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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

by

Alberto Montagnoli
(University of Sheffield)

Mirko Moro
(University of Stirling)

Georgios A. Panos
(University of Glasgow)

Robert E. Wright
(University of Strathclyde)

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Abstract: This study proposes a conceptual framework on how financial literacy could play a key role in shaping individuals' preference for government's redistribution policies. Using novel data from the British Election Survey in 2014, we employ two distinct ordinal measures of attitudes to redistribution, capturing individual stated preferences on whether the government should redistribute incomes and whether the government should intervene in making incomes more equal. We find a significant negative relationship between financial literacy and attitudes in favour of government intervention for income redistribution. The effects are economically important, robust to several specifications, samples, in instrumental variable regressions and independent of generic attitudes towards other types of inequality/discrimination, e.g. towards females or homosexuals. An inquiry into the mechanisms of this significant negative relationship suggests that public value and social rivalry effects dominate homo-oeconomicus considerations in mediating the effect of financial literacy on attitudes to redistribution.

JEL Classification: D14, D31, D53, D63, H23, I22, I24

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Financial Literacy and Attitudes to Redistribution

1. Introduction

Government intervention to redistribute and limit income inequality is at the heart of recent debate in several countries around the world. Individual preferences for redistribution lead to different transfer and tax systems. Economic models have focused on the impact of current and expected income, future prospects and mobility in influencing the demand for redistribution at individual level. Results show that the degree of redistribution desired by an individual is negatively correlated with income, wealth and better prospects. Some scholars lament that variables employed in the literature, such as current and future income and education, are imperfect proxy for 'economic motivations' in that they do not completely capture the range and nuisance of economic determinants.

Recent studies on the importance of financial literacy shown that people's ability to process economic and financial information is linked with financial planning, wealth accumulation, management of credit positions and pensions. We depart from this literature and contribute by studying the impact of financial literacy on support for redistributive policies. 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 acquisition of financial literacy may also change someone's views of the social value of income equality, independently from their own economic circumstances, the same way that some scholars conjecture that economics education may lead people to hold more positive views of, say, greed (see e.g., Wang et al., 2011).

We use representative subsamples of the British Election Study (BES) 2014 that include attitudes towards redistribution and a module on financial literacy, alongside a rich set of individual characteristics, including income, education, age, gender, marital status, personality traits, risk attitudes.[1] We use two variables to capture attitudes to redistribution. The first variable is the answer to the question "should the government try

[1] The BES is an Internet study collected by YouGov and run by a consortium of British Universities.

to make incomes more equal", where 0 is being in total disagreement and 10 in total agreement. The second variable is another ordinal variable taking 5 values, from '*Strongly disagree*' to '*Strongly agree*' with reference to the statement: "government should redistribute income from the better off to those who are less well off". In 2014 two waves were administered in Britain as a whole, while a third wave collected a boosted sample of Scottish with the motivation of tracking political and social perceptions following the referendum for Scottish independence of September 2014. With an eye on robustness, in our analysis we use two samples separately, the standard British sample, which consists of more than 5,000 respondents, and the boosted Scottish sample of over 6,000 participants. The survey offers weights that render our samples representative of the whole population in both Britain and Scotland. Financial literacy questions included in the survey are the three primary financial literacy questions employed by the literature (see Lusardi and Mitchell, 2014) and capture the understanding of interest rates, inflation and risk diversification.

Our analysis shows that individual with higher degree of financial literacy are less supportive of redistributive policies and income equality in Britain. Financial literacy shapes those preferences independently from other economic factors, such as education and income, and from a rich set of individual characteristics, including personality traits, risk attitudes, country of birth and of residence. This effect is also robust to a number of functional forms, specifications and interactions and economically important. In linear probability models, a correct answer to financially literacy questions leads to a negative effect of 9 percent on the probability to be supportive of "government intervention to make incomes more equal" and 3 percent of being in favour of redistributing income to the less well off. Ordered probit models add to this analysis by showing that financial literacy impacts on the probability of being in clear opposition to redistribution, i.e., it is more likely to be in *strongly* disagreement with redistributive policies than just slightly so and these effects are larger in magnitude, i.e. equivalent to 19-26%.

The identification assumption is that our financial literacy variable is uncorrelated with omitted factors that are not controlled for but are determinants for taxes and transfers preferences. Our econometric models include a comprehensive set of socio-economic determinant discussed in the literature, education and income defined using

both very specific categories/classes and continuous variables (and their interactions). However, omitted variables cannot be ruled out completely. In order to validate our results, we run a series of falsification tests and show that financial literacy is not a determinant of generic preferences to other types of inequality/discrimination by running regressions of individual support to equal opportunities for homosexuals, females and minority groups. In an effort to address endogeneity more directly, we experiment with different instrumental variables. The sign, size and statistical significance of the parameter of interest are confirmed.

We investigate whether our results can be partially explained by variables proposed by Corneo and Grüner (2002) and utilized in the literature to capture three main channels for individual support to redistribution and equality, namely, *homo oeconomicus* (a measure of pure self-interest), *social rivalry* (whereby preferences towards redistribution are formed in reference to others) and *public value* effects (a measure of beliefs which is independent from individual economic circumstances). We show that that public value and social rivalry effects dominate homo-oeconomicus considerations in mediating the effect of financial literacy on attitudes to redistribution.

The remainder of this study is organised as follows. *Section 2* reviews the relevant literature, *Section 3* presents the data and summary statistics. Then, *Section 4* presents the estimates and *Section 5* provides further robustness analysis, falsification tests and instrumental variables. Section 6 considers the possible mechanisms through which financial literacy impact the demand for redistribution. Finally, Section 7 concludes.

2. Review of existing literature

There is a vast literature on individual's preferences toward redistribution; the aim of this section is to briefly summarize it and propose a conceptual framework on how financial literacy can play a key role in shaping individuals' preference for government's redistribution policies.

2.1 Preferences towards redistribution

The theoretical literature on redistribution rests on the original works of Romer (1975), Roberts (1977) and Meltzer and Richard (1983), the focus is on the median voter's utility derived from income. The idea is that with rising inequality the distance between median and mean income rises, 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, expected social mobility, are accounted for. They show that beliefs about the level of fairness can account for large differences between redistributive policies.

The empirical literature on redistribution can be divided in broadly two branches. The first branch tries to measure preferences towards redistribution at a country and state level. The measure usually employed to capture inequality and favour to redistributiare Gini coefficient and the fraction median to mean income (see, Persson and Tabellini, 1994; Perotti, 1996; and Shelton, 2007; *inter alia*). [2]

Overall the picture emerging from these macro analyses is a general lack of empirical support on the effect of inequality on redistribution. A possible explanation for these results is the fact that there is likely more than one channel at play in the relation between preferences for redistribution and inequality and it is empirically challenging to capture all these mechanism at once.

The second strand of the literature has focused on the use of micro data trying to disentangle the determinants of individual preferences for redistribution. In this strand of the literature Alesina and Giuliano (2011), Alesina and La Ferrara (2005), and Fong (2001; 2006), focus their attention on current and expected income and social status; Andreoni and Miller, (2002); Fong et al., (2006) and Fong and Oberholzer-Gee (2011)

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

look at the role of behavioral factors, such as beliefs regarding the role of luck and. Gruber and Hungerman, (2007) focus their attention on the role of altruism or religion.

Corneo and Grüner (2002) propose a theoretical framework to categorize the possible channels through which preferences for redistribution can be derived. Specifically they identify three mechanisms that could be at play in shaping the individual's preferences for redistribution. Firstly, according to the *homo oeconomicus effect*, individuals are driven by self-interest and their preferences are entirely shaped by their rank in the income scale. Specifically, preferences are inversely related to the gain that the individual obtain from governmental redistribution.[3] Second, the *public value effect* states that preferences are unrelated by the level of income, preferences are then endowments, such as ethics, the individual was born with.[4] The third channel is the *social rivalry effect*; here the focus is on the "*relative leaving standards of the individual*" Corneo and Grüner (2002: p.87); in this framework the social composition of the area the individual lives in and the marital status becomes of importance.

Given the right data and proxy for these effects, the framework set up by Corneo and Grüner (2002) offers a series of hypotheses that can be tested empirically. Overall results are mixed, for instance Fong (2001) does not find an effect of self-interest on preferences towards redistribution. While Keely and Tan (2008), using GSS data for the period 1978-2000 find that among identity markers only race, gender, age, and socioeconomic class are important classifiers for income redistribution preferences. Similarly, Luttmer (2001) shows how financial self-interest is not the only determinant of attitudes toward welfare spending, but other factors could be at play like racial group loyalty. More recently, Luttmer and Singhal (2011), try to explain the differences in attitude across Europe and the United States, have suggested that also culture could be a key a strong and persistent determinant.

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[3] On this, see e.g. Meltzer and Richards (1981) and Benabou and Ok (2001).

[4] This point was recently discussed in Piketty (1998) and Alesina and Angeletos (2005) among others. Alesina et al. (2001) propose a model where the individual's utility is dependent on the utilities of members of other ethnic groups. Their conclusion suggests that the individual's awareness of ethnic heterogeneity could be the drive for the difference in views on income redistribution across socio-economic groups.

2.2 Link between financial literacy and preferences towards redistribution

The literature has so far largely ignored the potential link between preferences toward inequality and financial literacy. This section tries to fill in the gap by laying out the theoretical channel though which financial literacy could affect the individual's preferences for redistribution. As mentioned above, in the traditional literature preferences for redistribution depend on economic factors (e.g. Romer, 1975 and Meltzer and Richards, 1981). We simply argue 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) define 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 private benefits. In this context, we then should expect financial literacy to be associated with less favourable preferences to redistribution.

In particular, Jappelli and Padula (2013) sketch a life-cycle model of consumption where the level of financial literacy is endogenously determined. Here 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 correlated to future wealth. The claim, supported by the data 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 a high expected income and may be driven by self-interest, while individual with a low level of financial literacy have a lower expected income and therefore have an incentive to tax the rich (see e.g. Meltzer and Richards, 1981; and Banabou and Ok, 2001). This suggests that financial literacy should matter even when controlling for standard income and educational attainment.

