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## Socio-economic Groups and Saving

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## Executive Summary

Using the ONS Wealth and Assets Survey data, we have identified two distinct sets of socio-economic groups, one based upon whether the household has any cash savings and the other based upon whether the household has at least £1000 of cash savings. Our analysis determines the key characteristics of the households within each group and not only indicates that the more affluent groups tend to be more likely to have savings (as you would expect) but quantifies the different levels of saving for each group.

Focussing on the set of groups defined by whether the household has at least £1000 of cash savings, we have also analysed responses to a number of attitudinal questions in the Wealth and Assets Survey. Of those households that have not saved in the last two years, there are clear differences between the groups in terms of the reasons they give for not saving, though the differences between groups are less pronounced when it comes to the other attitudinal questions.

## Introduction

Select were pleased to be asked to undertake a new analysis of the Wealth and Assets Survey (WAS) data by Joseph Surtees, Senior Public Policy Advocate, on behalf of StepChange Debt Charity.

Select previously carried out an analysis of the WAS data on behalf of StepChange in November 2014. That analysis found that cash savings are a highly statistically significant predictor for household problem debt, with the risk of problem debt estimated to be lower for households with higher cash savings. Taking the effect of other significant risk factors into account, for a household with an average net annual (regular) income of £25,000, the odds of problem debt was estimated to be approximately 44% lower if the household has cash savings of £1,000. Increasing household cash savings to a minimum of £1,000 (for those households with lower savings currently) reduces the number of households estimated to be at risk of problem debt by approximately 500,000 homes (to 2.8 million).

This project builds on the previous analysis by establishing which socio-economic groups in Great Britain have little or no cash savings and exploring the attitudes of those groups towards personal finance. The aims of the project are:

1. To partition the population of households in Great Britain into groups defined by socio-economic factors and quantify the corresponding proportions of households that save, where saving is defined in two ways:
  - a. having at least some cash savings;
  - b. having at least £1000 of cash savings.
2. To estimate the distributions of responses to a number of attitudinal questions in the WAS questionnaire, broken down by the groups identified in (1)

In this report we provide a description of the data and methods we used in the analysis, followed by a summary of the results.

## Data

The analysis used data from the Wealth and Assets Survey (WAS), a detailed, longitudinal survey of private households in Great Britain conducted by the Social Survey Division of the Office for National

Statistics (ONS). The WAS provides considerable information on the wealth of households and individuals, including the level, distribution, nature and type of assets (including savings) and debts of all types as well as attitudes to financial planning, saving and financial advice. Private households in Great Britain were sampled for the survey (meaning that people in residential institutions, such as retirement homes, nursing homes, prisons, barracks or university halls of residence, and also homeless people were not included) and data were collected via face-to-face interviews.

Data from the most recent wave (wave 3) of the WAS, which were collected between July 2010 and June 2012, were obtained from the UK Data Archive (End User Licence version, for non-commercial use; 16 October 2014, 3<sup>rd</sup> Edition) (ONS, 2014). This wave of the WAS has responses from around 21,000 households. The WAS questionnaire was divided into two parts, one for the household and the other for each individual within that household. All adults aged 16 years and over (excluding those aged 16-18 currently in full-time education) were interviewed in each responding household. The household schedule was completed by one person in the household and predominantly collected household level information such as the number, demographics and relationship of individuals to each other, as well as information about the ownership, value and mortgages on the residence and other household assets. The individual schedule was given to each adult in the household and asked questions about economic status, education and employment, business assets, benefits and tax credits, saving attitudes and behaviour, attitudes to debt, insolvency, major items of expenditure, retirement, attitudes to saving for retirement, pensions, financial assets, non-mortgage debt, and investments and other income.

In order to answer the questions posed in the project brief at the requested household-level, any individual person-level variables of interest first needed to be aggregated to the household level prior to analysis. The WAS identifies a Household Reference Person (HRP) in each household, according to the ONS definition. This is an individual person within the household who is identified as a reference point for producing further derived statistics and for characterising a whole household according to characteristics of the chosen reference person. In households with more than one adult, the most economically active person is chosen (in the priority order: full-time job, part-time job, unemployed, retired, other), if all adults have the same economic activity then the eldest person is selected.

