierre-Carl and Olivia S. Mitchell, 2016. "Optimal financial knowledge and wealth inequality". *Journal of Political Economy*. Forthcoming.
- Luttmer, Erzo F. P., and Monica Singhal, 2011. "Culture, context, and the taste for redistribution". *American Economic Journal: Economic Policy*. Vol. 3, pp. 157-179.
- Luttmer, Erzo F. P., 2001. "Group loyalty and the taste for redistribution". *Journal of Public Economics*. Vol. 109, No. 3, pp. 500-528.
- Meltzer, Allan H., and Scott F. Richard, 1983. "Tests of a rational theory of the size of government". *Public Choice*. Vol. 41, No. 3, pp.403-418.
- Onraet Emma, Van Hiel Alan, Dhont Kristof, Hodson Gordon, Schittekatte Mark and Sarah de Pauw. 2015. "The association of cognitive ability with right-wing ideological attitudes and prejudice: A meta-analytic review". *European Journal of Personality*. Vol. 29, pp. 599-621.
- Persson, Torsten, and Guido Tabellini, 1994. "Does centralization increase the size of government?". *European Economic Review*. Vol. 38, No. 3, pp. 765-773.

- Piketty, T., 1995. "Social mobility and redistributive politics". *Quarterly Journal of Economics*. 110(3), pp. 551-585.
- Piketty, Thomas, 1998. "Self-fulfilling beliefs about social status". *Journal of Public Economics*. Vol. 70, No. 1, pp. 115-132.
- President's Advisory Council on Financial Literacy (PACFL), 2008. Annual Report to the President.
- Rayo, Luis, and Gary S. Becker, 2006. "Peer comparisons and consumer debt". *Harvard Law Review*. Vol. 73, pp. 231-248.
- Rayo, Luis, and Gary S. Becker, 2007a. "Evolutionary Efficiency and Happiness". *Journal of Political Economy*. Vol. 115, No. 2, pp. 302-337.
- Rayo, Luis, and Gary S. Becker, 2007b. "Habits, Peers, and Happiness: An Evolutionary Perspective". *American Economic Review Papers and Proceedings*. Vol. 97, No. 2 (May), pp. 487-491.
- Ravallion, Martin and Michael Lokshin, 2000. "Who wants to redistribute? The tunnel effect in 1990s Russia". *Journal of Public Economics*. Vol. 76, pp. 87-104.
- Roberts, Kevin W. S., 1977. "Voting over income tax schedules". *Journal of Public Economics*, Vol. 8, No. 3, pp.329-340.
- Romer, Thomas, 1975. "Individual welfare, majority voting, and the properties of a linear income tax". *Journal of Public Economics*. Vol. 4, No. 2, pp.163-185.
- Schoon Ingrid, Cheng Helen, Gale Catharine R., Batty G. David, and Ian J. Deary, 2010. "Social status, cognitive ability, and educational attainment as predictors of liberal social attitudes and political trust". *Intelligence*. Vol. 38, pp. 144-150.
- Shelton, Cameron A., 2007 "The size and composition of government expenditure". *Journal of Public Economics*. Vol. 91, No. 11, pp. 2230-2260.
- Stankov Lazar, 2009. "Conservatism and cognitive ability". *Intelligence*. Vol. 37, pp. 294-304.
- Strum, Jan-Egbert, and Jakob De Haan, 2015. "Income inequality, capitalism and ethno-linguistic fractionalization". *American Economic Review*. Vol. 105, No. 5, pp. 593-597(5).
- Wang, Long, Deepak Malhotra, and J. Keith Murnighan, 2011. "Economics education and greed". *Academy of Management Learning & Education*. Vol. 10, No 4, pp. 643-660.

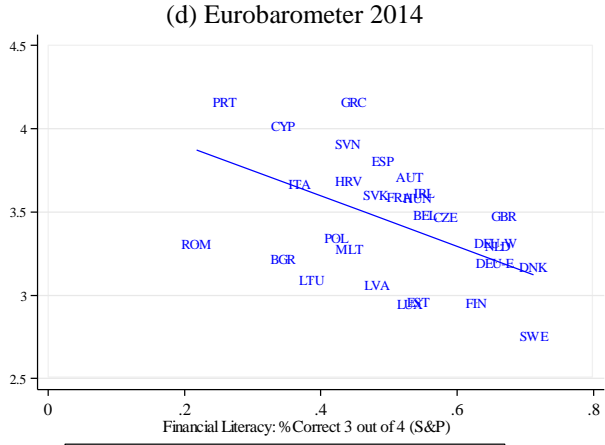
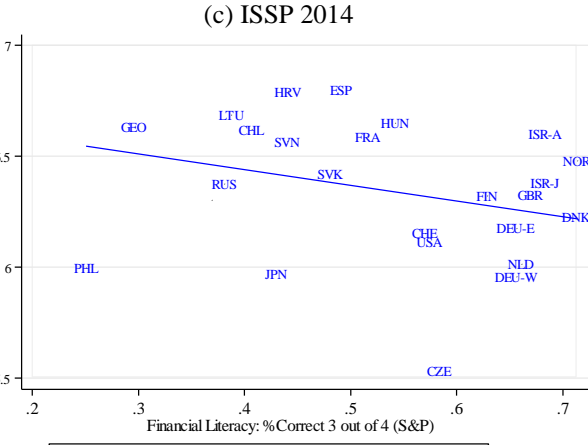
Figure 1

International comparisons of attitudes to redistribution and financial literacy
World Values Survey (Wave 6), International Social Survey Programme (2014), Eurobarometer (2014), and S&P Financial Literacy Survey (2014)



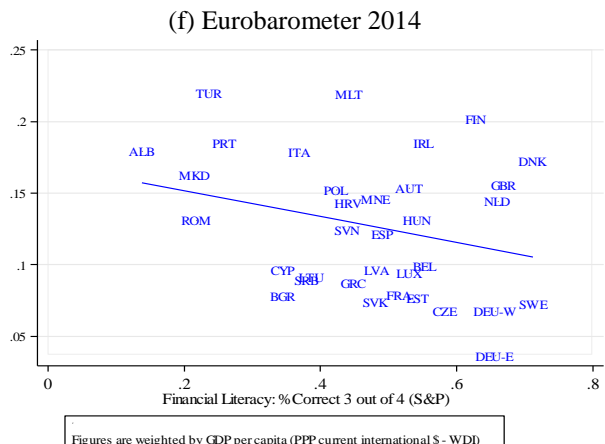
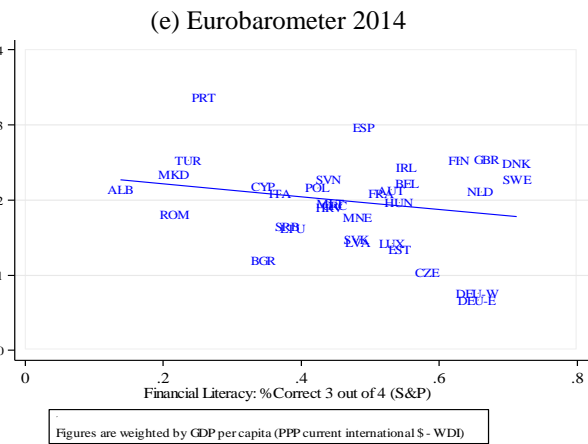
Figures are weighted by GDP per capita (PPP current international \$ - WDI)

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Figures are weighted by GDP per capita (PPP current international \$ - WDI)



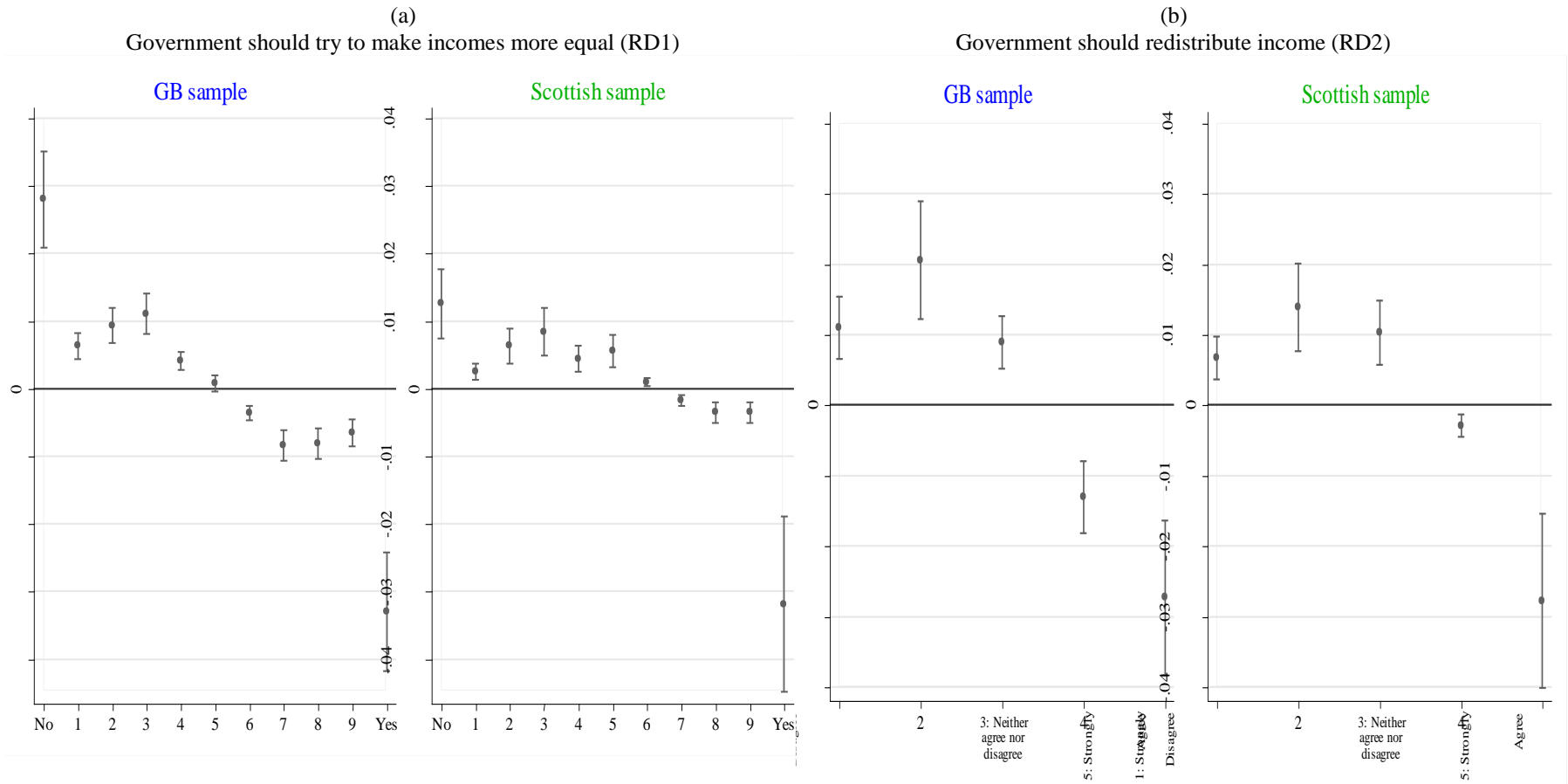
Figures are weighted by GDP per capita (PPP current international \$ - WDI)

Figures are weighted by GDP per capita (PPP current international \$ - WDI)

Notes: Figures are weighted by GDP per capita for 2014 (PPP-adjusted current \$international), from the World Development Indicators.

Figure 2

Average marginal effects of financial literacy on attitudes towards redistribution from ordered probit regressions



Notes: Each graph plots average marginal effects of financial literacy on attitudes to redistribution along with 95% confidence intervals. The estimates are from separate ordered probit regressions of the redistribution variables, i.e. RD_1 and RD_2 respectively, on financial literacy and a rich set of control variables. The estimates are presented in the [Appendix Table A3](#). They are weighted using population level weights and utilise robust standard errors.