Financial literacy could improve the accuracy of subjective evaluation of one's own income position within income distribution, thus reducing biases (Cruces *et al.*, 2013). Thus a more financial literate individual would put more emphasis on the role of effort as

an additional incentive to achieve a specific socio-economic goal; in other words we have a higher the return, both real and perceived to 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), where individuals have various level of productivity. Since one's wage is related to productivity, those 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 the individual preference for redistribution are inversely correlated to the individual's belief that future success is determined by effort and talent; whereas those individuals that place more emphasis on luck and social connection (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 (see, e.g., Luttmer and Singhal, 2011). The interesting point here is that an individual with a high level of financial literacy should rely less on social belief deriving 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 does not have any public value effect. The prediction here is that the acquisition of financial literacy may change beliefs and values of the benefits of equality in the same way that some theories conjecture that economics study lead people to hold more positive views on self interest (see e.g., Wang et al., 2011).

The definition of financial literacy proposed here has a clear private management 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 a negative relationship to arise from other reasons. Individuals with a high level of financial literacy may believe that the a high level of inequality can have positive spillovers effects on growth since this provide an incentive both to innovation and entrepreneurship as in Lazear and Rosen (1981), or as suggested by Kaldor (1957) by

increasing saving and investment given that rich people given that rich people have a higher propensity to save.[5]

3. Data and Summary Statistics

We use data from the 'The British Election Study' (BES) conducted in 2014. This database contains information on both financial literacy and preferences for redistribution, alongside a rich set of individual characteristics. The survey was conducted by Yougov and is managed by a consortium of Universities. Although the BES includes more than 25,000 individuals, the financial literacy module that we used in this paper was administered to a representative subset of respondents. We run our analysis on two separate samples for robustness purposes: a standard Great Britain sample (which includes England, Wales and Scotland) and a separate (boosted) sample of Scottish people that were interviewed at a different time for reasons to do with tracking Scottish preferences around the referendum of independence of September 2014. The total amount of observations used depends on outcome variable used and ranges from 3,000 to 5,000 for the GB sample and from 3,700 to 6,200 for the Scottish sample.

For our dependent variables, we rely on two specific questions as indicators of the support that individuals give to redistribution. "*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 have a scale to choose from that goes from zero to ten, where zero reads "*Government should try to make incomes equal*" and ten as "*Government should be less concerned about equal incomes*". The second question to capture preferences based on the following question "*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

[5] It is beyond the scope of this work to give, but 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 (see e.g. Galor and Moav, 2004; Aghion, Caroli, and Garcia-Penalosa, 1999; Alesina and Perotti, 1996). Hence we should expect that an individual who is economically (but not necessarily financially) literate is more averse to conservative policies. This would make the expected direction of the relation ambiguous.

among “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree”, “Strongly agree”, “Don't know”.

Table 2 and *Table 3* provides some summary statistics on the distribution of the respondents. About 42% of the interviewees reported to be in favour or mildly in favour of redistribution, while 40% think that the government should be less concern about equal incomes.

Our key independent variable is the financial literacy index across the GB population. This is based on three questions, which have become standard in the literature.[6] 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”. As shown in Lusardi and Mitchell (2014, p.10), these questions capture “(i) numeracy and capacity to do calculations related to interest rates, such as compound interest; (ii) understanding of inflation; and (iii) understanding of risk diversification.” These are the basic skill required to make long term decisions on the level of savings and investment.

The responses to the three questions are combined to form an index Table 1 gives a snapshot of the level of financial literacy in Britain in 2014; about 40% of the people surveyed answered correctly to all three questions while about 11% responded incorrectly

[6] See Lusardi and Mitchell (2014).

to all questions. The question with the highest number of correct responses was regarding inflation, with 80% of the interviewees responding correctly, while the question assessing the understanding of risk received 28% of incorrect answers. Although the overall index is slightly higher for Great Britain than for Scotland, we see that the patter of right and wrong answers is similar.

Table 3 gives an overview of the rich set of control variables available in our sample. The average person on our sample is 47 years old; he/she has twelve years of education and a personal income of about £21,000 and a household income of £32,350. 30% of the individual interviewed are home owners while 28% have mortgage. In our sample we have a 3.5% of people unemployed, this percentage increases to 5.2% among the people that are identified has displaying a low level of financial literacy. Overall the data in Table 3 corroborate the existing finding of the financial literacy literature in that individuals with low levels of financial literacy are more likely to be inactive or unemployed, to have a lower income; furthermore, they are less likely to work in the private sector and to live in urban areas. Finally, personality traits do not appear to be statistically significant between individuals with high and low financial literacy.[7]

4. Results

We estimate specifications of the following form for attitudes towards redistribution:

$$R_i = \beta_1 (FL_i) + \beta_2 X_i + \theta_r + \varepsilon_i, \quad (1)$$

where: R_i denotes attitudes towards redistribution for individual i, FL_i is a variable capturing the degree of financial literacy, $\mathbf{X}_i$ is a vector of individual characteristics, θ_r is a fixed effect for region of residence. As described above we capture preferences to redistribution (R_i) by using two separate ordinal outcomes. The first one (*RD1*) captures individual demand for direct government intervention to make incomes more equal, while the second one (*RD2*) asks whether participant believe that the government should redistribute income from the better off to the less well off. The vector ($\mathbf{X}_i$) includes a rich

[7] *Table A1* in the Appendix shows the correlation matrix.

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, employed, unemployed, inactive or retired), trade union membership, ethnicity, country of birth (Scotland, Wales, Northern Ireland, Republic of Ireland, Commonwealth, European Union, Rest of the World), house tenure, whether the respondent has experienced an income shock last year, preferences to risk taking (i.e., a risk taking index from 1, low, to 4, high), political orientation (from 0, left, to 10, right), social desirability[explain this] (from 0, low, to 4, high), a variable indicating the degree of religiosity, the big 5 personality traits and finally whether the individual live in an urban area. In an attempt to isolate the effect of financial literacy from potential confounding factors we take advantage of the richness of the survey and experiment with different functional forms, specifications and interactions of income, education and age variables.

For robustness purposes, equation (1) is estimated using both OLS and ordered probit to account for the ordered nature of the dependent variables. These two estimation methods yield very similar results. Each specification includes sampling weights and robust standard errors.

Table 4 and *Table 5* present results for Great Britain and Scotland, respectively; Panels A and B summarize the estimates for the two outcome variables: 'Government should make incomes more equal' (Panel A) and 'Government should redistribute to the less well off' (Panel B). Each column presents different specification of equation (1). The bottom panel indicates the set of control variables used in each specification.

In *Table 4* we start with the simplest specification, in which attitudes towards redistribution is run on financial literacy without any control variables, and then we examine what happen when confounding factors such as education, income and other individual characteristics are included in the model. This provides an idea on the robustness of the finding and influence of omitted variables. As expected the relation is negative and statistically significant at 1% level, implying that financial literacy is associated with preferences against redistribution. Specifically, a correct response to the financial literacy question is associated with -0.537 (more than half point) on the 10-point

scale for the first RD1. The relationship is also economically relevant when compared to the (linear) probability of 5.147, the effect is equivalent to 10 percent. With respect to the second one, the effect is highly statistically significant but smaller, equivalent to 4 percent.

As the relevant literature has previously suggested there is a direct relationship between income, education and financial literacy. To avoid the possibility that our results are entirely the product of such a relation, the following columns presents the results including different specifications of income, education and age, together with a large set of other control variables that we have described above.[8] Columns 2 and 8 include personal income, education and age as dummy variables, while the following columns include continuous version of these variables. In particular, the categorical variable 'income class' has been transformed in a continuous variable by assigning to respondents the midpoint value of their selected income class (what about top coding?); 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 UK; and age (what about age?).

One may argue that what matters in the financial literacy-redistribution relationship is the combination of household and personal income. Some individuals with high financial literacy might decide for a vocational job that earns less if their spouse can compensate for that loss. Columns 5 and 11 include both personal and household income, their polynomial orders to control for potential nonlinearities and their interaction to account for all the possible combinations of personal and household income within households. Further, in an effort to show that financial literacy is not picking up any education effects, we interact financial literacy with years of education. The coefficient reported is the main effect of the interaction, so its size cannot be directly compared with the other coefficients. It indicates the effect of financial literacy for respondents that left school when they were 15. This is notable because it does tell that financial literacy impacts preferences even when is completely disentangled from education.

[8] *Table A2* in the Appendix for the full set of estimated coefficients.

Finally, in order to isolate the effect of financial literacy for all potential confounding factors, a fully saturated model in which financial literacy interacts with years of education, (log of) personal income and (log of) age are included. The coefficient reported shows the main effect of the interaction.

All the specifications across the two questions provide strong support to the idea that the higher the degree of financial literacy, the weaker the preferences towards redistribution. A correct response in the financial literacy question decreases the probability to agree to the idea 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 0.4 points on the 10-point scale, and 0.1 points on the 5-point scale, respectively. These effects are equivalent to 9 percent and 3.4 percent, respectively.

Similar conclusions can be drawn when analyzing the boosted Scottish sample for both outcome variables (Table 5). For the sake of parsimony we present three specifications only including the model with full set of interactions. The coefficients are all negative and statistically significant at 1% level. Their effect is equivalent to 5 and 2.3 percent, respectively. We take this as a further robustness check that confirms our hypothesis.

We then take the specification that includes income, education and age dummy variables – together the full set of individual characteristics and region fixed effects – and estimate an ordinal probit regression to account for the ordinal nature of the response variables.[9] Table 6 reports average marginal effects, the predicted probability and the percent of the financial literacy effect (i.e., the ratio between the average marginal effect and predicted probability that measures the contribution of financial literacy to the prediction) for each outcome category for the two redistribution variables. The model is estimated on both the GB and Scottish samples. Figure 1 plots the average marginal effects and their 95% confidence intervals. These estimates reinforce previous findings but also add important nuisance to the analysis. In particular financial literacy exerts a sizeable negative impact on the probability of strongly agreeing with redistributive

[9] These specifications are columns 2 and 8 in *Table 4* and columns 1 and 4 in *Table 5*.

policies. Focusing on the GB sample, the probability of answering 'Yes' to the first question declines by 0.033, while the probability of answering 'No' goes up by 0.028. The predicted probabilities for those categories are 0.135 and 0.106, respectively, which represent the largest effect in absolute term, 26 and -25 percent. A similar pattern is suggested when looking at the second question. Financial literacy decreases the probability to strongly agreeing with redistributing income to those who are less well off by 14 percent and raises the chance to strongly disagree with that statement by 21 percent. An identical pattern is uncovered when looking at the Scottish sample. The impact of financial literacy on redistribution preferences is slightly smaller for the Scottish sample. Figure 1 visualises the probability changes across each outcome category. The average marginal effects are all statistically significant with the exception of the mid-category for the first question.