### **Cash Savings**

The total household cash savings were calculated for households in the WAS by summing the household value of cash ISAs (not including investment ISAs which includes stocks, shares, life insurance, corporate bonds and PEPs), informal savings (e.g., cash or loose change, given to someone else to look after and save for you, etc.), current accounts in credit and savings accounts (e.g., Savings or deposit account with a bank or building society, National Savings Easy Access [Ordinary] Account, etc.).

### **Socio-economic factors**

We considered 10 socio-economic factors, suggested to us by StepChange, for defining subgroups of households:

- National Statistics Socio-Economic Classification (Nssec) of HRP or partner
- Employment Status of HRP or partner

- Number of dependent children
- De facto marital status of HRP/partner
- Tenure
- Type of household (e.g. couple over state pension age, lone parent with dependent children etc.)
- Household net annual (regular) income
- Age of HRP or partner (grouped into 9 bands)
- HRP or partner has longstanding illness, disability or infirmity
- Whether there are any dependent children under the age of 5 in household

### Attitudinal questions

Responses to a number of attitudinal questions are considered in the second part of the analysis. The survey questions considered are:

1. (To individuals that have previously stated that they have not saved any income during the last two years.) What were your reasons for not saving in the last two years? (9 possible reasons are offered and the respondent is asked to tick all that apply.)
2. How strongly do you agree or disagree with the statement “I prefer to buy things on credit rather than save up and wait”? (Level of agreement is measured on a 5-point scale.)
3. How strongly do you agree or disagree with the statement “I am very organised when it comes to managing my money day to day”? (Level of agreement is measured on a 4-point scale.)
4. If you had a choice of receiving £1000 today or £1100 next year, which would you choose? (2 options are available.)

These attitudinal questions are posed to individuals in the household. To aggregate question (1) to a household level, we combined all the reasons for not saving given by the HRP and their partner. To aggregate questions (2)-(4) to a household level, for each question we excluded households where the HRP and their partner gave inconsistent answers. A consistent answer was taken to be an exact match, or where one of the two answers is “I don’t know” or “I have no opinion”. When one of the two answers is “I don’t know” or “I have no opinion”, the other answer is taken as the household response. Excluding households with inconsistent answers reduces the sample size to between 8,500 and 11,000, depending on the question (49-56% of the original sample size).

## Methods

### Partitioning the population with classification trees

We partitioned the population into groups defined by socio-economic factors by fitting classification trees. The aim of a classification tree is to partition the data in such a way as to maximise the separation between the groups according to a given outcome. We fitted two classification trees: one based upon whether the household has any cash savings as the outcome, and the other based upon whether the household has at least £1000 cash savings as the outcome.

A classification tree is generated by a recursive binary partitioning of the data. A binary split is defined using one of the candidate variables (which in this instance are the socio-economic factors). If the variable is continuous then the split is defined by a threshold, with all cases greater than the

threshold going into one class and the rest going in the other class. If the variable is categorical then the split is defined by choosing a subset of categories, with all cases in those categories going into one class and the rest going in the other class.

Various algorithms are available for generating trees, each using different criteria for choosing the optimal split at any given stage in the tree. We used an algorithm that views the tree as a probability model and measures the value of a split in terms of the likelihood of observing the data given the model. Introducing an additional split will increase the likelihood, and the split that results in the greatest increase in the likelihood is the optimal choice. A stopping rule is applied to determine when the increase in likelihood is insufficient to warrant a split and therefore controls the final number of groups (known as “leaves”) defined by the tree.

The WAS data includes sample weights that are used to account for the sampling design and non-response in the survey in order to ensure that the data are representative of households in Great Britain. We applied the sample weights throughout the fitting of classification trees, so that choices of splits were based on unbiased population estimates of the outcomes (proportions of households with any cash savings or at least £1000 cash savings).

### **Estimating the distribution of attitudes in the population groups**

For the second part of the analysis we focussed on the partition defined by the tree based on the outcome of whether the household has at least £1000 savings. For each group we estimated the distribution of responses to the four attitudinal questions described in the Data Section.

We applied the sample weights in the analysis so that the resulting distributions are unbiased estimates for the population of households Great Britain.