Table 1
Frequencies for attitudes towards redistribution, by financial literacy level

Panel A: RD₁ – “Government should try to make incomes more equal” (%)												
	No: 0 –	– 1 –	– 2 –	– 3 –	– 4 –	– 5 –	– 6 –	– 7 –	– 8 –	– 9 –	– 10: Yes	
<i>GB sample</i> [BES: Wave 2]	10.39	3.73	6.66	11.7	7.59	17.49	8.07	9.94	6.7	4.17	13.56	
Fin. literacy: #Correct responses	– 0 –	– 1 –	– 2 –	– 3 –	– 4 –	– 5 –	– 6 –	– 7 –	– 8 –	– 9 –	– 10: Yes	
	6.59	1.86	5.07	7.42	5.97	22.18	7.38	8.16	5.25	5.76	24.37	
	7.31	3.50	4.61	9.20	6.50	20.31	5.60	8.37	8.03	4.89	21.69	
	10.11	3.24	6.92	11.83	7.83	17.58	7.56	9.84	6.82	4.53	13.73	
	12.65	4.53	7.68	13.52	8.21	15.3	9.61	11.03	6.33	3.31	7.82	
<i>Scottish sample</i> [BES: Wave 4]	6.34	1.66	5.10	8.83	6.31	13.60	8.55	11.06	8.32	5.68	24.55	
Fin. literacy: #Correct responses	– 0 –	– 1 –	– 2 –	– 3 –	– 4 –	– 5 –	– 6 –	– 7 –	– 8 –	– 9 –	– 10: Yes	
	4.37	1.04	5.41	3.30	6.41	18.94	5.28	7.89	5.48	7.13	34.75	
	5.25	1.54	4.01	6.99	5.99	13.42	5.68	7.08	8.22	6.19	35.63	
	5.35	1.03	4.61	8.97	5.43	13.34	9.09	11.51	8.76	5.79	26.12	
	8.24	2.40	5.94	11.15	7.17	12.41	10.4	13.50	8.80	4.95	15.04	

Panel B: RD₂ – “Government should redistribute income from the better off to those who are less well off” (%)					
	<i>Strongly Disagree</i>		<i>Neither agree nor disagree</i>		<i>Strongly Agree</i>
	– 1 –	– 2 –	– 3 –	– 4 –	– 5 –
<i>GB sample</i> [BES: Wave 2]	5.10	18.32	24.60	32.68	19.31
Fin. literacy: #Correct responses	– 0 –	– 1 –	– 2 –	– 3 –	– 4 –
	3.12	8.12	26.88	36.77	25.11
	4.78	13.55	24.16	33.70	23.80
	3.91	18.24	25.59	33.95	18.30
	6.52	22.83	23.59	30.41	16.64
<i>Scottish sample</i> [BES: Wave 4]	3.77	12.85	20.75	33.60	29.03
Fin. literacy: #Correct responses	– 0 –	– 1 –	– 2 –	– 3 –	– 4 –
	1.49	9.07	24.89	31.83	32.72
	3.59	9.74	20.32	34.52	31.83
	2.85	11.60	20.04	35.06	30.44
	5.29	16.43	20.27	32.54	25.48

Notes: This table shows the distribution of responses to different questions about attitudes towards redistribution in the British Election Study 2014/2015 and their frequencies by the number of correct responses in the financial-literacy questions. All statistics are weighted using population level weights.

Table 2
Financial literacy in Great Britain and Scotland (British Election Study)

Panel A: Financial literacy measures				
	<u>#Correct responses</u>	<u>#Wrong responses</u>	<u>#DK/DA responses</u>	<u>At least one "Don't know"</u>
GB sample	1.99	0.49	0.52	31.25%
Scottish sample	1.93	0.51	0.56	33.91%

Panel B: Financial literacy: #Correct responses				
	<u>All 3 correct</u>	<u>2 correct</u>	<u>1 correct</u>	<u>0 correct</u>
GB sample	40.22%	29.45%	19.55%	10.78%
Scottish sample	37.28%	31.15%	19.12%	12.45%

Panel C: Distribution of financial-literacy responses				
	<u>Correct</u>	<u>Incorrect</u>	<u>Don't know</u>	<u>Refuse</u>
GB: Compound interest	81.32%	8.88%	9.80%	3.10%
GB: Inflation	69.09%	12.48%	18.43%	3.18%
GB: Stock risk	48.68%	27.93%	23.38%	2.41%
Scotland: Compound interest	80.87%	7.96%	11.17%	2.68%
Scotland: Inflation	65.81%	14.33%	19.85%	2.81%
Scotland: Stock risk	46.57%	28.57%	24.86%	2.43%

Panel D: International comparison (Lusardi and Mitchell, 2014)						
<u>Country</u>	<u>Survey year</u>	<u>Interest rate</u>	<u>Inflation</u>	<u>Risk</u>	<u>All 3 correct</u>	<u>At least 1 "Don't know"</u>
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 Study (2014-2015)

Table 3
Sample averages and mean differences

	Great Britain				Scotland			
	[BES Wave 2: 5,732 obs.]				[BES Wave 4: 5,387 obs.]			
	<i>All</i>	<i>FLH</i>	<i>FLL</i>	<i>(p-value)</i>	<i>All</i>	<i>FLH</i>	<i>FLL</i>	<i>(p-value)</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RD ₁	5.15	4.86	5.92	(0.000)	6.23	5.98	6.84	(0.000)
RD ₂	3.43	3.35	3.63	(0.000)	3.71	3.67	3.82	(0.002)
Male	49.4%	53.4%	40.1%	(0.000)	47.7%	53.0%	36.1%	(0.000)
Age	47.45	49.42	42.93	(0.000)	46.61	47.68	44.28	(0.000)
Years of education	12.66	13.06	11.74	(0.000)	12.66	13.23	11.42	(0.000)
Married	58.5%	62.2%	50.0%	(0.000)	60.8%	62.3%	57.5%	(0.021)
Single	22.6%	19.7%	29.3%	(0.000)	27.8%	26.8%	29.9%	(0.113)
Widowed/divorced/separated	10.5%	10.3%	11.1%	(0.442)	11.4%	10.9%	12.6%	(0.216)
Household size	2.56	2.51	2.66	(0.005)	2.48	2.47	2.51	(0.359)
Has young children	21.4%	20.5%	23.5%	(0.096)	20.5%	19.7%	22.3%	(0.162)
Urban region	60.2%	58.6%	64.1%	(0.005)	35.4%	35.5%	35.1%	(0.873)
Race: White	91.0%	92.9%	86.7%	(0.000)	96.5%	96.9%	95.7%	(0.132)
- "-: Black	2.0%	2.0%	1.9%	(0.904)	0.1%	0.1%	0.2%	(0.467)
- "-: Mixed	1.2%	1.1%	1.6%	(0.258)	0.6%	0.8%	0.2%	(0.019)
- "-: Asian	3.8%	2.3%	7.2%	(0.000)	0.8%	0.7%	1.0%	(0.479)
- "-: Other	2.0%	1.8%	2.6%	(0.189)	2.0%	1.6%	2.9%	(0.034)
Personal income	21,042.0	22,984.1	16,582.2	(0.000)	16,710.6	18,690.9	12,407.7	(0.000)
Household income	32,350.2	35,385.6	25,379.7	(0.000)	29,603.1	32,657.3	22,966.9	(0.000)
House owner	30.7%	34.4%	22.3%	(0.000)	27.6%	30.7%	20.8%	(0.000)
Has mortgage	28.5%	31.0%	22.8%	(0.000)	29.4%	32.2%	23.1%	(0.000)
Income shock	14.8%	13.5%	17.9%	(0.002)	9.9%	8.8%	12.3%	(0.012)
Father entrepreneur	5.8%	6.2%	4.8%	(0.130)	4.7%	5.2%	3.6%	(0.058)
Attended private school	18.4%	16.6%	22.5%	(0.001)	11.6%	11.6%	11.7%	(0.954)
Risk-taking	2.54	2.54	2.54	(0.990)	2.60	2.63	2.53	(0.003)
Left-right orientation	5.14	5.19	5.03	(0.049)	4.65	4.62	4.73	(0.116)
Social desirability	1.94	1.98	1.82	(0.001)	1.89	1.91	1.83	(0.106)
Religious	55.2%	55.0%	55.6%	(0.788)	51.4%	50.3%	53.9%	(0.089)
Occ. status: Self-employed	7.0%	8.2%	4.3%	(0.000)	4.8%	5.4%	3.3%	(0.001)
- "-: Full-time employed	37.8%	38.9%	35.2%	(0.073)	35.6%	38.0%	30.2%	(0.000)
- "-: Part-time employed	11.5%	10.5%	13.8%	(0.021)	11.3%	10.8%	12.4%	(0.220)
- "-: Unemployed	3.5%	2.7%	5.2%	(0.006)	4.3%	3.9%	5.2%	(0.161)
- "-: Student	5.9%	5.0%	7.8%	(0.024)	7.9%	7.8%	8.1%	(0.832)
- "-: Retired	22.8%	24.9%	17.9%	(0.000)	20.9%	22.3%	17.7%	(0.003)
- "-: Inactive	11.5%	9.7%	15.6%	(0.000)	14.8%	11.4%	22.1%	(0.000)
Trade union member	15.4%	17.3%	11.0%	(0.000)	2.9%	2.8%	2.9%	(0.915)
Agreeableness	6.06	6.06	6.06	(0.989)	6.03	5.98	6.14	(0.024)
Conscientiousness	6.75	6.87	6.49	(0.000)	6.49	6.60	6.27	(0.000)
Extraversion	4.16	4.07	4.36	(0.000)	4.14	4.06	4.31	(0.002)
Neuroticism	3.76	3.61	4.10	(0.000)	3.83	3.68	4.16	(0.000)
Openness	5.50	5.53	5.42	(0.078)	5.53	5.59	5.41	(0.009)
Home oeconomicus effect [HOE]	0.00	0.11	-0.27	(0.000)	-0.02	0.10	-0.29	(0.000)
Public value effect [PVE]	0.00	0.04	-0.08	(0.007)	0.06	0.06	0.05	(0.748)
Social rivalry effect [SRE]	0.00	0.01	-0.03	(0.216)	0.02	0.00	0.07	(0.123)
Downward-value differential [DVD]	0.00	0.03	-0.06	(0.024)	0.02	0.01	0.02	(0.871)
Upward-value differential [UVD]	0.00	0.00	0.00	(0.898)	-0.02	0.01	-0.09	(0.009)

Notes: Weighted averages from the British Election Study. HOE, PVE, SRE, DVD and UVD are in normalized values. The p-values in parentheses stem from weighted t-tests of mean differences between individuals with high financial literacy (*FLH*) and low financial literacy (*FLL*).

Table 4
Regressions: Attitudes towards redistribution and financial literacy in Great Britain (BES, 2014, Wave 2)

Panel A: Dependent variable – RD_1 : “Government should try to make incomes more equal”						
	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy: #Correct responses	-0.537*** [0.058]	-0.449*** [0.059]	-0.440*** [0.059]	-0.402*** [0.060]	-0.661*** [0.154]	-0.617*** [0.137]
<i>% Financial-literacy effect</i>	-10.4%	-8.7%	-8.6%	-7.8%	-12.9%	-12.0%
<i>Linear prediction</i>	5.147	5.134	5.134	5.134	5.134	5.134
<i>#Observations</i>	5,066	4,895	4,895	4,895	4,895	4,895
<i>R²</i>	0.029	0.231	0.220	0.224	0.225	0.225
Panel B: Dependent variable – RD_2 : “Government should redistribute income from the better off to those who are less well off”						
	(7)	(8)	(9)	(10)	(11)	(12)
Financial literacy: #Correct responses	-0.151*** [0.020]	-0.116*** [0.022]	-0.117*** [0.022]	-0.105*** [0.022]	-0.274*** [0.057]	-0.194*** [0.054]
<i>% Financial-literacy effect</i>	-4.4%	-3.4%	-3.4%	-3.1%	-8.0%	-5.7%
<i>Linear prediction</i>	3.428	3.425	3.425	3.425	3.425	3.425
<i>#Observations</i>	5,297	5,101	5,101	5,101	5,101	5,101
<i>R²</i>	0.017	0.244	0.233	0.236	0.239	0.237
Control variables for both Panels A and B:						
Individual characteristics	-	+	+	+	+	+
Education (dummy variables)	-	+	-	-	-	-
Age (dummy variables)	-	+	-	-	-	-
Personal income (dummy variables)	-	+	-	-	-	-
Years of education	-	-	+	+	+	+
Log(Age)	-	-	+	+	+	+
Log(Personal income)	-	-	+	+	+	+
Log(Personal income) ² and ³	-	-	-	+	+	+
Log(Household income)	-	-	-	+	+	+
Log(Household income) ²	-	-	-	+	+	+
Log(Personal income)*Log(Household income)	-	-	-	+	+	+
Financial literacy*Years of education	-	-	-	-	+	-
Fin. literacy*Log(Personal income)*Years of education*Log(Age)	-	-	-	-	-	+

Notes: Individual characteristics are shown in detail in Appendix Table A3 and discussed in Section 3. All estimates are weighted using population level weights. Robust standard errors in brackets. Asterisks denote the following levels of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 5
Attitudes to redistribution and financial literacy in Scotland (BES, 2014, Wave 4)