This plot makes more evident the larger impact that financial literacy applies on the extreme responses ('*Yes*', '*No*' and '*Strongly Agree*' or '*Strongly Disagree*'). This finding is in line with the concept that financial literacy reduces uncertainty and provides more confidence when it comes to provide opinion that requires the use of a degree of numeracy.

Figure 2 and *Figure 3* show how the impact of financial literacy varies across education and income, respectively. The take home message is that the negative effect exerted by financial literacy is quite homogenous over income and education dimensions. Interestingly, opposition to government intervention to redistribute or make incomes equal is stronger for individuals with high financial literacy but low education. When looking at narrow education qualification, a financial literate with a degree has the same negative view on redistribution as, say, someone with no formal qualifications in the GB sample. Similar homogeneity can be found when looking at income groups, whereby financial literacy makes someone less favorable of government intervention to make inocmes more equal no matter what level of income. For the individual with high degree of financial literacy and incomes the opposition is stronger when asked directly about redistribution of incomes (RD2) in both GB and Scottish samples.

5. Falsification and robustness tests

A concern in our analysis is that financial literacy may be correlated with error term via omitted factors measuring generic preferences against equality or 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 running models of attitudes to equal opportunities to (a) gay and lesbians, (b) women and (c) ethnic minorities. 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 preferences analysed here. Panel A of *Table 7* reports estimated coefficients of financial literacy from separate OLS regressions run 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 equity, which we see as a validation of our strategy.

The second falsification exercise consists of running our favourite specification (Table 4 column 2) using the number of incorrect responses to the financial literacy question and the number of 'don't knows' (instead of number of correct responses). This model is estimated in Panel B of Table 7 using our two redistribution variables as outcomes (*RD1* and *RD2*). Interestingly, these results provide a completely different picture. As the number of incorrect answer or '*don't knows*' increase, the likelihood of being in favour of redistribution and income equality also increases. This is also taken as a validation of our strategy.

We experiment with instrumental variables regressions in *Table 8*. The choice of valid instruments for financial literacy for the year 2014 in the UK is complicated as the exclusion restrictions needed to justify the use of traditional instrumental variable methodology is hard to find. For this reason, the first estimates reported uses Lewbel (2012) that worked out a method in which instrumental variable approach is applied when without traditional instruments. In particular, the first-stage exclusion restriction is generated by the control variables which we know are heteroskedastic, i.e. the greater the

degree of heteroskedasticity in the error process, the higher will be the correlation of the generated instruments with the included endogenous variables. With an eye on robustness, these estimates are accompanied by three more instrumental variables regressions in which three standard instruments are used as traditional instruments. The battery of tests confirms that three out of four instruments are strong (F-test of the excluded instruments is well above the rule of thumb of 10 and Kleibergen-Paap *rk* Wald stats is large). The results confirm our previous analysis in that the estimated coefficients are negative and statistically significant. Worth noting that Lewbel (2012) method provides also estimates which size is comparable with our previous estimates, while the other methods have very large, and perhaps unreasonable, sizes – as is sometimes typical with instrumental variable regressions. To this end, we take Lewbel (2012) as a valid approach and if anything as a further robustness check that our analysis is valid.

6. Mechanisms

In the previous section we have found that the link between preferences for redistribution and the level of individual's financial literacy is robust to the choice of economic controls and to a number of sample, functional forms and specifications. Although this result has important implication *per se,* we can have a more complete picture by dissecting the mechanisms through which individual's financial literacy may mediate the preferences 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 channel or whether mitigates or amplifies any of these mechanisms. The aim of this section is also to disentangle these channels for individuals with high and low financial literacy.

To this end we make use of the categorization proposed by Corneo and Grüner (2002) and the analysis presented in Section 2. There are three important broad set which may have an effect on agents when forming their views on public policies. Firstly there is a *homo-oeconomicus effect*, as specified by the traditional literature for a self-centric individual what matters is the level of personal income. Here the individual cares only

about his/her personal gains from the redistribution. In the absence of a direct measure of the pecuniary gains from redistribution, we build a variable (HOE) which measures the logarithmic distance between the personal income to the national median income.

The second channel is commonly referred as the *public value effect*. Here the agent's preferences toward a particular policy are shaped by her public values. As presented in Corneo and Gruner (2002) the mechanism may be expressed by some kind of social welfare function. The literature has proposed various measures to capture this type of information; for instance Alesina and La Ferrara (2005) measure the extent of future income prospects in the U.S.; the key result highlights a link between conservative policies and one's position in the social ladder. Looking at the differences between US and Europe, Alesina and Glaeser (2004) detailed how different cultures may have different social function and therefore they tend to emphasize different ways the merits of equality and individualism. Other factors derived from personal and family history may be also relevant as suggested by (Piketty, 1995; Bénabou and Tirole, 2006). In order to test the *public value effect* we construct a variable, PVE, which combines the answers from the two questions asking the interviewees whether they '*Strongly disagree*', '*Disagree*', '*Neither agree nor disagree*', '*Agree*', '*Strongly agree*', '*Don't know*' two statements capturing the individual attitude toward effort. The two statements utilized are "*When someone is unemployed, it's usually through no fault of their own" and "In business, bonuses are a fair way to reward hard work*".

Finally, the third mechanism that we are going to explore is what Corneo and Gruner (2002) define as the *social rivalry effect*, here the key point is one's relative living standard of the individual. In absence of a specific variable capturing the occupational status, we build an index, SRE, based on a combination of personal income and education.

Results are presented in *Table 9*. We fist include the three channels alongside the financial literacy measure; in column (1) we see that even after the inclusion of the three mechanisms reduces its size from -0.537 in Table 4 to -0.427. However, the relation is still strongly statistically significant indicating that financial literacy is capturing aspects that these standard proxies are not able to. As expected, HOE enters with a statistically

significant negative sign, suggesting that there is a negative effect between an individual's relative income and his preferences for conservative policies on redistribution. PVE and SRE also are found to display a negative and statistically significant relation, in line with our previous hypothesis.

Columns (2) and (3) split the sample between individuals with high and low financial literacy (FLH and FLL, respectively), where FLH represent interviewees who answered correctly to 2 to 3 of the financial literacy questions and FLL otherwise. Some interesting results emerge from this analysis. All three channels appear still to be negative and significant for the FLH. The order of magnitude of the coefficients is comparable with those of Corner and Gruner (2002) with the exception of SRE which is found to be stronger, in absolute value, in our database [not sure these are comparable across studies].

The picture changes dramatically when we look at those individuals that have scored a low level of financial literacy (FLL); for them the only channel driving their preferences toward redistribution is the *public value effect*. The results do not change when we enter separately the DVD and the UVD variables. The disappearance of the HOE and the SRE channels can be interpreted as financial literacy interacting with the two aspects (HOE and SRE), capturing the individual self-awareness. Hence preferences for higher redistribution among the individuals with low financial literacy could be explained by the fact that these agents have more difficulty to place themselves or their peers well in the income scale.

6. Concluding remarks and implications

This paper examines whether financial literacy shapes preferences towards redistribution. We first point out that financial literacy could be an important variable to explain the role played by the various mechanisms. We show that the individuals who are with greater financial literacy are less likely to report preferences in support of redistribution. Our analysis also shows that the size of these effects are economically important and that financial literacy exerts a strong influence on 'extreme responses', '*Yes*', '*No*' and '*Strongly Agree*' or '*Strongly Disagree*'. The results are robust under various

specifications, a rich set of controls and interactions with income and education. We experiment with instrumental variable regressions that confirm our analysis too.

The importance of financial literacy in modern economies cannot be overemphasized. Financial literacy has a clear public good element to it as it is linked with macro financial stability. Our analysis predicts that intervention to improve numeracy and literacy in this realm can lead to lower demand for redistribution. This may be taken into account when designing the intervention by including elements on economics of inequality with the objective to provide a broader view on the subject.

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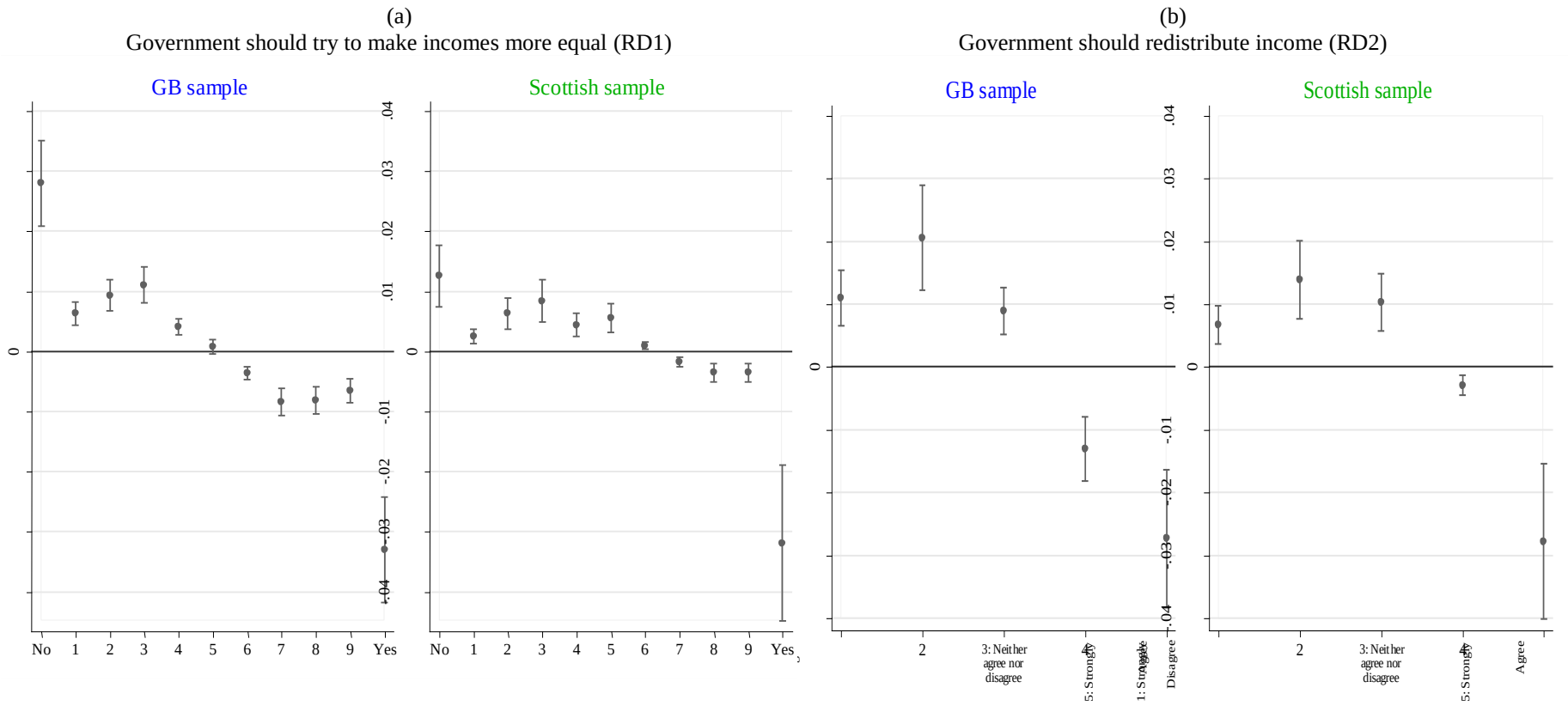
Figure 1