## **Results**

The fitted classification trees are displayed in Figure 1 (any cash savings) and Figure 2 (cash savings of £1000 or more). The groups are represented by branch endings at the bottom of the diagram indicated by numbers coloured in red. These numbers indicate the estimated population proportion of households with any cash savings or cash savings of at least £1000 within the corresponding group. To understand the definition of a group, we follow the branches up to the top, noting the blue text at each split as we go. The blue text describes the class belonging to the left-hand branch of the split. The categories of categorical variables are represented by integers, which can be interpreted by referring to the key in Table 1.

For example, the far left group of Figure 1 has the number 0.851, meaning that we estimate that 85.1% of households in that group have some cash savings. Following the branches up from that group, we find the following sequence of splits:

- Household net income less than £23,350
- Household net income less than £31,450
- Tenure categories 4 and 5 (i.e., renting)
- Number of dependent children 1 or fewer
- Number of dependent children 2 or fewer

Piecing together the information from the splits, we find that the group comprises households with household net income less than £23,350 that are renting and have one or fewer children.

Table 2 and Table 3 give the group definitions and corresponding proportions in tabular form. The rows of the tables are ordered by the proportion of households with savings, with the group with the lowest proportion of savers at the top. These tables tell us, for example, that the group with the lowest proportion of households with at least £1000 cash savings comprises households that are renting or squatting and have household net income of less than £35,050.

Figure 3 and Figure 4 show the distribution of households between the groups. Amongst the groups defined by whether they have any cash savings, the largest is group 9, comprising households that have one or fewer dependent children, own or part-own their house and have net household income greater than £17,850. This group accounts for 43% of the total population and the proportion of households within this group with cash savings is estimated to be 98.5%. Amongst the groups defined by whether they have cash savings of at least £1000, the largest is group 1, comprising households with household net income less than £23,350 that are renting and have one or fewer children. This group accounts for 26% of the population and the proportion of households within this group that have at least £1000 savings is estimated to be 36.9%.

Only four of the 10 candidate socio-economic variables appear in the two trees. The fact that other variables have not been selected by the tree algorithm means that splitting on them does not substantially improve the separation between the groups. To give an idea of the differences in the proportions of households with cash savings between the various categories of the variables not included in the trees, we have supplied tables summarising this information in a separate Excel file. These tables must be interpreted cautiously as they will indicate the effects of the variables individually without controlling for other variables. It is possible that a variable could appear to have a strong effect on propensity to save, but in fact it is confounded with another variable. If that other variable was taken into account, then the effect might be less pronounced, or even work in the opposite direction. To get round this problem would require fitting a model that estimates the effects of all the variables simultaneously, which is beyond the scope of this project.

### **Distributions of attitudes between the population groups**

In this section we describe the distributions of attitudes amongst socio-economic groups identified in the last section. In accordance with instructions from StepChange, we have only analysed the attitudes of the groups defined by whether they have at least £1000 cash savings, i.e., as described in Figure 2 and Table 3.

Figure 6 shows the percentage of households in each group that have saved any income in the last two years. As expected, the groups with higher proportions of households with at least £1000 cash savings also have higher proportions of households that have saved in the last 2 years. For those households that have not saved in the last two years, Figure 6 shows the percentage giving each of the nine possible reasons, broken down by group. The panels in Figure 6 are ordered by the total percentage of all non-saving households giving that reason, going left to right and top to bottom. There are clear differences between the groups in terms of the frequency with which they give the various reasons. For example, for the most common reason, “Cannot afford to”, there is a clear

trend with the less affluent groups tending to cite this reason more often than the more affluent groups.

Figures Figure 7, Figure 8Figure 9 display the estimated distributions of opinions on the remaining attitudinal questions, broken down by group. For the question about buying on credit (Figure 7), there is little difference between the groups, with most households saying that they prefer to save up and wait rather than buying on credit. All of the groups have more households saying that they would prefer to receive £1000 today than £1100 next year (Figure 8), but there is a gentle trend with the less affluent groups tending to express this preference more frequently than the more affluent groups. Most people believe they are very organised when it comes to managing money day to day (Figure 9), and there is little difference between the groups with at least 80% in each group agreeing that they are very organised.