Panel A: Dependent variable – RD_1 : “Government should try to make incomes more equal”			
	(1)	(2)	(3)
Financial literacy: #Correct responses	-0.283*** [0.061]	-0.246*** [0.062]	-0.369** [0.157]
<i>% Financial-literacy effect</i>	-4.5%	-3.9%	-5.9%
<i>Linear prediction</i>	6.239	6.239	6.239
<i>#Observations</i>	4,989	4,989	4,989
<i>R²</i>	0.251	0.249	0.249
Panel B:			
Dep. variable – RD_2 : “Government should redistribute income from the better off to those who are less well off”			
	(4)	(5)	(6)
Financial literacy: #Correct responses	-0.088*** [0.021]	-0.069*** [0.021]	-0.155*** [0.058]
<i>% Financial-literacy effect</i>	-2.4%	-1.9%	-4.2%
<i>Linear prediction</i>	3.719	3.719	3.709
<i>#Observations</i>	4,986	4,986	4,986
<i>R²</i>	0.236	0.237	0.236
Individual characteristics	+	+	+
Education (dummy variables)	+	-	-
Age (dummy variables)	+	-	-
Personal income (dummy variables)	+	-	-
Years of education	-	+	+
Log(Age)	-	+	+
Log(Personal income)	-	+	+
Log(Personal income) ² and ³	-	+	+
Log(Household income)	-	+	+
Log(Household income) ²	-	+	+
Log(Personal income)*Log(Household income)	-	+	+
Financial literacy*Log(Personal income)*Years of education*Log(Age)	-	-	+

Notes: Individual characteristics include the set of controls, which is shown in detail in Appendix Table A3 and discussed in Section 3. All estimates are weighted using population level weights. Robust standard errors in brackets. Asterisks denote the following levels of significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6
Predicted probabilities and financial literacy effects

Panel A: Dependent variable – RD_1 : “Government should try to make incomes more equal”											
	<i>No – 0</i>	<i>- 1 –</i>	<i>- 2 –</i>	<i>- 3 –</i>	<i>- 4 –</i>	<i>- 5 –</i>	<i>- 6 –</i>	<i>- 7 –</i>	<i>- 8 –</i>	<i>- 9 –</i>	<i>Yes – 10</i>
<u>GB sample [Wave 2]</u>											
Fin. literacy AME	0.027***	0.006***	0.009***	0.011***	0.004***	0.001	-0.003***	-0.008***	-0.008***	-0.006***	-0.032***
	[0.004]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.004]
% Fin. literacy effect	25.8%	17.2%	13.9%	9.3%	5.2%	0.4%	-4.4%	-8.1%	-12.0%	-15.1%	-24.0%
Predicted probability	0.106	0.036	0.066	0.116	0.076	0.176	0.079	0.101	0.066	0.042	0.135
#Observations	4,895	4,895	4,895	4,895	4,895	4,895	4,895	4,895	4,895	4,895	4,895
<u>Scottish sample [Wave 4]</u>											
Fin. literacy AME	0.013***	0.002***	0.006***	0.008***	0.004***	0.005***	0.001***	-0.002***	-0.003***	-0.003***	-0.031***
	[0.002]	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.000]	[0.001]	[0.001]	[0.005]
% Fin. literacy effect	19.0%	14.0%	12.0%	9.0%	6.5%	3.7%	0.8%	-1.6%	-4.1%	-6.1%	-12.6%
Predicted probability	0.068	0.018	0.051	0.088	0.063	0.136	0.084	0.111	0.083	0.055	0.244
#Observations	4,989	4,989	4,989	4,989	4,989	4,989	4,989	4,989	4,989	4,989	4,989
Panel B: Dependent variable – RD_2 : “Government should redistribute income from the better off to those who are less well off”											
	<i>1 – Strongly Disagree</i>	<i>- 2 –</i>	<i>3 – Neither agree nor disagree</i>	<i>- 4 –</i>	<i>5 – Strongly Agree</i>						
<u>GB sample [Wave 2]</u>											
Fin. literacy AME	0.011***		0.020***		0.009***		-0.013***		-0.027***		
	[0.002]		[0.004]		[0.002]		[0.003]		[0.006]		
% Fin. literacy effect	21.0%		11.0%		3.6%		-3.9%		-14.2%		
Predicted probability	0.052		0.184		0.244		0.329		0.191		
#Observations	5,101		5,101		5,101		5,101		5,101		
<u>Scottish sample [Wave 4]</u>											
Fin. literacy AME	0.007***		0.014***		0.010***		-0.003***		-0.027***		
	[0.002]		[0.003]		[0.002]		[0.001]		[0.006]		
% Fin. literacy effect	17.2%		10.3%		5.0%		-0.9%		-9.4%		
Predicted probability	0.038		0.133		0.203		0.336		0.290		
#Observations	4,986		4,986		4,986		4,986		4,986		

Notes: Each panel shows the predicted probability of each response category of RD_1 and RD_2 , from ordered probit regressions reported in the [Appendix Table A3](#). The response categories are 0-10 for RD_1 , and 1-5 for RD_2 , respectively. Probability changes due to an additional correct financial-literacy response (*i.e.* the average marginal effect) are reported, along with the percentage effect of financial literacy (*i.e.* the ratio between the average marginal effect and the predicted probability for each category). The estimates are weighted and robust standard errors of the AME are reported in brackets. Asterisks denote the following levels of significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7
Falsification tests and counterfactual hypotheses

Panel A: Financial literacy and attitudes to equality rights - Please say whether you think these have gone too far [5] or have not gone nearly far enough in Britain [1]							
<u>Dep. Variable:</u> <i>Attempts to give equal opportunities to:</i>	<u>GB sample</u>			<u>Scottish sample</u>			
	<i>Gays and lesbians</i>	<i>Women</i>	<i>Ethnic minorities</i>	<i>Gays and lesbians</i>	<i>Women</i>	<i>Ethnic minorities</i>	
Financial literacy:	(1)	(2)	(3)	(4)	(5)	(6)	
#Correct responses	0.001 [0.022]	-0.023 [0.018]	-0.027 [0.021]	-0.010 [0.022]	0.025 [0.019]	-0.031 [0.021]	
<i>Linear prediction</i>	3.142	2.735	3.392	2.992	2.561	3.207	
<i>#Observations</i>	5,007	5,104	4,988	4,872	4,974	4,857	
<i>R²</i>	0.216	0.140	0.213	0.245	0.143	0.208	

Panel B: Financial illiteracy and attitudes to redistribution: # Incorrect and #DK/DA responses								
<u>Dependent Variable:</u>	<u>GB sample</u>				<u>Scottish sample</u>			
	<i>RD₁</i>	<i>RD₂</i>	<i>RD₁</i>	<i>RD₂</i>	<i>RD₁</i>	<i>RD₂</i>	<i>RD₁</i>	<i>RD₂</i>
Financial illiteracy:	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
#Wrong responses	0.241*** [0.084]	-	0.101*** [0.029]	-	0.214*** [0.082]	-	0.109*** [0.029]	-
#DK/DA responses	-	0.440*** [0.071]	-	0.075*** [0.026]	-	0.208*** [0.077]	-	0.036 [0.024]
<i>% Fin.-illiteracy effect</i>	4.7%	8.6%	2.9%	2.2%	3.4%	3.3%	2.9%	1.0%
<i>Linear prediction</i>	5.134	5.134	3.425	3.425	6.239	6.239	3.719	3.719
<i>#Observations</i>	4,895	4,895	5,101	5,101	4,989	4,989	4,986	4,986
<i>R²</i>	0.218	0.225	0.239	0.238	0.246	0.247	0.235	0.232

Panel C: Financial literacy components and attitudes to redistribution								
Financial literacy:	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
Interest: Correct	-0.363** [0.169]	-	-0.196*** [0.056]	-	-0.076 [0.171]	-	-0.023 [0.060]	-
Inflation: Correct	-0.529*** [0.137]	-	-0.03 [0.048]	-	-0.225* [0.134]	-	-0.118** [0.049]	-
Risk: Correct	-0.435*** [0.114]	-	-0.112*** [0.041]	-	-0.478*** [0.113]	-	-0.105** [0.041]	-
Interest: Wrong	-	0.317 [0.213]	-	0.176** [0.071]	-	0.005 [0.222]	-	0.019 [0.083]
Inflation: Wrong	-	0.342 [0.250]	-	0.265*** [0.080]	-	0.212 [0.249]	-	0.088 [0.082]
Risk: Wrong	-	0.462** [0.182]	-	0.064 [0.064]	-	0.322* [0.166]	-	0.191*** [0.060]
Interest: DK/DA	-	0.541*** [0.185]	-	-0.012 [0.063]	-	0.062 [0.184]	-	0.023 [0.063]
Inflation: DK/DA	-	0.343*** [0.131]	-	0.131*** [0.047]	-	0.440*** [0.130]	-	0.103** [0.048]
Risk: DK/DA	-	0.608*** [0.148]	-	0.080 [0.053]	-	0.555*** [0.147]	-	0.118** [0.050]
<i>Linear prediction</i>	5.134	5.134	3.413	3.413	6.239	6.239	3.718	3.718
<i>No. of Observations</i>	4,895	4,895	5,292	5,292	4,989	4,989	4,986	4,986
<i>R²</i>	0.231	0.232	0.242	0.243	0.252	0.253	0.234	0.235

Notes: The remaining specification is identical to Column 2 of Table 4 and the comments there apply. Asterisks denote the following levels of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 8
Instrumental-variable regressions

Panel A: Dependent variable – RD_1 : “Government should try to make incomes more equal”								
<i>Instrument:</i>	GB sample				Scottish sample			
	<i>Lewbel</i>	<i>P.F. section</i>	<i>FinEdu</i>	<i>P.F. section, FinEdu</i>	<i>Lewbel</i>	<i>P.F. section</i>	<i>FinEdu</i>	<i>P.F. section, FinEdu</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Financial literacy: #Correct responses	-0.575*** [0.097]	-0.185* [0.110]	-0.898* [0.480]	-1.030* [0.580]	-1.222* [0.668]	-2.053*** [0.691]	-1.036*** [0.402]	-1.503*** [0.442]
<i>% Financial-literacy effect</i>	-11.2%	-3.0%	-17.5%	-16.5%	-23.8%	-32.9%	-20.2%	-24.1%
<i>Linear prediction</i>	5.134	6.239	5.1341	6.239	5.134	6.239	5.134	6.239
<i># Observations</i>	4,895	4,989	4,895	4,989	4,895	4,989	4,895	4,989
<i>R²</i>	0.229	0.25	0.215	0.205	0.184	-0.009	0.203	0.128
<i>F-statistic</i>	13.23***	17.82***	12.56***	16.34***	12.18***	12.50***	12.45***	14.80***
Partial R ² of excluded instruments:	0.3685	0.0090	0.0067	0.0155	0.3334	0.0076	0.0065	0.0144
F-Test of excluded instruments	25.73***	37.87***	21.07***	28.58***	21.17***	34.45***	26.32***	29.91***
(a) Kleibergen-Paap rk LM statistic χ^2	430.55***	35.11***	20.85***	51.79***	411.99***	34.14***	25.69***	55.93***
(b) Kleibergen-Paap rk Wald χ^2	1,991.0***	38.47***	21.41***	58.09***	1,659.8***	34.99***	26.74***	60.78***
(c) Anderson-Rubin Wald test: F	2.17***	3.46*	3.56*	3.33**	1.42**	3.38*	11.19***	7.32***
(c) Stock-Wright LM S-statistic: χ^2	112.07***	3.49*	3.59*	6.75**	78.99	3.34*	11.09***	14.29***
(d) Hansen J statistic χ^2	79.86	0.00	0.00	0.16	77.72	0.00	0.00	1.33
Panel B: Dependent variable – RD_2 : “Government should redistribute income from the better off to those who are less well off”								
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Financial literacy: #Correct responses	-0.064* [0.037]	-0.068* [0.036]	-0.432** [0.178]	-0.283 [0.214]	-0.467 [0.302]	-0.642*** [0.211]	-0.445*** [0.161]	-0.484*** [0.146]
<i>% Financial-literacy effect</i>	-1.9%	-1.8%	-12.7%	-7.6%	-13.7%	-17.3%	-13.1%	-13.0%
<i>Linear prediction</i>	3.409	3.719	3.409	3.719	3.409	3.719	3.409	3.719
<i># Observations</i>	5,292	4,986	5,292	4,986	5,292	4,986	5,292	4,986
<i>R²</i>	0.237	0.236	0.172	0.211	0.157	0.037	0.167	0.134
<i>F-statistic</i>	15.67***	15.52***	13.70***	14.65***	13.36***	11.80***	13.63***	13.19***
Partial R ² of excluded instruments:	0.3628	0.0095	0.0052	0.0145	0.3448	0.0069	0.0089	0.0161
F-test of excluded instruments	31.46***	49.62***	19.07***	34.59***	21.89***	32.15***	36.52***	32.92***
(a) Kleibergen-Paap rk LM statistic χ^2	453.20***	46.43***	19.04***	63.47***	403.07	30.84***	34.54***	59.41***
(b) Kleibergen-Paap rk Wald χ^2	2,429.0***	50.35***	19.36***	70.22***	1,716.4	32.67***	37.10***	66.91***
(c) Anderson-Rubin Wald test: F	1.87***	6.33**	2.61	4.31**	1.14	1.78	11.07***	6.62***
(c) Stock-Wright LM S-statistic: χ^2	102.33**	6.35**	2.62	8.79**	75.96	1.78	11.00***	13.13***
(d) Hansen J statistic χ^2	101.82**	0.00	0.00	0.01	70.70	0.00	0.00	1.36

Notes: Individual characteristics include the set of controls, which is shown in detail in Appendix Table A3 and discussed in Section 3. Estimates are weighted using population level weights. Robust standard errors in brackets. Asterisks denote the following levels of significance: *** p<0.01, ** p<0.05, * p<0.1.