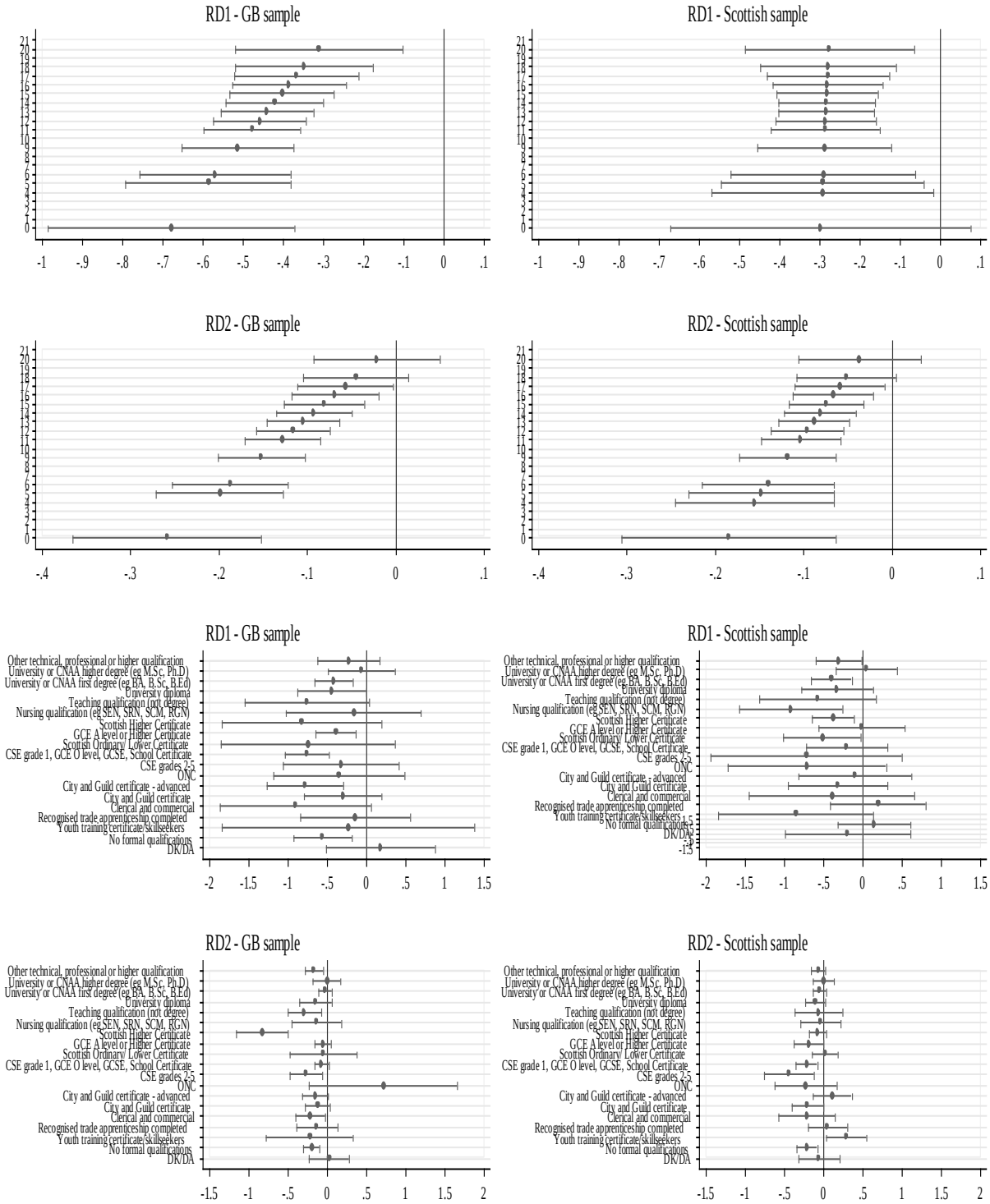
Average marginal effects of financial literacy on attitudes towards redistribution from ordered probit regressions (Great Britain, 2014)



Notes: Each graph plots estimates of average marginal effects (with 95% confidence intervals) of financial literacy after separate ordered probit regressions in which a redistribution variable (reported on top of each graph) is regressed on financial literacy and a set of controls described in Section 3. All estimates are weighted using population level weights.

Figure 2

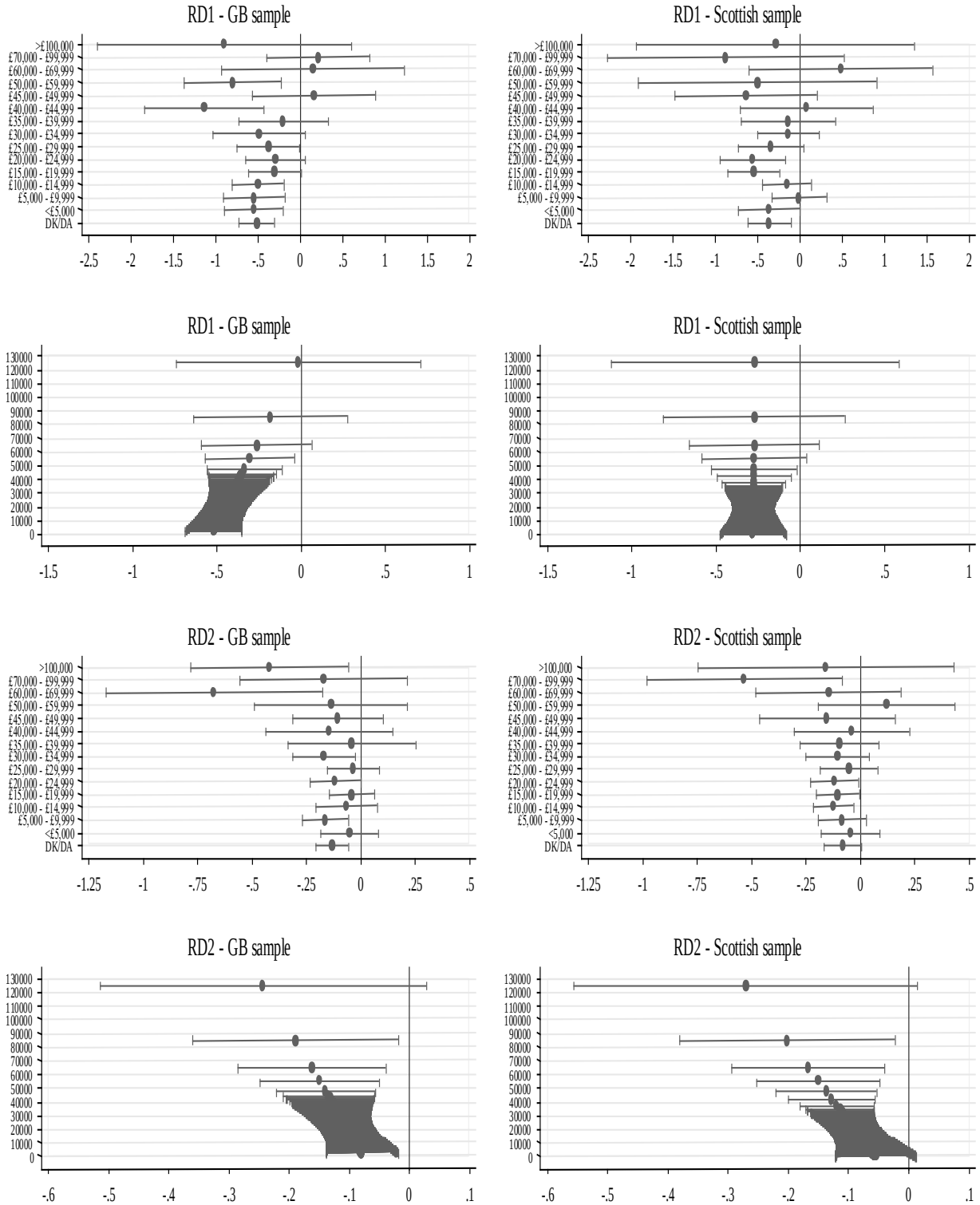
Average marginal effects of financial literacy on attitudes towards redistribution by education



Notes: These plots show the impact of financial literacy as education varies. The first plot uses years of education (a continuous variable) while the bottom four plots use education qualifications (dummies). RD1 is the first outcome (Government should try to make incomes more equal), while RD2 is the second question (Government should redistribute income)