## Tables and Figures

Tenure	
1	Own it outright
2	Buying with mortgage
3	Part rent/part mortgage
4	Rent it
5	Rent-free
6	Squatting
Household type	
1	Single person over state pension age (SPA)
2	Single person below SPA
3	Couple over SPA
4	Couple below SPA
5	Couple, one over one below SPA
6	Couple and dependent children
7	Couple and non-dependent children only
8	Lone parent and dependent children
9	Lone parent and non-dependent children only
10	More than 1 family, other household types

Table 1: Key for the categorical variables in the trees

Group number	Number of dependent children	Tenure	Household net income	Household type	Proportion with cash savings
1	0 or 1	4, 5	$x < 23350$		0.851
2	1		$x < 33250$		0.869
3	3 or more				0.898
4	0 or 1	1, 2, 3	$x < 17850$	2, 4, 5, 6, 8, 9	0.920
5	0 or 1	4, 5	$23350 < x < 31450$		0.953
6	$1.5 < x < 2.5$		$33250 < x < 46750$		0.957
7	0 or 1	4, 5	$31450 < x$		0.966
8	0 or 1	1, 2, 3	$x < 17850$	1, 3, 7, 10	0.983
9	0 or 1	1, 2, 3	$x > 17850$		0.985
10	2		$X > 46750$		0.985

Table 2: Classification tree groups for the outcome of whether the household has any cash savings. See Table 1 for household type and tenure definitions.

Group number	Tenure	Household net income	Number of dependent children	Proportion with savings $\geq$ £1000
1	4, 6	$x < 35050$		0.369
2	2, 5	$x < 17250$	0 or 1	0.587
3	1, 2, 3, 5	$x < 51250$	2 or more	0.661
4	2, 3, 5	$17250 < x < 27650$	0 or 1	0.681
5	4, 6	$35050 < x$		0.697
6	2, 3	$27650 < x < 62650$	0 or 1	0.841
7	1, 3	$x < 17250$	0 or 1	0.850
8	1, 2, 3, 5	$51250 < x$	0 or 1	0.895
9	1	$17250 < x < 27650$	0 or 1	0.922
10	1, 2, 3, 5	$62650 < x < 78500$	0 or 1	0.946
11	1, 5	$27650 < x < 62650$	0 or 1	0.965
12	1, 2, 3, 5	$x > 78500$	0 or 1	0.965

Table 3: Classification tree groups for the outcome of whether the household has at least £1000 cash savings. See Table 1 for tenure definitions.