Table 9
Longitudinal models of attitudes to redistribution

	Random effects		Weighted Least		WLS _[wave 2-wave7]	
	GLS _[Waves 1-7]		Squares _[Waves 1-7]		RD_1	RD_2
	RD_1	RD_2	RD_1	RD_2	RD_1	RD_2
<i>GB sample</i>						
Financial literacy: # correct responses	-0.422*** [0.034]	-0.391*** [0.043]	-0.099*** [0.012]	-0.090*** [0.015]	-0.373*** [0.063]	-0.048* [0.025]
<i>% Financial-literacy effect</i>	-8.0%	-7.3%	-3.0%	-2.7%	-979.0%	-32.4%
<i>Linear prediction</i>	5.288	5.350	3.343	3.335	-0.038	0.148
<i>#Observations</i>	23,042	23,042	14,073	14,073	4,895	5,101
<i>[Overall] R²</i>	0.294	0.283	0.275	0.244	0.086	0.057
<i>Scottish sample</i>						
Financial literacy: # correct responses	-0.336*** [0.034]	-0.322*** [0.045]	-0.063*** [0.012]	-0.070*** [0.016]	-0.188*** [0.061]	-0.034 [0.021]
<i>% Financial-literacy effect</i>	-5.6%	-5.2%	-1.7%	-1.9%	-25.9%	-11.8%
<i>Linear prediction</i>	5.984	6.167	3.601	3.611	0.727	0.288
<i>#Observations</i>	23,852	23,852	14,055	14,055	4,989	4,986
<i>[Overall] R²</i>	0.276	0.265	0.256	0.232	0.098	0.063

Notes: The longitudinal information on RD_1 is for waves 1, 2, 3, 4, 6 and 7. The information on RD_2 stems from waves 1, 6 and 7. The remaining specification is identical to column 2 of Table 4 and the comments there apply. Robust standard errors in brackets. The models in columns 2 and 4 also have the standard errors clustered at the individual level. Asterisks denote the following levels of significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 10
Mechanisms (RD_I)

	Great Britain						Scotland					
	All	All	All	All	FLH	FLL	All	All	All	FLH	FLH	FLL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Homo oeconomicus effect [HOE]	-0.275***	-0.248***	-0.248***	-	-0.307***	-0.147	-0.152**	-0.130**	-0.130**	-	-0.135**	-0.120
	[0.069]	[0.068]	[0.068]		[0.072]	[0.152]	[0.061]	[0.062]	[0.062]		[0.066]	[0.129]
Public value effect [PVE]	-0.518***	-0.505***	-0.506***	-	-0.473***	-0.608***	-0.682***	-0.679***	-0.679***	-	-0.844***	-0.329***
	[0.064]	[0.063]	[0.063]		[0.070]	[0.134]	[0.060]	[0.060]	[0.060]		[0.066]	[0.117]
Social rivalry effect [SRE]	-0.222***	-0.216***	-	-	-0.265***	-0.078	-0.187***	-0.190***	-	-	-0.177***	-0.222*
	[0.052]	[0.051]			[0.055]	[0.121]	[0.051]	[0.051]			[0.050]	[0.121]
Downward value diff. [SRE ^{DVD}]	-	-	-0.131**	-	-	-	-	-	-0.133**	-	-	-
			[0.054]						[0.064]			
Upward value diff. [SRE ^{UVD}]	-	-	0.127**	-	-	-	-	-	0.095*	-	-	-
			[0.058]						[0.052]			
Fin. literacy: # correct responses	-	-0.420***	-0.420***	-	-	-	-	-0.289***	-0.289***	-	-	-
		[0.059]	[0.059]					[0.061]	[0.061]			
FLH	-	-	-	-0.807***	-	-	-	-	-	-0.476***	-	-
				[0.133]						[0.130]		
HOE* FLH	-	-	-	-0.269***	-	-	-	-	-	-0.142**	-	-
				[0.070]						[0.066]		
HOE*(1- FLH)	-	-	-	-0.205	-	-	-	-	-	-0.101	-	-
				[0.127]						[0.117]		
PVE*FLH	-	-	-	-0.476***	-	-	-	-	-	-0.833***	-	-
				[0.069]						[0.065]		
PVE*(1- FLH)	-	-	-	-0.601***	-	-	-	-	-	-0.326***	-	-
				[0.129]						[0.112]		
SRE*FLH	-	-	-	-0.265***	-	-	-	-	-	-0.181***	-	-
				[0.055]						[0.051]		
SRE*(1- FLH)	-	-	-	-0.061	-	-	-	-	-	-0.197	-	-
				[0.128]						[0.124]		
<i>Linear prediction</i>	5.128	5.128	5.128	5.128	4.850	5.910	6.234	6.234	6.234	6.234	5.979	6.861
<i># Observations</i>	4,826	4,826	4,826	4,826	3,817	1,009	4,861	4,861	4,861	4,861	3,810	1,051

Notes: HOE, PVE, SRE, (SRE^{DVD} and SRE^{UVD}) are normalized measures of the homo-oeconomicus, public value and social rivalry effects (downward-value differential and upward-value differential), respectively. These are described at Section 6. The specification is identical to Column 2 of Table 4, excluding the personal income dummies, which can not be used simultaneously with HOE. All estimates are weighted. Robust standard errors are shown in brackets.

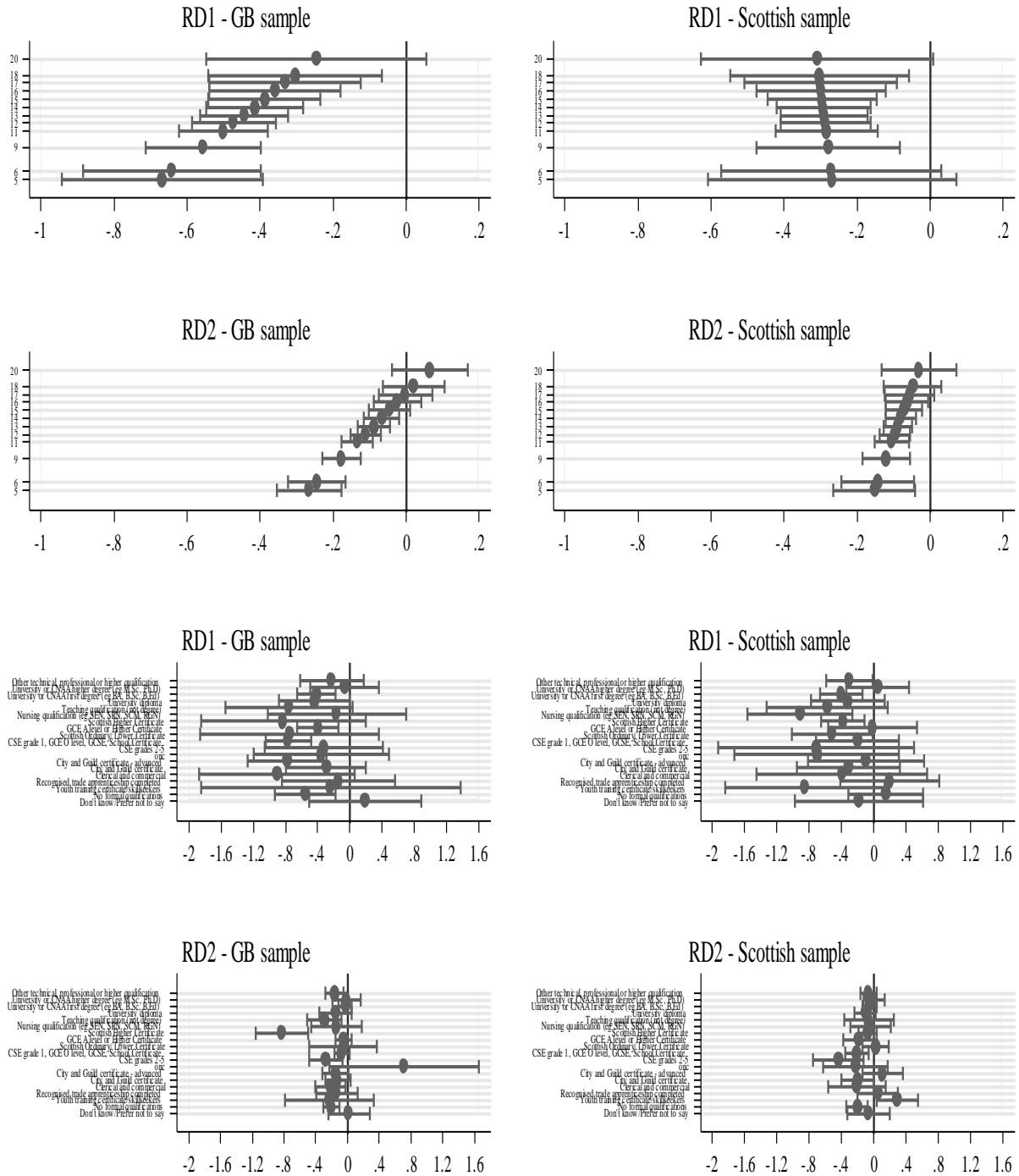
Table 11
Mechanisms (RD_2)

	Great Britain						Scotland					
	All	All	All	All	FLH	FLL	All	All	All	FLH	FLH	FLL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Homo oeconomicus effect [HOE]	-0.038 [0.025]	-0.032 [0.025]	-0.031 [0.026]	-	-0.074*** [0.028]	0.036 [0.049]	-0.001 [0.022]	0.005 [0.022]	0.006 [0.023]	-	-0.012 [0.023]	0.042 [0.045]
Public value effect [PVE]	-0.229*** [0.022]	-0.225*** [0.022]	-0.225*** [0.022]	-	-0.227*** [0.025]	-0.197*** [0.044]	-0.236*** [0.021]	-0.235*** [0.022]	-0.234*** [0.022]	-	-0.290*** [0.024]	-0.121*** [0.041]
Social rivalry effect [SRE]	-0.162*** [0.018]	-0.162*** [0.018]	-	-	-0.153*** [0.020]	-0.158*** [0.037]	-0.083*** [0.018]	-0.082*** [0.018]	-	-	-0.080*** [0.019]	-0.086** [0.040]
Downward value diff. [SRE ^{DVD}]	-	-	-0.107*** [0.021]	-	-	-	-	-	-0.068*** [0.020]	-	-	-
Upward value diff. [SRE ^{UVD}]	-	-	0.086*** [0.020]	-	-	-	-	-	0.031 [0.019]	-	-	-
Fin. literacy: # correct responses	-	-0.100*** [0.023]	-0.100*** [0.023]	-	-	-	-	-0.076*** [0.021]	-0.076*** [0.021]	-	-	-
FLH	-	-	-	-0.178*** [0.054]	-	-	-	-	-	-0.124*** [0.044]	-	-
HOE* FLH	-	-	-	-0.055** [0.027]	-	-	-	-	-	-0.009 [0.023]	-	-
HOE*(1- FLH)	-	-	-	0.027 [0.047]	-	-	-	-	-	0.04 [0.041]	-	-
PVE*FLH	-	-	-	-0.243*** [0.025]	-	-	-	-	-	-0.293*** [0.023]	-	-
PVE*(1- FLH)	-	-	-	-0.177*** [0.043]	-	-	-	-	-	-0.108*** [0.038]	-	-
SRE*FLH	-	-	-	-0.159*** [0.020]	-	-	-	-	-	-0.084*** [0.020]	-	-
SRE*(1- FLH)	-	-	-	-0.169*** [0.038]	-	-	-	-	-	-0.075* [0.039]	-	-
<i>Linear prediction</i>	3.419	3.419	3.4194	3.419	3.341	3.628	3.712	3.712	3.712	3.712	3.656	3.846
<i># Observations</i>	4,314	4,314	4,314	4,314	3,337	977	4,855	4,855	4,855	4,855	3,774	1,081

Notes: HOE, PVE, SRE, (SRE^{DVD} and SRE^{UVD}) are normalized measures of the homo-oeconomicus, public value and social rivalry effects (downward-value differential and upward-value differential), respectively. These are described at Section 6. The specification is identical to Column 2 of Table 4, excluding the personal income dummies, which can not be used simultaneously with HOE. All estimates are weighted. Robust standard errors are shown in brackets.