Figure 3

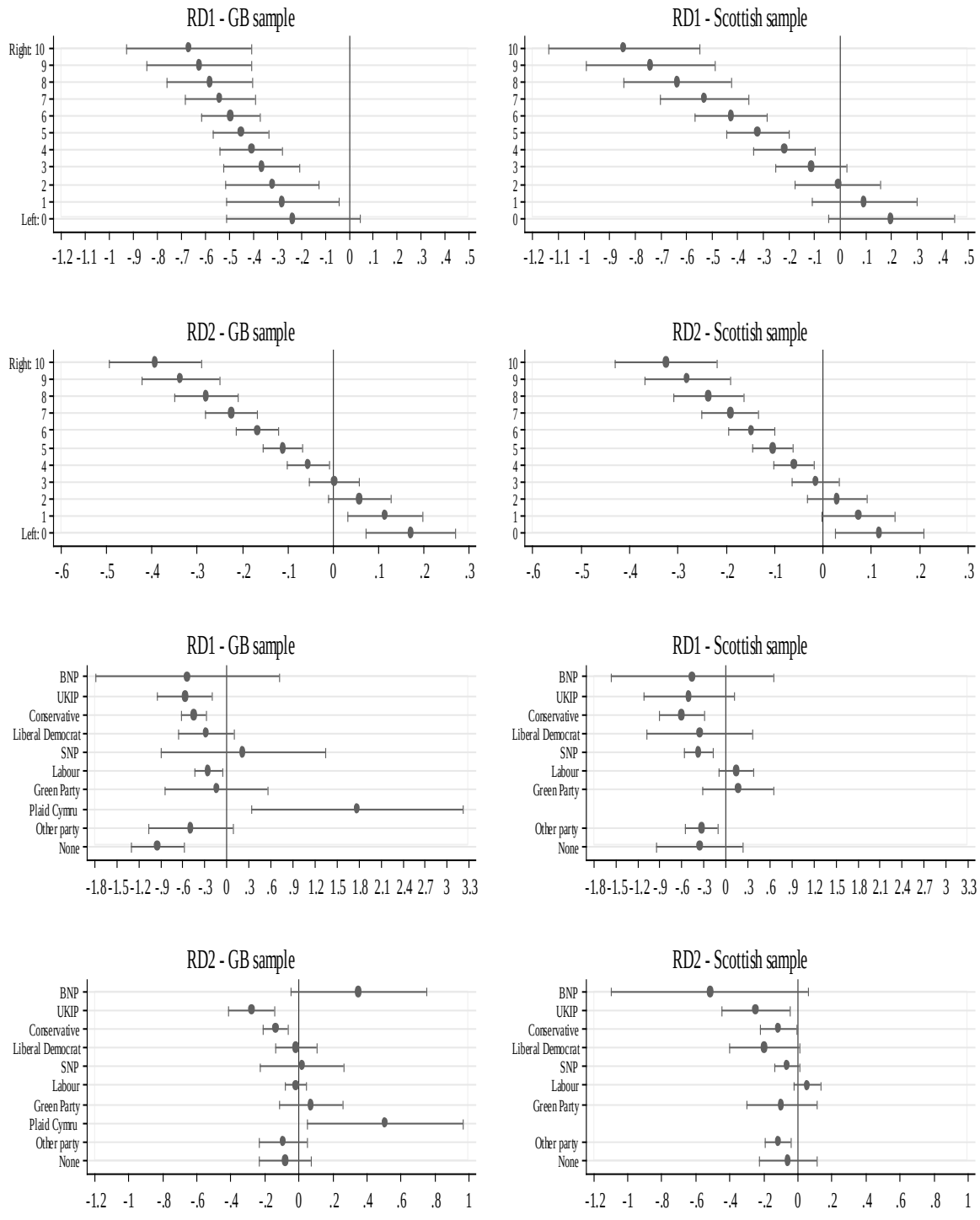
Average marginal effects of financial literacy on attitudes towards redistribution by income



Notes: These plots show the impact of financial literacy as income varies when income is expressed in classes or as a continuous variable. RD1 is the first outcome (Government should try to make incomes more equal), while RD2 is the second question (Government should redistribute income)

Figure 4

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



Notes:

Table 1
Financial literacy in 2014 Great Britain

Panel A: Financial literacy measures				
	#Correct responses	*#Wrong responses*	*#DK/DA responses*	*At least one "Don't know"*
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				
	All 3 correct	*2 correct*	*1 correct*	*0 correct*
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				
	Correct	*Incorrect*	*Don't know*	*Refuse*
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%

Notes: Weighted averages from the British Election Survey (2014)

Table 2

Frequencies: Attitudes towards redistribution and financial literacy in 2014 Great Britain

Panel A: "Government should try to make incomes more equal" (%)												
		No: 0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10: Yes*
GB sample		*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	6.59	1.86	5.07	7.42	5.97	22.18	7.38	8.16	5.25	5.76	24.37
	1	7.31	3.50	4.61	9.20	6.50	20.31	5.60	8.37	8.03	4.89	21.69
	2	10.11	3.24	6.92	11.83	7.83	17.58	7.56	9.84	6.82	4.53	13.73
	3	12.65	4.53	7.68	13.52	8.21	15.3	9.61	11.03	6.33	3.31	7.82
Scottish sample		*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	4.37	1.04	5.41	3.30	6.41	18.94	5.28	7.89	5.48	7.13	34.75
	1	5.25	1.54	4.01	6.99	5.99	13.42	5.68	7.08	8.22	6.19	35.63
	2	5.35	1.03	4.61	8.97	5.43	13.34	9.09	11.51	8.76	5.79	26.12
	3	8.24	2.40	5.94	11.15	7.17	12.41	10.4	13.50	8.80	4.95	15.04

Panel B: "Government should redistribute income from the better off to those who are less well off" (%)						
		Strongly Disagree		*Neither agree nor disagree*		*Strongly Agree*
		1	*2*	*3*	*4*	*5*
GB sample		*5.10*	*18.32*	*24.60*	*32.68*	*19.31*
Fin. literacy: #Correct responses	0	3.12	8.12	26.88	36.77	25.11
	1	4.78	13.55	24.16	33.70	23.80
	2	3.91	18.24	25.59	33.95	18.30
	3	6.52	22.83	23.59	30.41	16.64
Scottish sample		*3.77*	*12.85*	*20.75*	*33.60*	*29.03*
Fin. literacy: #Correct responses	0	1.49	9.07	24.89	31.83	32.72
	1	3.59	9.74	20.32	34.52	31.83
	2	2.85	11.60	20.04	35.06	30.44
	3	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 Survey 2014/5 and their break down by the number of correct responses in the financial-literacy questions. All statistics are weighted using population level weights.

Table 3
Sample averages and mean differences

	Great Britain [*5,552 obs.*]			Scotland [*5,387 obs.*]		
	All	*FLH*	*FLL*	*All*	*FLH*	*FLL*
	(1)	(2)	(3)	(4)	(5)	(6)
RD_1	5.15	4.86	5.92***	6.23	5.98	6.84***
RD_2	3.43	3.35	3.63***	3.71	3.67	3.82***
Male	49.4%	53.4%***	40.1%	47.7%	53.0%***	36.1%
Age	47.45	49.42***	42.93	46.61	47.68***	44.28
Years of education	12.89	13.29***	11.96	12.86	13.43***	11.63
Married	58.5%	62.2%***	50.0%	60.8%	62.3%**	57.5%
Single	22.6%	19.7%	29.3%***	27.8%	26.8%	29.9%
Widowed/divorced/separated	10.5%	10.3%	11.1%	11.4%	10.9%	12.6%
Household size	2.56	2.51	2.66***	12.80	7.23	24.91*
Has young children	21.4%	20.5%	23.5%*	20.5%	19.7%	22.3%
Urban region	60.2%	58.6%	64.1%***	35.4%	35.5%	35.1%
White	91.0%	92.9%***	86.7%	96.5%	96.9%	95.7%
Personal income	21,041.0	22,983.8***	16,579.7	16,709.0	18,691.3***	12,401.8
Household income	32,350.5	35,387.1***	25,377.6	29,580.0	32,627.3***	22,958.8
House owner	30.7%	34.4%***	22.3%	27.6%	30.7%***	20.8%
Has mortgage	28.5%	31.0%***	22.8%	29.4%	32.2%***	23.1%
Income shock	14.8%	13.5%	17.9%***	9.9%	8.8%	12.3%**
Risk-taking	2.54	2.54	2.54	2.60	2.63***	2.53
Left-right orientation	5.14	5.19**	5.03	4.65	4.62	4.73
Social desirability	1.94	1.98***	1.82	1.89	1.91	1.83
Religious	55.2%	55.0%	55.6%	51.4%	50.3%	53.9%*
Employed	56.3%	57.6%**	53.4%	51.6%	54.2%***	46.0%
Student	5.9%	5.0%	7.8%**	8.1%	8.0%	8.4%
Inactive	11.5%	9.7%	15.6%***	14.8%	11.4%	22.2%***
Unemployed	3.5%	2.7%	5.2%***	4.3%	3.9%	5.2%
Retired	22.8%	24.9%***	17.9%	20.9%	22.4%***	17.7%
Self-employed	11.3%	12.7%***	8.1%	2.1%	2.6%***	1.1%
Private sector	39.4%	40.2%	37.7%	1.4%	1.7%*	0.8%
Public sector	28.4%	28.9%	27.0%	5.3%	4.4%	7.3%**
Third sector	4.4%	4.4%	4.6%	0.4%	0.5%	0.3%
Other work	5.8%	4.5%	8.8%***	4.3%	3.4%	6.0%**
No work	2.9%	2.2%	4.5%***	2.4%	2.0%	3.3%*
Union	44.8%	49.7%***	33.4%	6.7%	7.0%	6.1%
Agreeableness	6.06	6.06	6.06	6.03	5.98	6.14**
Conscientiousness	6.75	6.87***	6.49	6.49	6.60***	6.27
Extraversion	4.16	4.07	4.36***	4.14	4.06	4.31***
Neuroticism	3.76	3.61	4.10***	3.83	3.68	4.16***
Openness	5.50	5.53*	5.42	5.53	5.59***	5.41
HOE	0.000	0.115***	-0.265	0.003	0.086***	-0.176
PVE	0.000	0.035***	-0.081	0.059	0.064	0.050
SRE	0.000	0.033***	-0.076	0.022	0.016	0.035
DVD	0.000	0.041***	-0.093	0.012	0.015	0.006
UVD	0.000	-0.015	0.034	-0.024	-0.011	-0.051

Notes: Weighted averages from the British Election Study.