**Does the household have any cash savings?**

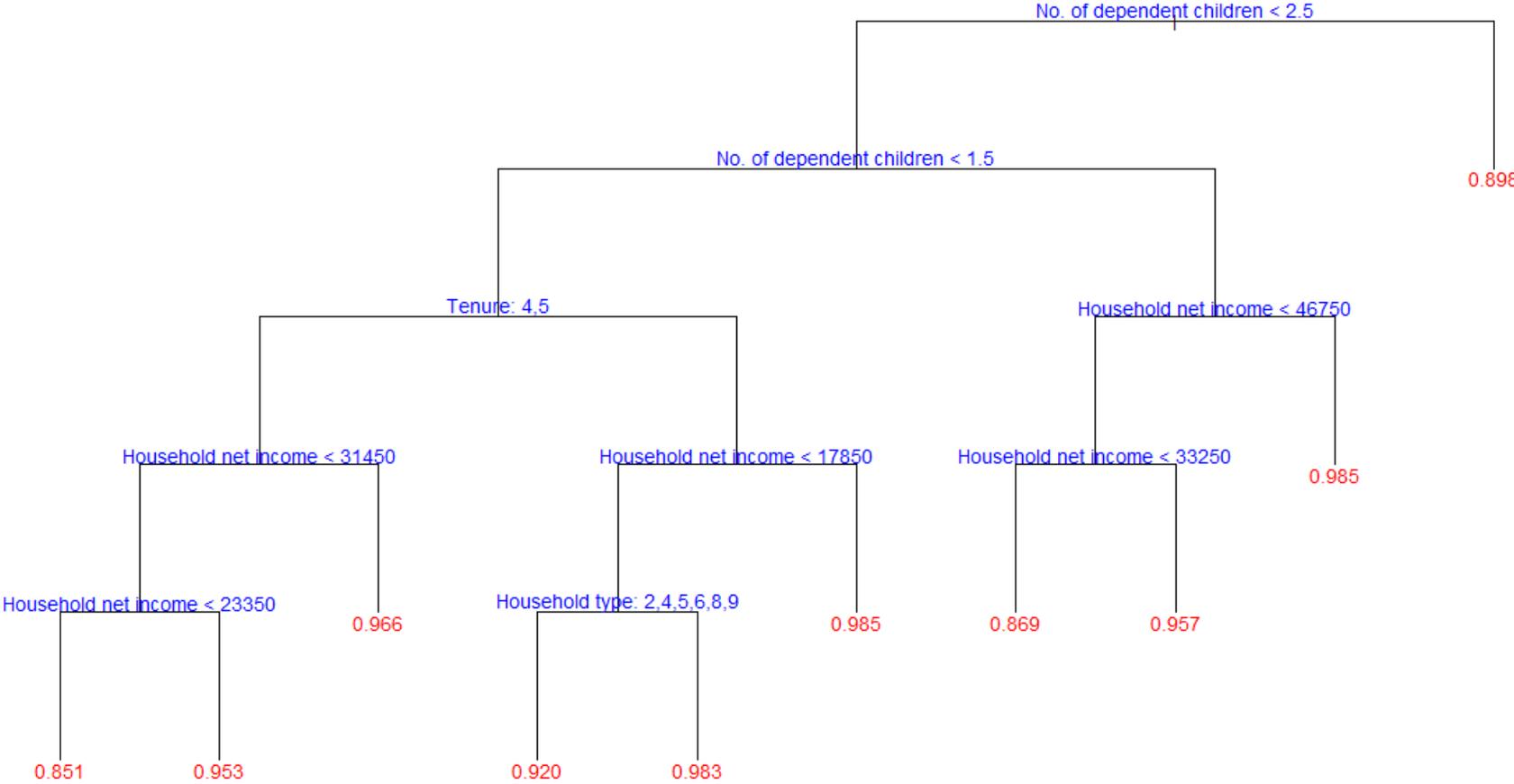


Figure 1: Classification tree for the outcome of whether the household has any cash savings. See Table 1 for the tenure and household type definitions.