Figure A1

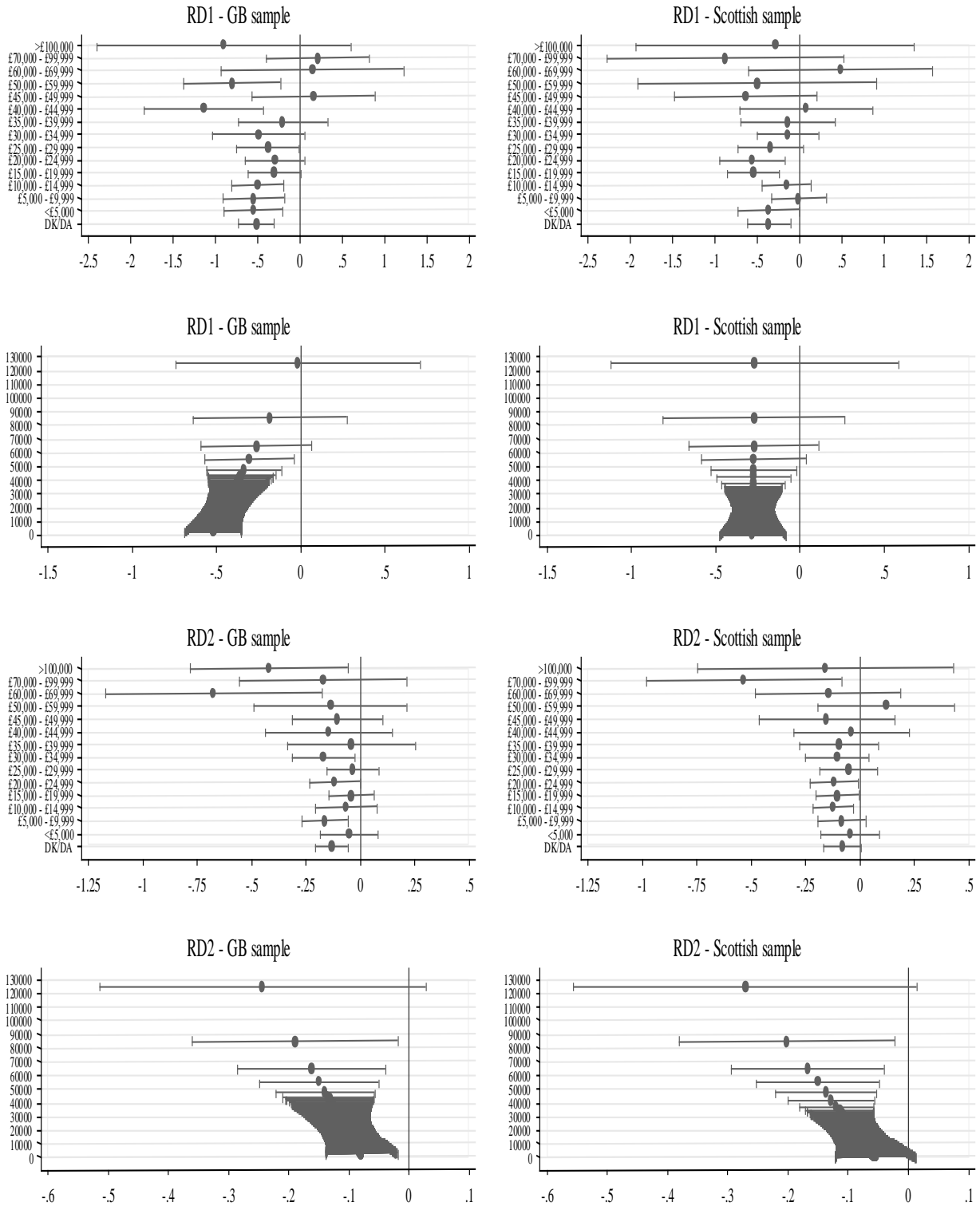
Average marginal effects of financial literacy on attitudes towards redistribution, by education



Notes: Each graph plots the impact of financial literacy on attitudes to redistribution, as education varies. The effects presented are from linear regressions that incorporate interaction terms between financial literacy and education variables. The specifications used are those of columns 2 and 3 of Table 4. The first set of 4 plots uses a continuous variable for years of education, while the bottom set of 4 plots uses educational qualification dummy variables.

Figure A2

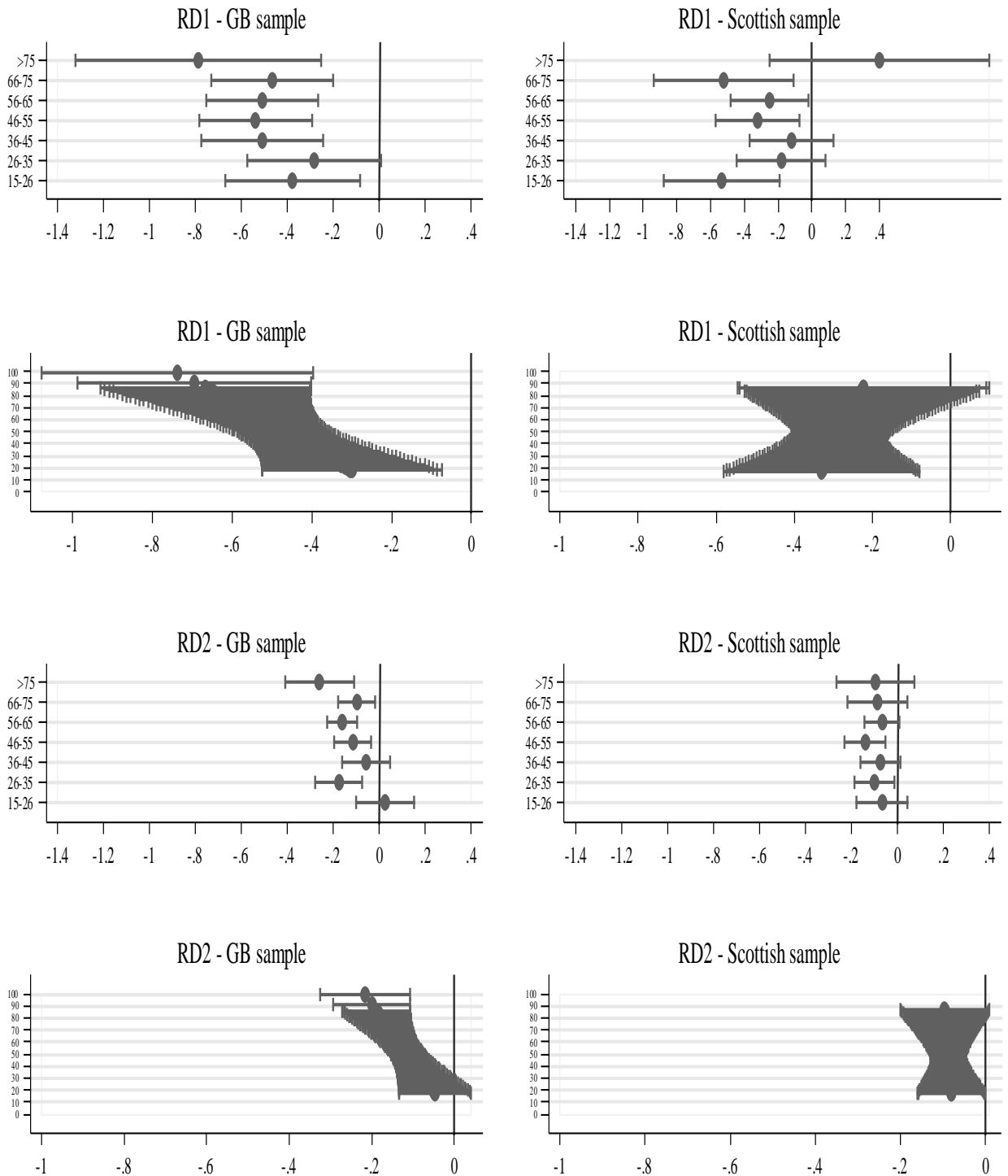
Average marginal effects of financial literacy on attitudes towards redistribution, by income



Notes: These plots show the impact of financial literacy as income varies when income is expressed in classes or as a continuous variable. RD_1 is the first measure (*Government should try to make incomes more equal*), while RD_2 is the second measure (*Government should redistribute income from the better off to those worse off*).

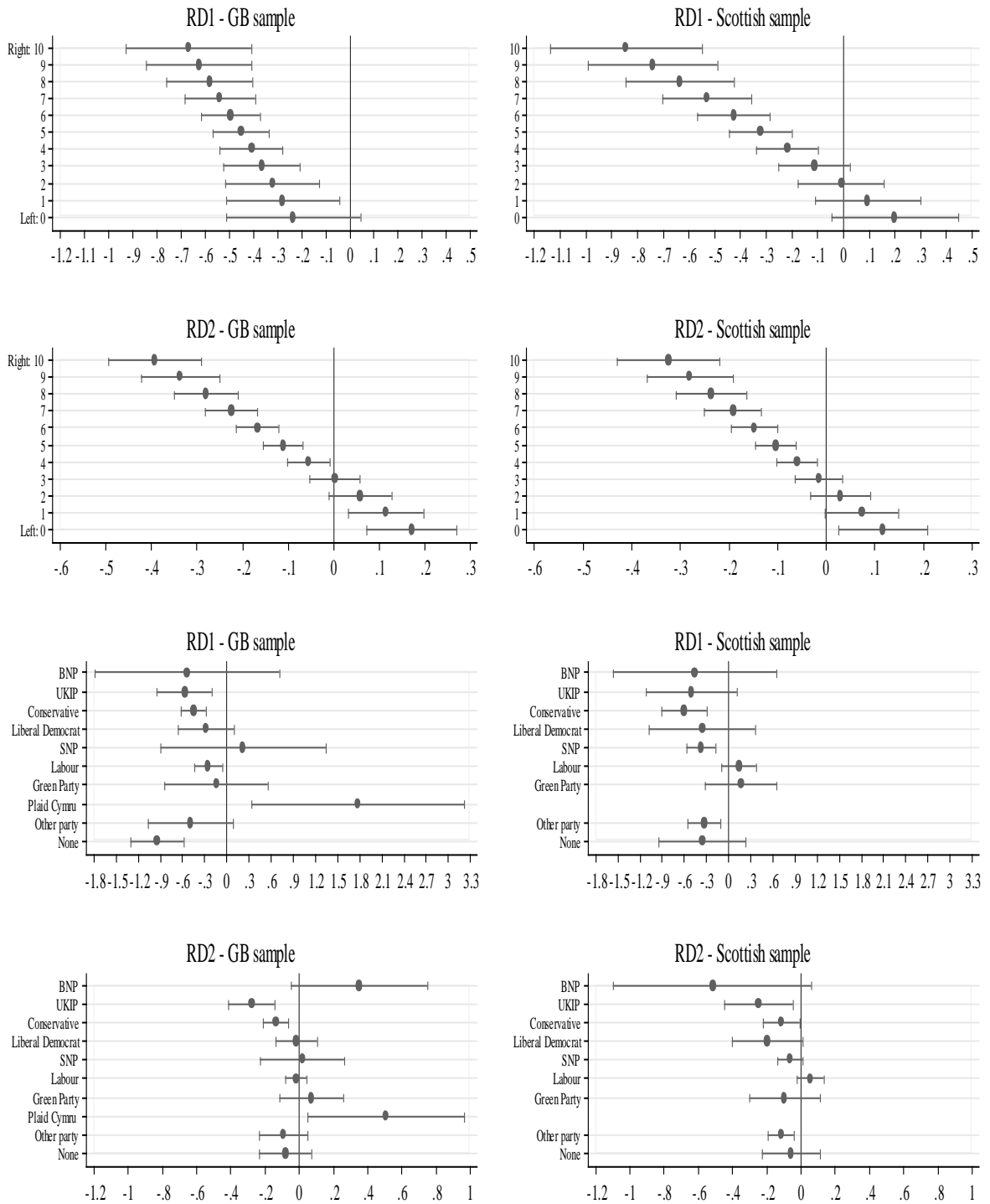
Figure A3

Average marginal effects of financial literacy on attitudes towards redistribution by age



Notes: Each graph plots the impact of financial literacy on attitudes to redistribution, as age varies. The effects presented are from linear regressions that incorporate interaction terms between financial literacy and age variables. The specifications used are those of columns 2 and 3 of Table 4. The first set of 4 plots uses a continuous variable for age, while the bottom set of 4 plots uses 7 age-group dummy variables.