Table 4

Regressions: Attitudes towards redistribution and financial literacy in 2014 Great Britain

Panel A: Dependent variable − "Government should try to make incomes more equal"						
	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy: #Correct responses	-0.537***	-0.458***				
	[0.058]	[0.059]				
Linear prediction	*5.147*	*5.134*				
#Observations	*5,066*	*4,895*				
R^2	*0.029*	*0.231*				
Panel B: Dependent variable − "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***	-0.117***				
	[0.020]	[0.022]				
Linear prediction	*3.428*	*3.425*				
#Observations	*5,297*	*5,101*				
R^2	*0.017*	*0.244*				
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 include age and education dummies and a set of controls described in Section 3. All estimates are weighted using population level weights. Robust standard errors in parenthesis. *** 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 − "Government should try to make incomes more equal"			
	(1)	(2)	(3)
Financial literacy: #Correct responses	-0.287***		
	[0.061]		
Linear prediction	*6.239*		
#Observations	*4,989*		
R^2	*0.254*		
Panel B: Dep. variable − "Government should redistribute income from the better off to those who are less well off"			
	(4)	(5)	(6)
Financial literacy: #Correct responses	-0.089***		
	[0.021]		
Linear prediction	*3.719*		
Observations	*4,986*		
R^2	*0.237*		
Individual characteristics	+	+	+
Years of education	–	+	+
Log(Age)	–	+	+
Personal income – dummies	–	+	+
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	–	+	+
Financial literacy*Log(Personal income)*Years of education*Log(Age)	–	–	+

Notes: Individual characteristics include age and education dummies and a set of controls described in Section 3. All estimates are weighted using population level weights. Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 6

Predicted probabilities and financial literacy effects

Panel A: Dependent variable − "Government should try to make incomes more equal"											
	No – 0	*– 1 –*	*– 2 –*	*– 3 –*	*– 4 –*	*– 5 –*	*– 6 –*	*– 7 –*	*– 8 –*	*– 9 –*	*Yes – 10*
GB sample											
Fin. literacy AME	0.028***	0.006***	0.009***	0.011***	0.004***	0.001	-0.004***	-0.008***	-0.008***	-0.007***	-0.033***
	[0.004]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.004]
Predicted probability	*0.106*	*0.036*	*0.066*	*0.116*	*0.076*	*0.176*	*0.079*	*0.101*	*0.066*	*0.042*	*0.135*
% Fin. literacy effect	*26.33%*	*17.55%*	*14.22%*	*9.53%*	*5.35%*	*0.44%*	*-4.50%*	*-8.28%*	*-12.29%*	*-15.41%*	*-24.51%*
#Observations	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*	*4,895*
Scottish sample											
Fin. literacy AME	0.014***	0.003***	0.006***	0.008***	0.004***	0.005***	0.001***	-0.002***	-0.004***	-0.004***	-0.031***
	[0.002]	[0.000]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.000]	[0.001]	[0.001]	[0.005]
Predicted probability	*0.070*	*0.018*	*0.052*	*0.090*	*0.064*	*0.137*	*0.084*	*0.111*	*0.082*	*0.055*	*0.237*
% Fin. literacy effect	*19.21%*	*14.12%*	*12.09%*	*9.02%*	*6.40%*	*3.53%*	*0.64%*	*-1.85%*	*-4.43%*	*-6.42%*	*-12.98%*
#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 − "Government should redistribute income from the better off to those who are less well off"					
	1 – Strongly Disagree	*– 2 –*	*3 – Neither agree nor disagree*	*– 4 –*	*5 – Strongly Agree*
GB sample					
Fin. literacy AME	0.011***	0.021***	0.009***	-0.013***	-0.027***
	[0.002]	[0.004]	[0.002]	[0.003]	[0.006]
Predicted probability	*0.052*	*0.184*	*0.244*	*0.329*	*0.191*
% Fin. literacy effect	*21.19%*	*11.17%*	*3.67%*	*-3.97%*	*-14.30%*
#Observations	*5,101*	*5,101*	*5,101*	*5,101*	*5,101*
Scottish sample					
Fin. literacy AME	0.007***	0.014***	0.010***	-0.003***	-0.028***
	[0.002]	[0.003]	[0.002]	[0.001]	[0.006]
Predicted probability	*0.038*	*0.133*	*0.203*	*0.336*	*0.291*
% Fin. literacy effect	*17.43%*	*10.46%*	*5.06%*	*-0.88%*	*-9.55%*
#Observations	*4,986*	*4,986*	*4,986*	*4,986*	*4,986*

Notes: Each panel shows the predicted probability of reporting a category (0-10 for the first model, 1-5 for the second model); probability changes due to financial literacy (*i.e.* the average marginal effect) and the contribution of financial literacy expressed in percent (*i.e.* the ratio between average marginal effect and predicted probability for each category). Robust standard errors in parentheses. *** 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 things have gone too far or have not gone far enough in Britain: [1: Not gone nearly far enough - 5: Gone much too far]

	GB sample			Scottish sample		
Dep. Variable: Attempts to give equal opportunities to...	*Gays and lesbians*	*Women*	*Ethnic minorities*	*Gays and lesbians*	*Women*	*Ethnic minorities*
	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy: #Correct responses	-0.001	-0.021	-0.030	-0.009	0.027	-0.028
	[0.022]	[0.018]	[0.021]	[0.021]	[0.019]	[0.021]
Linear prediction	*3.142*	*2.735*	*3.392*	*2.992*	*2.561*	*3.207*
#Observations	*5,007*	*5,104*	*4,988*	*4,872*	*4,974*	*4,857*
R^2	*0.215*	*0.143*	*0.213*	*0.251*	*0.149*	*0.210*

Panel B: Financial illiteracy and attitudes to redistribution: # Incorrect responses

	GB sample				Scottish sample			
Dependent. Variable:	*RD1*		*RD2*		*RD1*		*RD2*	
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Financial illiteracy: #Wrong responses	0.252***	–	0.103***	–	0.217***	–	0.109***	–
	[0.084]		[0.030]		[0.082]		[0.029]	
Financial illiteracy: #DK/DA responses	–	0.444***	–	0.075***	–	0.213***	–	0.039
		[0.071]		[0.026]		[0.077]		[0.024]
Linear prediction	*5.1341*	*5.1341*	*3.4249*	*3.4249*	*6.2387*	*6.2387*	*3.7191*	*3.7191*
#Observations	*4,895*	*4,895*	*5,101*	*5,101*	*4,989*	*4,989*	*4,986*	*4,986*
R^2	*0.217*	*0.225*	*0.239*	*0.238*	*0.250*	*0.250*	*0.236*	*0.233*

Notes: The remaining specification is identical to Column 2 of Table 3. Comments in Table 3 apply.

Table 8

Instrumental variables: financial literacy and attitudes to redistribution in 2014 Great Britain

	GB sample				Scottish sample			
Instrument:	*Lewbel*	*P.F. section*	*FinEdu*	*P.F. section, FinEdu*	*Lewbel*	*P.F. section*	*FinEdu*	*P.F. section, FinEdu*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent variable – "Government should try to make incomes more equal"								
Financial literacy: #Correct responses	-0.577***	-0.964*	-1.135*	-1.037**	-0.217*	-0.947*	-1.675***	-1.284***
	[0.097]	[0.497]	[0.684]	[0.414]	[0.112]	[0.561]	[0.638]	[0.418]
Linear prediction	*5.134*	*5.134*	*5.134*	*5.134*	*6.239*	*6.239*	*6.239*	*6.239*
# Observations	*4895*	*4895*	*4895*	*4895*	*4989*	*4989*	*4989*	*4989*
R^2	*0.229*	*0.211*	*0.195*	*0.204*	*0.254*	*0.218*	*0.095*	*0.172*
F-statistic	*12.93*	*12.17*	*11.96*	*12.11*	*17.68*	*16.46*	*13.90*	*15.50*
Partial R^2 of excluded instruments:	0.373	0.008	0.006	0.015	0.325	0.008	0.007	0.015
F-Test of excluded instruments	25.73***	36.07***	19.36***	27.12***	21.03***	36.06***	27.08***	30.85***
(a) Kleibergen-Paap rk LM statistic χ^2	447.18***	33.67***	19.22***	49.51***	395.53***	35.62***	26.41***	57.17***
(b) Kleibergen-Paap rk Wald χ^2	2018.9***	36.65***	19.68***	55.12***	1671.4***	36.64***	27.52***	62.71***
(c) Anderson-Rubin Wald test: F	2.24***	3.79***	2.89*	3.14**	1.72***	2.97*	7.80***	5.40***
(c) Stock-Wright LM S-statistic: χ^2	109.29***	3.76*	2.92*	6.38**	91.24	2.94*	7.77***	10.59***
(d) Hansen J statistic χ^2	78.479	–	–	0.042	90.25	–	–	0.74
Panel B: Dependent variable – "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	-0.073*	-0.427**	-0.411	-0.421***	-0.072**	-0.283	-0.560***	-0.441***
	[0.037]	[0.178]	[0.308]	[0.161]	[0.036]	[0.207]	[0.197]	[0.138]
Linear prediction	*3.409*	*3.409*	*3.409*	*3.409*	*3.719*	*3.719*	*3.719*	*3.719*
# Observations	*5292*	*5292*	*5292*	*5292*	*4986*	*4986*	*4986*	*4986*
R^2	*0.238*	*0.175*	*0.182*	*0.178*	*0.237*	*0.213*	*0.094*	*0.157*
F-statistic	*15.25*	*13.7*	*13.76*	*13.74*	*15.32*	*14.44*	*12.36*	*13.37*
Partial R^2 of excluded instruments:	0.366	0.009	0.015	0.014	0.339	0.007	0.010	0.017
F-test of excluded instruments	31.40***	48.84***	17.49***	33.70***	21.73***	33.67***	38.48***	34.51***
(a) Kleibergen-Paap rk LM statistic χ^2	463.55***	45.86***	17.52***	62***	394.6***	32.13***	36.25***	61.41***
(b) Kleibergen-Paap rk Wald χ^2	2457.1***	49.57***	17.75***	68.42***	1727.1***	34.21***	39.10***	70.14***
(c) Anderson-Rubin Wald test: F	2.06***	6.16**	1.89	3.94**	1.23*	1.89	9.13***	5.74***
(c) Stock-Wright LM S-statistic: χ^2	107.89***	6.19**	1.90	8.02**	78.61	1.89	9.11***	11.38***
(d) Hansen J statistic χ^2	106.13**	–	–	0.002	73.95	–	–	0.885

Notes: Individual characteristics include age and education dummies and a set of controls described in Section 3. All estimates are weighted using population level weights. Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 9

Mechanisms: Attitudes to redistribution and financial literacy in 2014 Great Britain

Panel A: Dependent variable − "Government should try to make incomes more equal"						
	All	*FLH*	*FLL*	*All*	*FLH*	*FLL*
GB sample	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy: #Correct responses		−	−		−	−
HOE						
PVE						
SRE				−	−	−
DVD	−	−	−			
UVD	−	−	−			
Linear prediction						
#Observations	*4,827*	*3,817*	*1,010*	*4,827*	*3,817*	*1,010*
Scottish sample	(7)	(8)	(9)	(10)	(11)	(12)
Financial literacy: #Correct responses		−	−		−	−
HOE						
PVE						
SRE				−	−	−
DVD	−	−	−			
UVD	−	−	−			
Linear prediction						
# Observations	*4,861*	*3,810*	*1,051*	*4,861*	*3,810*	*1,051*
Panel B: "Government should redistribute income from the better off to those who are less well off"						
	All	*FLH*	*FLL*	*All*	*FLH*	*FLL*
GB sample	(13)	(14)	(15)	(16)	(17)	(18)
Financial literacy: #Correct responses		−	−		−	−
HOE						
PVE						
SRE				−	−	−
DVD	−	−	−			
UVD	−	−	−			
Linear prediction						
#Observations	*5,031*	*3,912*	*1,119*	*5,031*	*3,912*	*1,119*
Scottish sample	(19)	(21)	(23)	(20)	(22)	(24)
Financial literacy: #Correct responses		−	−		−	−

Table 9 continued in next page

Table 9 continued from last page

	All	*FLH*	*FLL*	*All*	*FLH*	*FLL*
	(19)	(20)	(21)	(22)	(23)	(24)
HOE						
PVE						
SRE				–	–	–
DVD	–	–	–			
UVD	–	–	–			
Linear prediction						
#Observations	*4,855*	*3,774*	*1,081*	*4,855*	*3,774*	*1,081*

Notes: HOE, PVE and SRE are measures of homo-oeconomicus, public value and social rivalry effects, respectively. See section 5 for details. Individual characteristics include age and education dummies and a set of controls described in Section 3. All estimates are weighted using population level weights. Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Appendix

Table A1
Correlation matrix

	RD_1	RD_2	Financial literacy	Male	Age	Years of Education	Log (Pers. income)	Log (Hous. income)	Single	Employed	Urban region	Homeowner	White	HOE	PVE	SRE	DVD	UVD
RD_1	**1.00**	*0.54**	*-0.15**	*-0.02*	*-0.02*	*-0.11**	*-0.08**	*-0.21**	*0.05**	*-0.05**	*0.04**	*-0.10**	*-0.03**	*0.00*	*-0.32**	*-0.12**	*-0.11**	*0.09**
RD_2	0.43*	**1.00**	*-0.09**	*0.04**	*0.01*	*-0.06**	*-0.03**	*-0.15**	*0.02*	*-0.05**	*0.06**	*-0.07**	*-0.04**	*0.01*	*-0.32**	*-0.13**	*-0.11**	*0.10**
Financial literacy	-0.17*	-0.13*	**1.00**	*0.20**	*0.09**	*0.22**	*0.21**	*0.25**	*-0.04**	*0.08**	*0.00*	*0.12**	*0.01*	*0.13**	*0.02*	*0.00*	*0.01*	*0.00*
Male	-0.04*	0.02*	0.17*	**1.00**	*-0.02**	*0.01*	*0.18**	*0.16**	*0.05**	*0.08**	*0.03**	*0.00*	*-0.03**	*0.07**	*-0.03**	*-0.03**	*0.00*	*0.04**
Age	-0.03*	0.01	0.17*	-0.02	**1.00**	*-0.32**	*0.00*	*-0.07**	*-0.46**	*-0.20**	*-0.16**	*0.50**	*0.08**	*-0.03**	*-0.14**	*0.00*	*0.00*	*0.00*
Years of Education	-0.07*	-0.07*	0.17*	-0.03*	-0.36*	**1.00**	*0.18**	*0.28**	*0.16**	*0.19**	*0.08**	*-0.11**	*-0.05**	*0.10**	*0.01*	*0.01*	*0.07**	*0.04**
Log(Pers. income)	-0.13*	-0.12*	0.20*	0.22*	0.08*	0.17*	**1.00**	*0.49**	*-0.11**	*0.43**	*0.06**	*-0.09**	*0.12**	*0.82**	*0.05**	*0.00*	*0.02**	*0.03**
Log(Hous. income)	-0.16*	-0.17*	0.25*	0.10*	-0.08*	0.27*	0.62*	**1.00**	*-0.23**	*0.44**	*0.03**	*0.00*	*0.06**	*0.21**	*0.12**	*0.01*	*0.04**	*0.01*
Single	0.06*	0.04*	-0.08*	0.09*	-0.42*	0.16*	-0.17*	-0.20*	**1.00**	*-0.05**	*0.13**	*-0.22**	*-0.04**	*-0.02*	*0.00*	*-0.02*	*-0.02*	*0.01*
Employed	0.00	-0.04*	0.05*	0.07*	-0.30*	0.19*	0.46*	0.42*	0.01	**1.00**	*0.03**	*-0.18**	*-0.02*	*0.21**	*0.13**	*0.01*	*0.02*	*0.00*
Urban region	0.03*	0.04*	-0.06*	0.00	-0.14*	0.01	-0.01	-0.01	0.10*	0.03*	**1.00**	*-0.13**	*-0.04**	*0.04**	*0.00*	*0.01*	*0.03**	*0.00*
Homeowner	-0.08*	-0.06*	0.13*	-0.02	0.44*	-0.09*	0.00	0.00	-0.10*	-0.23*	-0.08*	**1.00**	*0.02*	*-0.09**	*-0.06**	*0.01*	*0.02*	*0.00*
White	-0.02	-0.03*	0.10*	-0.04*	0.19*	-0.08*	0.02	0.04*	-0.09*	-0.01	-0.15*	0.08*	**1.00**	*0.05**	*0.01*	*0.01*	*0.00*	*-0.02*
HOE	-0.13*	-0.12*	0.19*	0.21*	0.08*	0.16*	0.98*	0.61*	-0.17*	0.45*	-0.01	0.00	0.03*	**1.00**	*0.01*	*-0.02*	*0.02**	*0.06**
PVE	-0.25*	-0.32*	0.06*	-0.01	-0.12*	0.05*	0.10*	0.15*	0.00	0.10*	0.00	-0.04*	0.00	0.09*	**1.00**	*0.07**	*0.05**	*-0.07**
SRE	-0.13*	-0.22*	0.05*	0.00	0.00	0.04*	0.04*	0.07*	0.00	0.01	0.03*	0.02	0.01	0.05*	0.13*	**1.00**	*0.82**	*-0.83**
DVD	-0.11*	-0.20*	0.05*	0.00	0.00	0.03*	0.07*	0.07*	0.01	0.03*	0.02	0.01	0.01	0.08*	0.11*	0.82*	**1.00**	*-0.37**
UVD	0.11*	0.16*	-0.03*	0.00	0.01	-0.04*	0.00	-0.04*	0.00	0.00	-0.03*	-0.01	0.00	0.00	-0.11*	-0.83*	-0.38*	**1.00**

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

Table A2

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	-0.175***	[0.023]	-0.119***	[0.024]	-0.120***	[0.025]	-0.097***	[0.023]
Personal income: missing	-0.248***	[0.084]	-0.211**	[0.088]	-0.091	[0.098]	-0.020	[0.095]
-"-: £0-£4,999 per year	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: £5,000-£9,999 per year	-0.037	[0.103]	-0.014	[0.097]	-0.011	[0.105]	0.134	[0.102]
-"-: £10,000-£14,999 per year	0.073	[0.095]	0.056	[0.104]	0.058	[0.104]	0.062	[0.100]
-"-: £15,000-£19,999 per year	-0.125	[0.099]	-0.041	[0.102]	-0.030	[0.106]	0.094	[0.103]
-"-: £20,000-£24,999 per year	-0.229**	[0.099]	-0.122	[0.104]	-0.133	[0.111]	0.037	[0.106]
-"-: £25,000-£29,999 per year	-0.189*	[0.100]	-0.111	[0.107]	-0.163	[0.113]	0.073	[0.114]
-"-: £30,000-£34,999 per year	-0.319***	[0.115]	-0.166	[0.112]	-0.13	[0.116]	0.030	[0.116]
-"-: £35,000-£39,999 per year	-0.296**	[0.123]	-0.342***	[0.126]	-0.245**	[0.123]	-0.093	[0.139]
-"-: £40,000-£44,999 per year	-0.382***	[0.146]	-0.205	[0.148]	-0.387***	[0.138]	-0.092	[0.142]
-"-: £45,000-£49,999 per year	-0.254*	[0.146]	-0.102	[0.148]	-0.125	[0.160]	0.232	[0.169]
-"-: £50,000-£59,999 per year	-0.492***	[0.126]	0.024	[0.170]	-0.484***	[0.169]	-0.162	[0.147]
-"-: £60,000-£69,999 per year	-0.421**	[0.164]	-0.204	[0.268]	-0.426**	[0.178]	-0.187	[0.186]
-"-: £70,000-£99,999 per year	-0.698***	[0.151]	-0.421**	[0.207]	-0.540***	[0.180]	-0.421**	[0.208]
-"-: >£100,000 per year	-0.220	[0.267]	-0.716***	[0.190]	-0.871***	[0.219]	-0.432*	[0.235]
Education: None	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: Level 1	0.064	[0.118]	-0.155	[0.166]	0.087	[0.113]	-0.024	[0.110]
-"-: Level 2	-0.014	[0.080]	-0.151**	[0.075]	-0.216**	[0.090]	-0.088	[0.085]
-"-: Apprenticeship	0.147	[0.140]	0.307*	[0.167]	-0.276	[0.220]	-0.262	[0.171]
-"-: Level 3	0.272*	[0.141]	-0.025	[0.128]	0.122	[0.185]	0.029	[0.170]
-"-: Level 4	-0.083	[0.091]	-0.243***	[0.082]	-0.306***	[0.095]	-0.208**	[0.087]
-"-: University	-0.007	[0.086]	-0.124	[0.082]	-0.284***	[0.091]	-0.145*	[0.085]
-"-: Graduate	-0.127	[0.103]	-0.022	[0.103]	-0.222**	[0.099]	-0.074	[0.098]
Age: 15-25	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: 26-35	0.082	[0.108]	0.161	[0.108]	-0.098	[0.110]	0.024	[0.112]
-"-: 36-45	0.222**	[0.108]	0.267**	[0.111]	-0.057	[0.114]	0.153	[0.115]
-"-: 46-55	0.131	[0.109]	0.270**	[0.109]	0.041	[0.115]	0.309***	[0.116]
-"-: 56-65	0.153	[0.114]	0.422***	[0.111]	-0.037	[0.119]	0.366***	[0.123]
-"-: 66-75	0.024	[0.126]	0.373***	[0.123]	0.161	[0.136]	0.323**	[0.140]
-"-: >76	0.239	[0.164]	0.424***	[0.152]	0.066	[0.190]	0.245	[0.171]
Male	0.040	[0.042]	0.223***	[0.046]	0.135***	[0.045]	0.302***	[0.044]
Marital status: Single	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: Married/Cohabiting/Civil partnership	-0.048	[0.059]	-0.095	[0.065]	-0.009	[0.060]	0.003	[0.061]
-"-: Widowed/Divorced/Separated	-0.008	[0.078]	0.034	[0.085]	0.031	[0.080]	-0.001	[0.077]
Log(Household size)	-0.002	[0.049]	0.09	[0.055]	0.026	[0.050]	-0.023	[0.040]