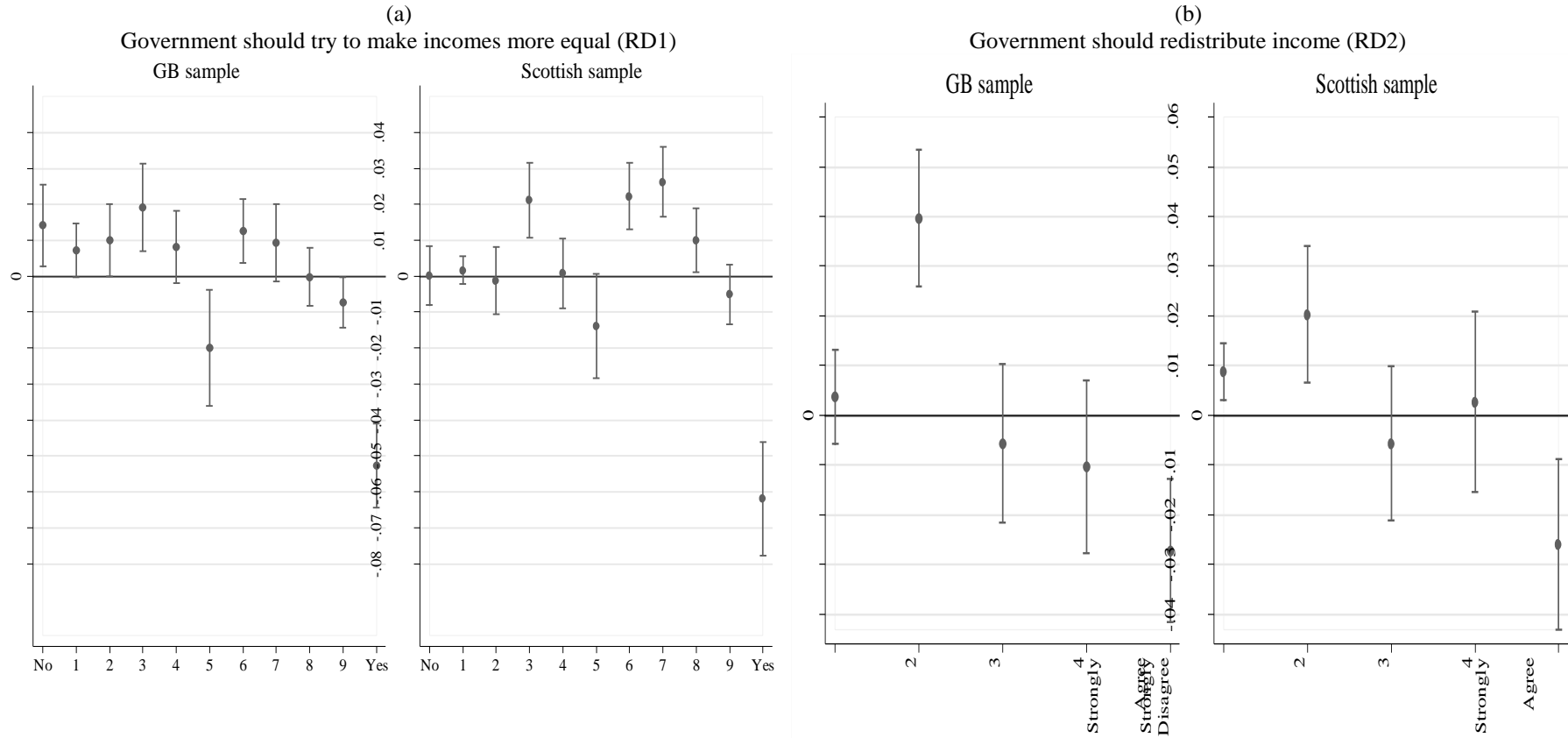
Figure A4
Average marginal effects of financial literacy on attitudes towards redistribution
by political orientation and party voting



Notes: Each graph plots the impact of financial literacy on attitudes to redistribution, as political orientation varies. The effects presented are from linear regressions that incorporate interaction terms between financial literacy and political orientation. The specifications used are those of Columns 2 and 3 of Table 4. The first set of 4 plots uses a continuous variable for left-right orientation [0-10], while the bottom set of 4 plots uses 10 political-party dummy variables, with the first eight being ordered from left to right political orientation.

Figure A5

Average marginal effects of financial literacy on attitudes towards redistribution from generalized ordered probit regressions (non-parallel line assumption for the effect of financial literacy)



Notes: Each graph plots average marginal effects of financial literacy on attitudes to redistribution along with 95% confidence intervals. The estimates are from separate generalized ordered probit regressions of the redistribution variables, i.e. RD_1 and RD_2 respectively, on financial literacy and a rich set of control variables. The non-parallel-line assumption is imposed for the effect of financial literacy. They are weighted using population level weights and utilize robust standard errors.

Table A1
Full sample and financial-literacy subsample comparisons

	<u>Understanding Society</u>		<u>BES Wave 2</u>			<u>BES Wave 4</u>		
	Unweighted	Weighted	Full sample (GB)	Fin. Lit. sub-sample (GB)	Sig. Diff.	Full sample (GB)	Fin. Lit. sub-sample (Scotland)	Sig. Diff.
<i>#Observations</i>	42,070	27,922	33,588	5,552		39,719	5,387	
<i>RD₁</i>	-	-	5.32	5.15	(0.000)	5.53	6.23	(0.000)
<i>RD₂</i>	-	-	3.45	3.43	(0.252)	3.45	3.42	(0.000)
Personal income	21,569.3	21,784.0	20639.1	21078.3	(0.072)	21117.2	16710.6	(0.000)
Personal income: missing	5.3%	4.1%	21.9%	21.8%	(0.921)	22.1%	21.1%	(0.161)
-": £0-£4,999 per year	10.3%	9.6%	8.9%	9.2%	(0.473)	9.1%	9.4%	(0.651)
-": £5,000-£9,999 per year	14.0%	14.3%	10.9%	10.0%	(0.051)	11.1%	12.8%	(0.011)
-": £10,000-£14,999 per year	17.0%	18.0%	11.5%	11.0%	(0.328)	11.7%	12.5%	(0.186)
-": £15,000-£19,999 per year	14.8%	15.3%	11.0%	10.8%	(0.610)	11.0%	11.6%	(0.306)
-": £20,000-£24,999 per year	10.6%	10.6%	9.8%	10.0%	(0.578)	9.7%	9.1%	(0.246)
-": £25,000-£29,999 per year	7.9%	7.8%	8.0%	8.6%	(0.184)	7.8%	7.0%	(0.098)
-": £30,000-£34,999 per year	5.5%	5.5%	5.6%	6.0%	(0.367)	5.5%	5.8%	(0.388)
-": £35,000-£39,999 per year	4.0%	4.1%	3.7%	3.4%	(0.290)	3.9%	3.6%	(0.461)
-": £40,000-£44,999 per year	2.9%	2.8%	2.5%	2.3%	(0.271)	2.5%	2.3%	(0.433)
-": £45,000-£49,999 per year	1.7%	1.8%	1.7%	2.2%	(0.051)	1.6%	1.2%	(0.029)
-": £50,000-£59,999 per year	2.1%	2.0%	1.9%	1.9%	(0.936)	1.8%	1.7%	(0.697)
-": £60,000-£69,999 per year	1.3%	1.4%	1.0%	1.2%	(0.104)	0.9%	0.9%	(0.972)
-": £70,000-£99,999 per year	1.5%	1.6%	1.1%	1.3%	(0.289)	1.0%	0.8%	(0.018)
-": >£100,000 per year	1.0%	1.1%	0.6%	0.5%	(0.093)	0.6%	0.4%	(0.008)
Years of education	11.30	11.23	12.73	12.66	(0.273)	12.65	12.66	(0.942)
Education: None of the below	12.6%	15.7%	-	-	-	-	-	-
-": No education	17.5%	1.0%	10.8%	11.2%	(0.377)	10.3%	10.8%	(0.410)
-": Level 1	1.8%	2.2%	4.5%	4.4%	(0.773)	4.5%	7.9%	(0.000)
-": Level 2	27.1%	31.6%	36.2%	35.6%	(0.383)	36.8%	31.1%	(0.000)
-": Apprenticeship	1.2%	1.4%	1.5%	1.4%	(0.552)	1.5%	2.1%	(0.026)
-": Level 3	3.9%	4.9%	2.3%	2.4%	(0.753)	2.5%	1.7%	(0.002)
-": Level 4	11.7%	14.3%	14.7%	15.0%	(0.557)	14.4%	14.6%	(0.681)
-": University	15.6%	18.7%	23.1%	23.7%	(0.426)	22.7%	23.8%	(0.163)
-": Graduate	7.4%	8.6%	6.7%	6.3%	(0.275)	6.5%	7.1%	(0.084)
Age	47.63	48.81	46.32	47.45	(0.000)	45.74	46.61	(0.005)
Age: 15-25	15.3%	13.5%	15.0%	13.3%	(0.009)	16.2%	13.7%	(0.001)
-": 26-35	14.2%	15.0%	17.7%	16.7%	(0.133)	17.6%	15.4%	(0.001)
-": 36-45	17.3%	16.5%	15.1%	15.2%	(0.954)	15.2%	17.1%	(0.005)
-": 46-55	18.0%	17.8%	16.4%	16.9%	(0.382)	16.6%	18.9%	(0.001)
-": 56-65	15.0%	15.3%	20.5%	21.8%	(0.023)	19.6%	20.7%	(0.087)
-": 66-75	12.3%	12.5%	13.1%	13.8%	(0.091)	12.7%	12.5%	(0.703)
-": >76	7.8%	9.5%	2.2%	2.4%	(0.393)	2.1%	1.7%	(0.083)
Male	46.5%	47.6%	48.5%	49.4%	(0.275)	48.1%	47.7%	(0.634)
Marital status: Single	27.1%	32.6%	55.3%	58.5%	(0.000)	61.0%	60.8%	(0.857)
-": Married/Cohabiting/Civil part.	38.2%	46.6%	23.1%	22.6%	(0.481)	27.9%	27.8%	(0.913)
-": Widowed/Divorced/Separated	12.6%	16.4%	10.8%	10.5%	(0.534)	11.2%	11.4%	(0.654)
Household size	2.96	2.80	2.59	2.56	(0.102)	2.63	2.48	(0.000)
Children at preschool and school age	-	-	20.7%	21.4%	(0.351)	21.8%	20.5%	(0.117)
Occ. status: Self-employed	7.8%	7.8%	6.8%	7.0%	(0.533)	6.8%	4.8%	(0.000)
-": Full-time employed	32.3%	32.7%	38.2%	37.8%	(0.589)	37.3%	35.6%	(0.043)
-": Part-time employed	10.3%	10.2%	11.6%	11.5%	(0.834)	11.7%	11.3%	(0.495)
-": Unemployed	4.6%	4.4%	3.8%	3.5%	(0.278)	3.8%	4.3%	(0.201)
-": Student	0.8%	0.4%	6.5%	5.9%	(0.212)	6.7%	7.9%	(0.031)

Table A1 continued in next page

Table A1 continued from last page

	Unweighted	Weighted	Full sample (GB)	Fin. Lit. sub-sample (GB)	Sig. Diff.	Full sample (GB)	Fin. Lit. sub-sample (Scotland)	Sig. Diff.
-": Retired	23.2%	25.2%	21.4%	22.8%	(0.013)	21.1%	20.9%	(0.783)
-": Inactive	21.1%	19.3%	11.7%	11.5%	(0.699)	12.3%	14.8%	(0.000)
Trade union member	5.6%	6.5%	14.3%	15.4%	(0.045)	2.5%	2.9%	(0.358)
Ethnicity: White	79.9%	87.5%	91.0%	91.0%	(0.992)	91.3%	96.5%	(0.000)
-": Black	1.7%	1.1%	2.0%	2.0%	(0.901)	1.9%	0.1%	(0.000)
-": Mixed	8.8%	4.3%	1.3%	1.2%	(0.757)	1.3%	0.6%	(0.000)
-": Asian	2.1%	1.2%	3.6%	3.8%	(0.643)	3.6%	0.8%	(0.000)
-": Other	0.4%	0.2%	2.2%	2.0%	(0.437)	1.8%	2.0%	(0.474)
Country of birth: England	-	-	79.1%	88.0%	(0.000)	63.4%	13.4%	(0.000)
-": Scotland	-	-	8.8%	3.1%	(0.000)	26.2%	81.8%	(0.000)
-": Wales	-	-	4.5%	1.7%	(0.000)	4.2%	0.5%	(0.000)
-": Northern Ireland	-	-	0.5%	0.5%	(0.760)	0.4%	0.5%	(0.457)
-": Republic of Ireland	-	-	0.5%	0.5%	(0.837)	0.5%	0.2%	(0.000)
-": Commonwealth	-	-	1.8%	1.7%	(0.641)	1.6%	1.2%	(0.064)
-": European Union	-	-	1.8%	1.8%	(0.920)	1.4%	1.4%	(0.745)
-": Rest of World	-	-	3.0%	2.6%	(0.240)	2.4%	1.2%	(0.000)
Home owner: outright	32.0%	32.8%	28.2%	30.7%	(0.000)	29.4%	27.6%	(0.018)
Mortgage: leasehold/freehold	38.4%	35.8%	28.0%	28.5%	(0.442)	29.1%	29.4%	(0.776)
Experienced income shock last year	-	-	15.6%	14.8%	(0.152)	7.3%	9.9%	(0.000)
Father entrepreneur	-	-	5.9%	5.8%	(0.774)	4.7%	4.7%	(0.956)
Attended private school	-	-	17.9%	18.4%	(0.488)	17.7%	11.6%	(0.000)
Risk-taker: 1 (Low) - 4 (High)	-	-	2.56	2.54	(0.282)	2.57	2.60	(0.030)
Political orient.n: 0 (left) - 10 (Right)	-	-	5.06	5.14	(0.010)	5.07	4.65	(0.000)
Social desirab.: 0 (Low) - 4 (High)	-	-	1.94	1.94	(0.668)	1.95	1.89	(0.005)
Religiosity	-	-	53.8%	55.2%	(0.092)	58.0%	51.4%	(0.000)
BIG5: Agreeableness	5.62	5.62	6.06	6.06	(0.928)	6.07	6.12	(0.198)
-": Conscientiousness	5.47	5.46	6.65	6.75	(0.001)	6.68	6.62	(0.109)
-": Extraversion	4.60	4.59	4.24	4.16	(0.016)	4.24	4.07	(0.000)
-": Neuroticism	3.56	3.57	3.79	3.76	(0.398)	3.76	3.73	(0.494)
-": Openness	4.56	4.56	5.54	5.50	(0.072)	5.55	5.58	(0.293)
Urban region	77.3%	77.7%	56.5%	60.2%	(0.000)	56.4%	35.4%	(0.000)
Region: Northeast	3.9%	4.5%	4.5%	5.3%	(0.025)	-	-	-
-": Northwest	10.3%	11.2%	11.1%	12.4%	(0.010)	-	-	-
-": Yorkshire & Humber	8.7%	9.0%	9.0%	9.7%	(0.113)	-	-	-
-": East Midlands	8.2%	7.7%	7.8%	9.0%	(0.013)	-	-	-
-": West Midlands	8.5%	8.8%	8.7%	10.5%	(0.000)	-	-	-
-": East England	9.1%	10.2%	9.4%	10.5%	(0.024)	-	-	-
-": Greater London	12.8%	11.7%	13.0%	14.7%	(0.004)	-	-	-
-": South East	12.7%	14.1%	14.1%	16.3%	(0.000)	-	-	-
-": South West	8.4%	9.3%	8.2%	9.7%	(0.001)	-	-	-
-": Wales	7.9%	5.0%	5.4%	0.8%	(0.000)	-	-	-
-": Scotland	9.3%	8.4%	8.9%	1.2%	(0.000)	-	-	-
Region: Borders	-	-	-	-	-	1.6%	2.2%	(0.000)
-": Central	-	-	-	-	-	6.6%	8.7%	(0.000)
-": Dumfries and Galloway	-	-	-	-	-	1.5%	2.2%	(0.000)
-": Fife	-	-	-	-	-	6.4%	8.8%	(0.000)
-": Grampian	-	-	-	-	-	6.0%	8.7%	(0.000)
-": Highland	-	-	-	-	-	3.3%	4.8%	(0.000)
-": Lothian	-	-	-	-	-	10.9%	14.6%	(0.000)
-": Orkney	-	-	-	-	-	0.4%	0.6%	(0.002)

Table A1 continued in next page

Table A1 continued from last page

	Unweighted	Weighted	Full sample (GB)	Fin. Lit. sub-sample (GB)	<i>Sig. Diff.</i>	Full sample (GB)	Fin. Lit. sub-sample (Scotland)	<i>Sig. Diff.</i>
-"-: Strathclyde	-	-	-	-	-	30.3%	41.9%	(0.000)
-"-: Tayside	-	-	-	-	-	4.8%	6.6%	(0.000)
-"-: Western Isles	-	-	-	-	-	0.3%	0.4%	(0.126)
-"-: Rest of GB	-	-	-	-	-	27.9%	0.5%	(0.000)

Notes: Averages from waves 2 and 4 the British Election Study and from wave 5 of Understanding Society (2013-2014). It is worth noting that the full sample from wave 4 is for the whole of Great Britain, with only the boosted financial-literacy sub-sample comprising of Scottish individuals.

Table A2
Correlation matrix

	RD ₁	RD ₂	Financial literacy	Male	Age	Years of Education	Log (P. income)	Log (HH income)	Single	Self-employed	Unemployed	Trade union member	Urban region	Homeowner	White	Father entrepreneur	Attended private school	HOE	PVE	SRE	DVD	UVD
RD ₁	1.00	0.54*	-0.15*	-0.02	-0.02	-0.10*	-0.08*	-0.20*	0.05*	-0.04*	0.11*	0.01	0.04*	-0.10*	-0.03*	-0.04*	-0.09*	-0.08*	-0.32*	-0.11*	-0.10*	0.08*
RD ₂	0.43*	1.00	-0.09*	0.04*	0.01	-0.06*	-0.03*	-0.15*	0.02	-0.03*	0.07*	0.01	0.06*	-0.07*	-0.04*	-0.01	-0.09*	-0.03*	-0.32*	-0.12*	-0.11*	0.09*
Financial literacy	-0.17*	-0.13*	1.00	0.20*	0.09*	0.22*	0.20*	0.24*	-0.04*	0.05*	-0.05*	-0.01	0.00	0.12*	0.01	0.03*	0.00	0.20*	0.02	-0.02*	0.00	0.03*
Male	-0.04*	0.02*	0.17*	1.00	-0.02*	0.01	0.18*	0.16*	0.05*	0.02	0.06*	0.00	0.03*	0.00	-0.03*	0.00	0.02	0.17*	-0.03*	-0.03*	0.00	0.05*
Age	-0.03*	0.01	0.17*	-0.02	1.00	-0.33*	0.00	-0.07*	-0.46*	0.05*	-0.07*	-0.09*	-0.16*	0.50*	0.08*	0.05*	0.04*	0.00	-0.14*	-0.01	0.00	0.01
Years of Education	-0.06*	-0.06*	0.17*	-0.02*	-0.36*	1.00	0.17*	0.27*	0.16*	0.06*	-0.01	0.00	0.09*	-0.11*	-0.05*	0.02	0.05*	0.17*	0.01	0.01	0.06*	0.04*
Log(Pers. income)	-0.13*	-0.12*	0.20*	0.22*	0.08*	0.17*	1.00	0.48*	-0.11*	0.04*	-0.13*	0.08*	0.06*	-0.09*	0.12*	0.00	-0.02	0.99*	0.05*	-0.03*	0.00	0.06*
Log(Hous. income)	-0.16*	-0.17*	0.25*	0.10*	-0.08*	0.27*	0.62*	1.00	-0.23*	0.08*	-0.19*	0.07*	0.03*	0.00	0.06*	0.00	0.00	0.48*	0.12*	0.00	0.03*	0.02*
Single	0.06*	0.04*	-0.08*	0.09*	-0.42*	0.17*	-0.17*	-0.20*	1.00	-0.05*	0.11*	0.01	0.13*	-0.22*	-0.04*	-0.03*	0.00	-0.11*	0.00	-0.01	-0.01	0.00
Self-employed	-0.04*	-0.05*	0.07*	0.04*	0.03*	0.02	0.04*	0.03*	-0.01	1.00	-0.04*	-0.02	-0.04*	0.02	0.00	0.05*	0.03*	0.04*	0.01	-0.02*	-0.01	0.03*
Trade union member	0.06*	0.06*	-0.05*	0.03*	-0.09*	0.01	-0.21*	-0.15*	0.12*	-0.05*	1.00	-0.03*	0.00	-0.07*	-0.05*	0.01	-0.02*	-0.12*	-0.05*	-0.01	-0.01	0.01
Unemployed	0.07*	0.09*	0.07*	0.03*	0.02*	0.04*	0.19*	0.15*	-0.04*	-0.07*	-0.05*	1.00	0.00	-0.04*	0.01	-0.03*	0.00	0.09*	0.02*	0.00	0.00	0.00
Urban region	0.03*	0.04*	-0.06*	0.00	-0.14*	0.02	-0.01	-0.01	0.10*	-0.04*	0.01	0.03*	1.00	-0.13*	-0.04*	-0.02*	0.01	0.05*	0.00	0.00	0.02	0.00
Homeowner	-0.08*	-0.06*	0.13*	-0.02	0.44*	-0.09*	0.00	0.00	-0.10*	0.00	-0.05*	-0.02*	-0.08*	1.00	0.02	0.05*	0.06*	-0.09*	-0.06*	0.00	0.01	0.00
White	-0.02	-0.03*	0.10*	-0.04*	0.19*	-0.08*	0.02	0.04*	-0.09*	-0.01	-0.06*	0.02*	-0.15*	0.08*	1.00	-0.05*	-0.03*	0.11*	0.01	0.00	-0.01	0.00
Father entrepreneur	-0.06*	-0.07*	0.04*	-0.04*	0.02	0.02	0.03*	0.02	-0.02	0.03*	-0.03*	-0.03*	0.00	0.03*	0.00	1.00	0.06*	0.00	0.00	-0.01	0.00	0.02
Attended private school	-0.06*	-0.02	-0.07*	0.03*	-0.02	0.00	0.00	-0.03*	0.00	0.00	0.00	-0.04*	0.03*	0.00	-0.14*	0.06*	1.00	-0.02*	0.00	0.00	0.01	0.02
HOE	-0.13*	-0.12*	0.19*	0.21*	0.08*	0.16*	0.98*	0.61*	-0.17*	0.04*	-0.20*	0.18*	-0.01	0.00	0.03*	0.02*	0.01	1.00	0.05*	-0.03*	0.01	0.06*
PVE	-0.25*	-0.32*	0.06*	-0.01	-0.12*	0.05*	0.10*	0.15*	0.00	0.00	-0.01	-0.07*	0.00	-0.04*	0.00	0.05*	-0.03*	0.09*	1.00	0.06*	0.04*	-0.05*
SRE	-0.14*	-0.22*	0.02*	0.00	-0.02*	0.05*	0.05*	0.06*	0.02	0.06*	0.00	-0.03*	0.01	0.01	0.00	0.01	0.02*	0.05*	0.10*	1.00	0.83*	-0.83*
DVD	-0.12*	-0.20*	0.03*	0.00	-0.01	0.06*	0.10*	0.08*	0.01	0.07*	-0.01	-0.03*	0.00	0.00	0.02	0.01	0.00	0.11*	0.09*	0.83*	1.00	-0.39*
UVD	0.12*	0.17*	0.00	0.00	0.02*	-0.02*	0.02	-0.01	-0.02	-0.04*	0.00	0.03*	-0.03*	-0.01	0.00	-0.01	-0.03*	0.02	-0.08*	-0.84*	-0.40*	1.00

Notes: Weighted correlation matrix. Cells below the diagonal are for Great Britain. Cells above the diagonal are for Scotland.