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	-0.040	[0.058]	0.009	[0.060]	-0.069	[0.060]	0.069	[0.058]
Occupation: Student	-0.288**	[0.130]	-0.153	[0.141]	-0.203*	[0.111]	0.051	[0.117]
-"-: Employed	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: Inactive	-0.069	[0.073]	0.100	[0.072]	-0.015	[0.076]	0.219***	[0.072]
-"-: Unemployed	-0.015	[0.142]	0.116	[0.140]	0.399***	[0.131]	0.281**	[0.125]
-"-: Retired	-0.131**	[0.066]	-0.09	[0.059]	-0.154**	[0.067]	-0.054	[0.072]
Last work: Self-employed	-0.115*	[0.066]	-0.088	[0.065]	0.402***	[0.140]	0.263	[0.177]
-"-: Private sector	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: Public sector	-0.008	[0.047]	0.039	[0.048]	0.172	[0.130]	0.204	[0.127]
-"-: Third sector	0.063	[0.090]	0.092	[0.084]	0.424	[0.465]	-0.065	[0.451]
-"-: Other	-0.113	[0.103]	0.207**	[0.102]	0.162	[0.134]	0.095	[0.114]
-"-: Never worked	-0.109	[0.125]	0.045	[0.130]	0.141	[0.174]	0.187	[0.146]
Trade union member (current or past)	0.131***	[0.044]	0.142***	[0.047]	0.103	[0.109]	0.047	[0.112]
Ethnicity: White	{*Ref.*}		{*Ref.*}		{*Ref.*}		{*Ref.*}	
-"-: Black	-0.208	[0.165]	0.071	[0.239]	0.491	[0.750]	0.663*	[0.384]
-"-: Mixed	0.125	[0.207]	0.308	[0.228]	-0.244	[0.256]	-0.112	[0.317]
-"-: Asian	0.122	[0.137]	0.061	[0.169]	0.351	[0.229]	0.388	[0.250]
-"-: Other	-0.111	[0.168]	-0.001	[0.128]	-0.048	[0.121]	0.015	[0.137]
Country of birth: Scotland	-0.186*	[0.100]	-0.056	[0.101]	0.111*	[0.060]	0.083	[0.057]
-"-: Wales	-0.130	[0.109]	0.307*	[0.176]	0.021	[0.162]	-0.245	[0.168]
-"-: Northern Ireland	0.116	[0.180]	-0.079	[0.258]	-0.392**	[0.193]	-0.710***	[0.244]
-"-: Republic of Ireland	0.018	[0.198]	0.036	[0.167]	-0.172	[0.272]	-0.271	[0.481]
-"-: Commonwealth	0.234	[0.186]	0.037	[0.175]	-0.024	[0.144]	-0.184	[0.203]
-"-: European Union	0.098	[0.137]	0.010	[0.125]	-0.018	[0.148]	-0.396**	[0.189]
-"-: Rest of World	-0.100	[0.179]	-0.298*	[0.160]	-0.014	[0.128]	0.014	[0.162]
Home owner: Own the leasehold/freehold outright	-0.060	[0.053]	-0.154***	[0.056]	-0.121*	[0.063]	-0.105*	[0.062]
Mortgage: Buying leasehold/freehold on a mortgage	-0.049	[0.052]	-0.216***	[0.062]	-0.08	[0.059]	-0.078	[0.057]
Has experienced income shock in last year	0.170***	[0.062]	0.414***	[0.074]	0.529***	[0.081]	0.559***	[0.082]
Risk-taker: 1 (Low) - 4 (High)	-0.035	[0.033]	-0.016	[0.036]	-0.051	[0.036]	-0.056	[0.035]
Political orientation: 0 (left) - 10 (Right)	-0.186***	[0.011]	-0.195***	[0.011]	-0.220***	[0.012]	-0.238***	[0.012]
Social desirability: 0 (Low) - 4 (High)	0.005	[0.018]	-0.008	[0.019]	0.059***	[0.019]	0.037**	[0.018]
Religiousness	-0.026	[0.041]	0.025	[0.043]	0.013	[0.042]	0.057	[0.043]
BIG5: Agreeableness	0.034***	[0.012]	0.014	[0.013]	0.027**	[0.014]	0.022	[0.014]
-"-: Conscientiousness	-0.010	[0.012]	-0.008	[0.013]	-0.019	[0.013]	-0.010	[0.013]
-"-: Extraversion	-0.022**	[0.010]	0.003	[0.009]	0.008	[0.010]	-0.004	[0.010]
-"-: Neuroticism	0.005	[0.010]	0.022**	[0.010]	0.020*	[0.011]	0.032***	[0.011]
-"-: Openness	0.001	[0.013]	0.005	[0.013]	0.045***	[0.014]	0.038***	[0.014]
Urban region	-0.051	[0.043]	-0.006	[0.047]	0.063	[0.048]	0.131***	[0.048]
Region: Northeast	-0.029	[0.095]	-0.001	[0.112]	–		–	

Table A3 continued in next page

Table A3 continued from last page

	RD_1^{GB}		RD_2^{GB}		$RD_1^{Scotland}$		$RD_2^{Scotland}$	
-"-: Northwest	0.025	[0.075]	0.009	[0.078]	–		–	
-"-: Yorkshire & Humber	0.170**	[0.082]	0.030	[0.085]	–		–	
-"-: East Midlands	-0.091	[0.089]	0.012	[0.090]	–		–	
-"-: West Midlands	-0.024	[0.082]	-0.127	[0.086]	–		–	
-"-: East England	-0.036	[0.081]	-0.160*	[0.084]	–		–	
-"-: Greater London	{*Ref.*}		{*Ref.*}		–		–	
-"-: South East	-0.043	[0.075]	-0.034	[0.075]	–		–	
-"-: South West	0.091	[0.084]	-0.106	[0.102]	–		–	
-"-: Wales	-0.504***	[0.162]	-0.157	[0.136]	–		–	
-"-: Scotland	-0.193	[0.153]	-0.140	[0.135]	–		–	
Region: Borders	–		–		0.249	[0.286]	0.356	[0.338]
-"-: Central	–		–		0.300	[0.266]	0.174	[0.322]
-"-: Dumfries and Galloway	–		–		0.334	[0.293]	0.263	[0.340]
-"-: Fife	–		–		0.293	[0.268]	0.272	[0.322]
-"-: Grampian	–		–		0.160	[0.265]	0.075	[0.322]
-"-: Highland	–		–		0.344	[0.270]	0.350	[0.325]
-"-: Lothian	–		–		0.294	[0.259]	0.297	[0.317]
-"-: Orkney	–		–		0.289	[0.401]	0.399	[0.342]
-"-: Strathclyde	–		–		0.422	[0.259]	0.326	[0.316]
-"-: Tayside	–		–		0.298	[0.269]	0.304	[0.322]
-"-: Western Isles	–		–		0.696*	[0.419]	-0.048	[0.433]
-"-: Rest of Great Britain	–		–		{*Ref.*}		{*Ref.*}	
Cut-off point 1	-2.934***	[0.234]	-2.875***	[0.256]	-2.443***	[0.336]	-2.338***	[0.408]
-"-: 2	-2.731***	[0.235]	-1.827***	[0.250]	-2.297***	[0.335]	-1.376***	[0.407]
-"-: 3	-2.437***	[0.235]	-1.047***	[0.248]	-1.971***	[0.337]	-0.630	[0.406]
-"-: 4	-2.027***	[0.234]	0.039	[0.247]	-1.566***	[0.335]	0.402	[0.405]
-"-: 5	-1.792***	[0.234]	–		-1.331***	[0.336]	–	
-"-: 6	-1.281***	[0.232]	–		-0.892***	[0.336]	–	
-"-: 7	-1.041***	[0.232]	–		-0.639*	[0.336]	–	
-"-: 8	-0.702***	[0.231]	–		-0.302	[0.336]	–	
-"-: 9	-0.437*	[0.231]	–		-0.030	[0.336]	–	
-"-: 10	-0.234	[0.232]	–		0.170	[0.336]	–	
No. of Observations	4,895		5,101		4,989		4,986	
Pseudo R^2	0.056		0.094		0.067		0.097	
Log-likelihood	-12,448.5		-7,989.9		-5,143.2		-3,000.4	
LR $\chi 2$	685.61***		812.19***		886.08***		852.13***	

Notes: * p<0.10, ** p<0.05, *** p<0.01