Table A3
Financial literacy and attitudes to redistribution in 2014 Great Britain and Scotland – Ordered probit regressions

	RD_1^{GB}	RD_2^{GB}	$RD_1^{Scotland}$	$RD_2^{Scotland}$
Financial literacy: #Correct responses	-0.172*** [0.023]	-0.117*** [0.024]	-0.118*** [0.024]	-0.095*** [0.023]
Personal income: missing	-0.245*** [0.084]	-0.196** [0.091]	-0.094 [0.097]	-0.036 [0.096]
-": £0-£4,999 per year	{Ref.}	{Ref.}	{Ref.}	{Ref.}
-": £5,000-£9,999 per year	-0.029 [0.103]	-0.008 [0.097]	0.001 [0.104]	0.143 [0.103]
-": £10,000-£14,999 per year	0.069 [0.095]	0.074 [0.103]	0.066 [0.103]	0.062 [0.101]
-": £15,000-£19,999 per year	-0.111 [0.099]	-0.007 [0.102]	-0.024 [0.106]	0.081 [0.104]
-": £20,000-£24,999 per year	-0.230** [0.102]	-0.099 [0.106]	-0.129 [0.112]	0.012 [0.109]
-": £25,000-£29,999 per year	-0.181* [0.102]	-0.074 [0.107]	-0.168 [0.114]	0.043 [0.116]
-": £30,000-£34,999 per year	-0.322*** [0.118]	-0.154 [0.114]	-0.148 [0.117]	-0.004 [0.117]
-": £35,000-£39,999 per year	-0.293** [0.125]	-0.310** [0.129]	-0.247** [0.123]	-0.122 [0.141]
-": £40,000-£44,999 per year	-0.371** [0.149]	-0.161 [0.151]	-0.394*** [0.139]	-0.128 [0.145]
-": £45,000-£49,999 per year	-0.270* [0.146]	-0.095 [0.151]	-0.122 [0.160]	0.205 [0.171]
-": £50,000-£59,999 per year	-0.505*** [0.129]	0.052 [0.172]	-0.474*** [0.171]	-0.190 [0.149]
-": £60,000-£69,999 per year	-0.412** [0.163]	-0.174 [0.262]	-0.436** [0.179]	-0.215 [0.189]
-": £70,000-£99,999 per year	-0.685*** [0.151]	-0.408* [0.209]	-0.552*** [0.182]	-0.449** [0.210]
-": >£100,000 per year	-0.200 [0.266]	-0.700*** [0.193]	-0.868*** [0.218]	-0.435* [0.239]
Education: None	{Ref.}	{Ref.}	{Ref.}	{Ref.}
-": Level 1	0.067 [0.118]	-0.179 [0.166]	0.091 [0.113]	-0.021 [0.111]
-": Level 2	-0.011 [0.079]	-0.159** [0.074]	-0.222** [0.089]	-0.093 [0.084]
-": Apprenticeship	0.168 [0.142]	0.316* [0.168]	-0.261 [0.215]	-0.283* [0.172]
-": Level 3	0.276** [0.140]	-0.022 [0.127]	0.149 [0.184]	0.039 [0.168]
-": Level 4	-0.060 [0.090]	-0.236*** [0.081]	-0.299*** [0.095]	-0.206** [0.086]
-": University	0.004 [0.084]	-0.129 [0.081]	-0.269*** [0.090]	-0.141* [0.085]
-": Graduate	-0.110 [0.101]	-0.023 [0.103]	-0.207** [0.099]	-0.068 [0.098]
Age: 15-25	{Ref.}	{Ref.}	{Ref.}	{Ref.}
-": 26-35	0.109 [0.108]	0.192* [0.106]	-0.121 [0.108]	-0.001 [0.112]
-": 36-45	0.255** [0.107]	0.316*** [0.109]	-0.080 [0.113]	0.122 [0.116]
-": 46-55	0.186* [0.108]	0.341*** [0.104]	0.013 [0.113]	0.282** [0.116]
-": 56-65	0.229** [0.112]	0.499*** [0.107]	-0.069 [0.118]	0.334*** [0.123]
-": 66-75	0.099 [0.124]	0.426*** [0.121]	0.140 [0.136]	0.299** [0.140]
-": >76	0.308* [0.163]	0.470*** [0.151]	0.050 [0.190]	0.226 [0.173]
Male	0.048 [0.041]	0.228*** [0.048]	0.118*** [0.045]	0.285*** [0.045]
Marital status: Single	{Ref.}	{Ref.}	{Ref.}	{Ref.}
-": Married/Cohabiting/Civil partnership	-0.047 [0.059]	-0.106 [0.065]	-0.016 [0.060]	0.013 [0.064]
-": Widowed/Divorced/Separated	-0.012 [0.077]	0.016 [0.084]	0.023 [0.080]	-0.008 [0.076]
Log(Household size)	-0.008 [0.049]	0.092 [0.056]	0.034 [0.059]	-0.048 [0.054]

Table A3 continued in next page

Table A3 continued from last page

	RD_1^{GB}		RD_2^{GB}		$RD_1^{Scotland}$		$RD_2^{Scotland}$	
Children at preschool and school age	-0.043	[0.058]	-0.004	[0.061]	-0.065	[0.063]	0.094	[0.061]
Occ. status: Self-employed	-0.190**	[0.075]	-0.115	[0.083]	-0.048	[0.080]	-0.098	[0.083]
-"-: Full-time employed	{Ref.}		{Ref.}		{Ref.}		{Ref.}	
-"-: Part-time employed	-0.001	[0.069]	0.106	[0.100]	-0.019	[0.073]	-0.065	[0.072]
-"-: Unemployed	-0.050	[0.145]	0.144	[0.139]	0.384***	[0.134]	0.250*	[0.129]
-"-: Student	-0.313**	[0.131]	-0.091	[0.142]	-0.231**	[0.114]	0.011	[0.123]
-"-: Retired	-0.154**	[0.076]	-0.035	[0.076]	-0.164**	[0.077]	-0.092	[0.083]
-"-: Inactive	-0.096	[0.080]	0.166**	[0.081]	-0.016	[0.082]	0.195**	[0.079]
Trade union member (current or past)	0.088	[0.056]	0.162**	[0.065]	0.237*	[0.143]	0.166	[0.141]
Ethnicity: White	{Ref.}		{Ref.}		{Ref.}		{Ref.}	
-"-: Black	-0.162	[0.165]	0.123	[0.239]	0.502	[0.761]	0.665	[0.405]
-"-: Mixed	0.111	[0.205]	0.241	[0.217]	-0.177	[0.266]	-0.052	[0.321]
-"-: Asian	0.121	[0.140]	0.063	[0.169]	0.422*	[0.241]	0.457*	[0.260]
-"-: Other	-0.110	[0.170]	0.008	[0.132]	-0.043	[0.120]	0.015	[0.136]
Country of birth: England	{Ref.}		{Ref.}		{Ref.}		{Ref.}	
-"-: Scotland	-0.148	[0.100]	-0.047	[0.098]	0.133**	[0.060]	0.098*	[0.057]
-"-: Wales	-0.123	[0.107]	0.293*	[0.169]	0.029	[0.162]	-0.247	[0.170]
-"-: Northern Ireland	0.145	[0.181]	-0.039	[0.268]	-0.384**	[0.194]	-0.687***	[0.242]
-"-: Republic of Ireland	0.031	[0.200]	0.039	[0.170]	-0.137	[0.279]	-0.237	[0.497]
-"-: Commonwealth	0.218	[0.186]	0.007	[0.175]	-0.029	[0.147]	-0.198	[0.203]
-"-: European Union	0.105	[0.136]	0.017	[0.125]	-0.033	[0.148]	-0.411**	[0.189]
-"-: Rest of World	-0.109	[0.183]	-0.297*	[0.159]	-0.021	[0.129]	0.010	[0.160]
Home owner: Own the leasehold/freehold outright	-0.061	[0.053]	-0.160***	[0.054]	-0.125**	[0.063]	-0.108*	[0.062]
Mortgage: Buying leasehold/freehold on a mortgage	-0.050	[0.052]	-0.218***	[0.061]	-0.092	[0.058]	-0.093	[0.057]
Has experienced income shock in last year	0.180***	[0.062]	0.405***	[0.073]	0.533***	[0.081]	0.562***	[0.082]
Father entrepreneur	-0.143**	[0.072]	-0.200**	[0.080]	-0.090	[0.075]	-0.002	[0.086]
Attended private school	-0.073	[0.047]	0.056	[0.056]	-0.116*	[0.061]	-0.115*	[0.061]
Risk-taker: 1 (Low) - 4 (High)	-0.032	[0.033]	-0.014	[0.036]	-0.045	[0.036]	-0.054	[0.036]
Political orientation: 0 (left) - 10 (Right)	-0.188***	[0.011]	-0.197***	[0.011]	-0.214***	[0.012]	-0.233***	[0.012]
Social desirability: 0 (Low) - 4 (High)	0.003	[0.018]	-0.008	[0.019]	0.061***	[0.019]	0.039**	[0.018]
Religiousness	-0.027	[0.041]	0.023	[0.043]	0.000	[0.042]	0.047	[0.043]
BIG5: Agreeableness	0.035***	[0.012]	0.015	[0.013]	0.025*	[0.014]	0.021	[0.014]
-"-: Conscientiousness	-0.009	[0.012]	-0.008	[0.013]	-0.023*	[0.012]	-0.013	[0.013]
-"-: Extraversion	-0.020**	[0.010]	0.004	[0.009]	0.011	[0.010]	-0.002	[0.010]
-"-: Neuroticism	0.005	[0.010]	0.022**	[0.010]	0.019*	[0.011]	0.032***	[0.011]
-"-: Openness	0.001	[0.013]	0.006	[0.013]	0.043***	[0.014]	0.036***	[0.014]
Urban region	-0.048	[0.043]	-0.003	[0.048]	0.061	[0.048]	0.128***	[0.048]
Region: Northeast	-0.022	[0.095]	0.025	[0.112]	-		-	
-"-: Northwest	0.027	[0.075]	0.019	[0.077]	-		-	

Table A3 continued in next page

Table A3 continued from last page

	RD_1^{GB}		RD_2^{GB}		$RD_1^{Scotland}$		$RD_2^{Scotland}$	
"-": Yorkshire & Humber	0.175**	[0.082]	0.033	[0.085]	-		-	
"-": East Midlands	-0.084	[0.089]	0.027	[0.090]	-		-	
"-": West Midlands	-0.024	[0.081]	-0.121	[0.086]	-		-	
"-": East England	-0.038	[0.080]	-0.163**	[0.083]	-		-	
"-": Greater London	{Ref.}		{Ref.}		-		-	
"-": South East	-0.036	[0.075]	-0.032	[0.075]	-		-	
"-": South West	0.103	[0.084]	-0.097	[0.103]	-		-	
"-": Wales	-0.537***	[0.160]	-0.154	[0.132]	-		-	
"-": Scotland	-0.293*	[0.150]	-0.120	[0.131]	-		-	
Region: Borders	-		-		0.253	[0.285]	0.341	[0.338]
"-": Central	-		-		0.291	[0.267]	0.147	[0.324]
"-": Dumfries and Galloway	-		-		0.343	[0.292]	0.260	[0.341]
"-": Fife	-		-		0.297	[0.268]	0.251	[0.324]
"-": Grampian	-		-		0.161	[0.265]	0.055	[0.323]
"-": Highland	-		-		0.341	[0.270]	0.329	[0.326]
"-": Lothian	-		-		0.291	[0.259]	0.275	[0.318]
"-": Orkney	-		-		0.283	[0.402]	0.383	[0.344]
"-": Strathclyde	-		-		0.411	[0.259]	0.302	[0.317]
"-": Tayside	-		-		0.289	[0.270]	0.273	[0.324]
"-": Western Isles	-		-		0.664	[0.422]	-0.068	[0.430]
"-": Rest of Great Britain	-		-		{Ref.}		{Ref.}	
Cut-off point 1	-2.918***	[0.234]	-2.839***	[0.255]	-2.507***	[0.339]	-2.474***	[0.414]
"-": 2	-2.716***	[0.235]	-1.793***	[0.252]	-2.361***	[0.338]	-1.514***	[0.414]
"-": 3	-2.422***	[0.235]	-1.013***	[0.251]	-2.036***	[0.340]	-0.768*	[0.413]
"-": 4	-2.012***	[0.234]	0.075	[0.251]	-1.633***	[0.338]	0.263	[0.412]
"-": 5	-1.778***	[0.234]	-		-1.399***	[0.339]	-	
"-": 6	-1.266***	[0.233]	-		-0.960***	[0.339]	-	
"-": 7	-1.027***	[0.232]	-		-0.708**	[0.339]	-	
"-": 8	-0.687***	[0.232]	-		-0.371	[0.339]	-	
"-": 9	-0.422*	[0.232]	-		-0.100	[0.339]	-	
"-": 10	-0.218	[0.233]	-		0.100	[0.339]	-	
No. of Observations	4,895		5,101		4,989		4,986	
Pseudo R ²	0.056		0.094		0.066		0.096	
Log-likelihood	-12,448.4		-7,989.1		-5,148.3		-3,002.2	
LR χ^2	690.43***		820.64***		876.31***		851.95***	