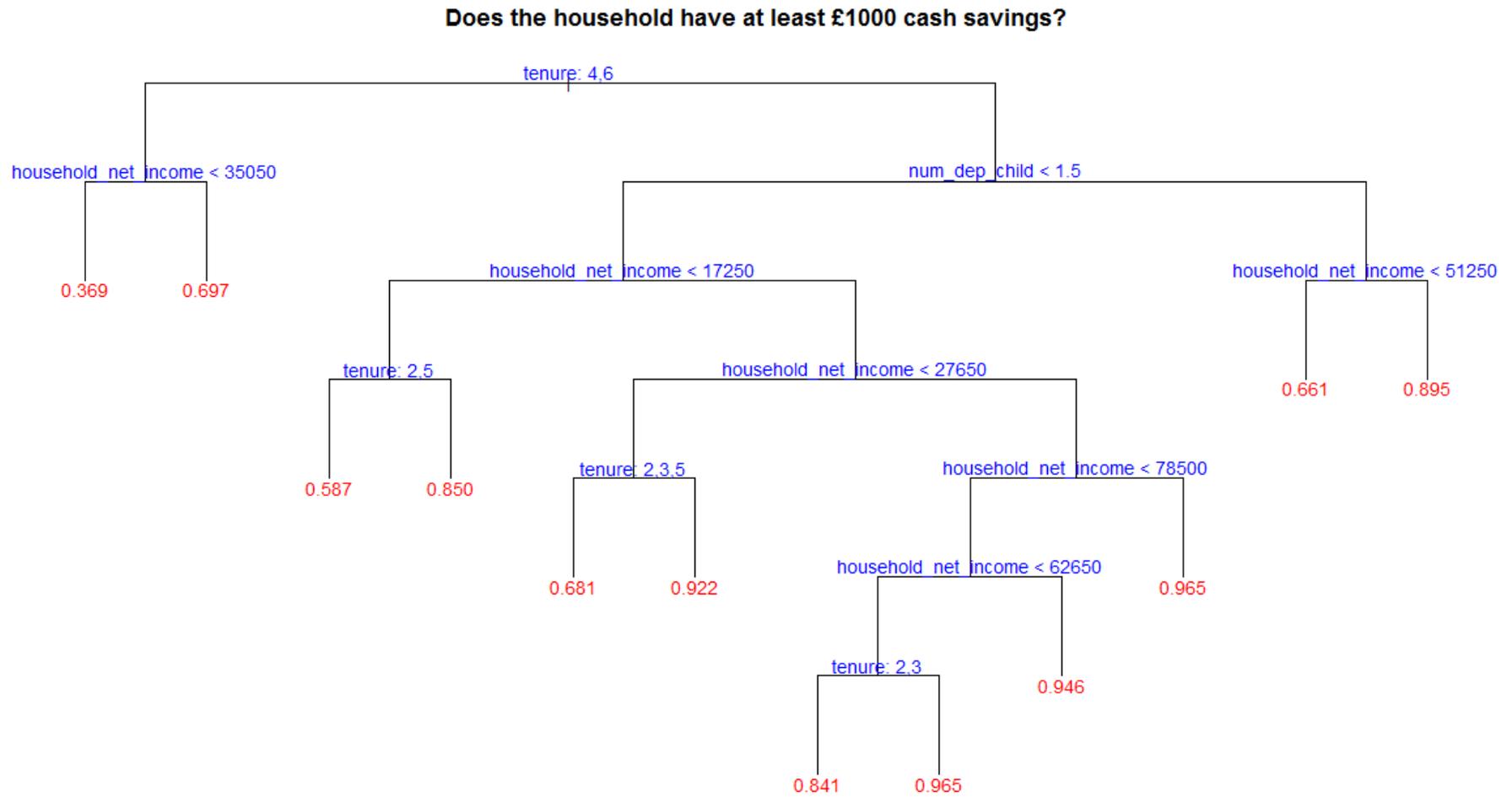
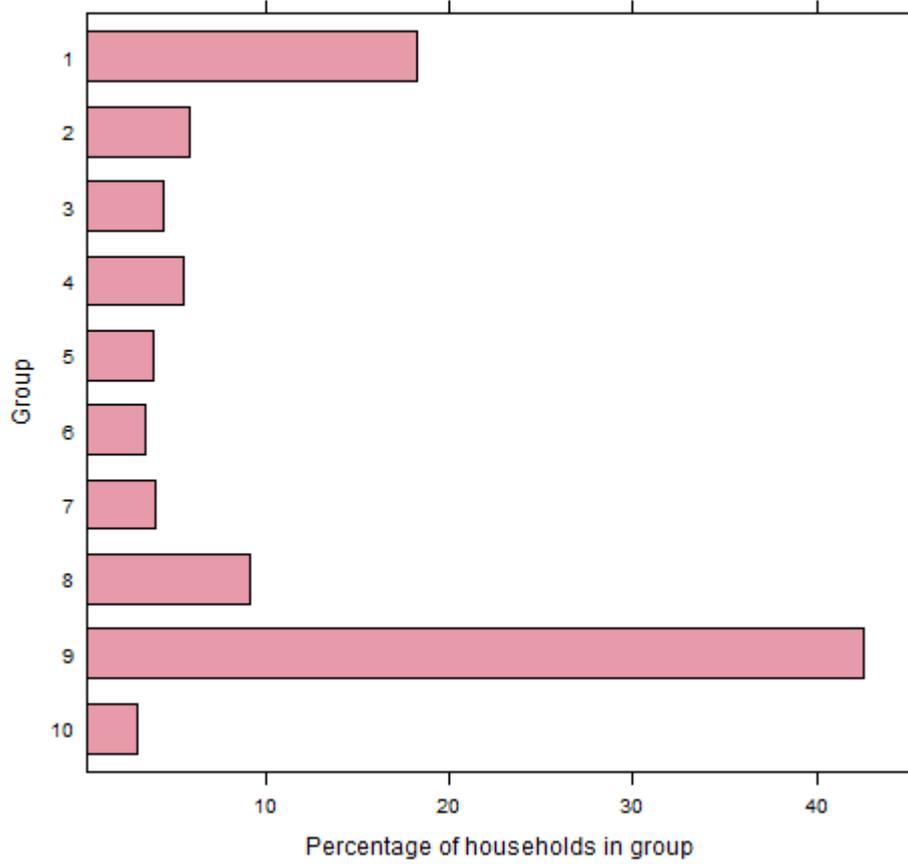


Figure 2: Classification tree for the outcome of whether the household has at least £1000 cash savings. See Table 1 for the tenure and household type definitions.

**Groups defined by "any cash savings"**



**Figure 3: The distribution of groups defined by whether they have any cash savings. The group numbers correspond to those in Table 2.**

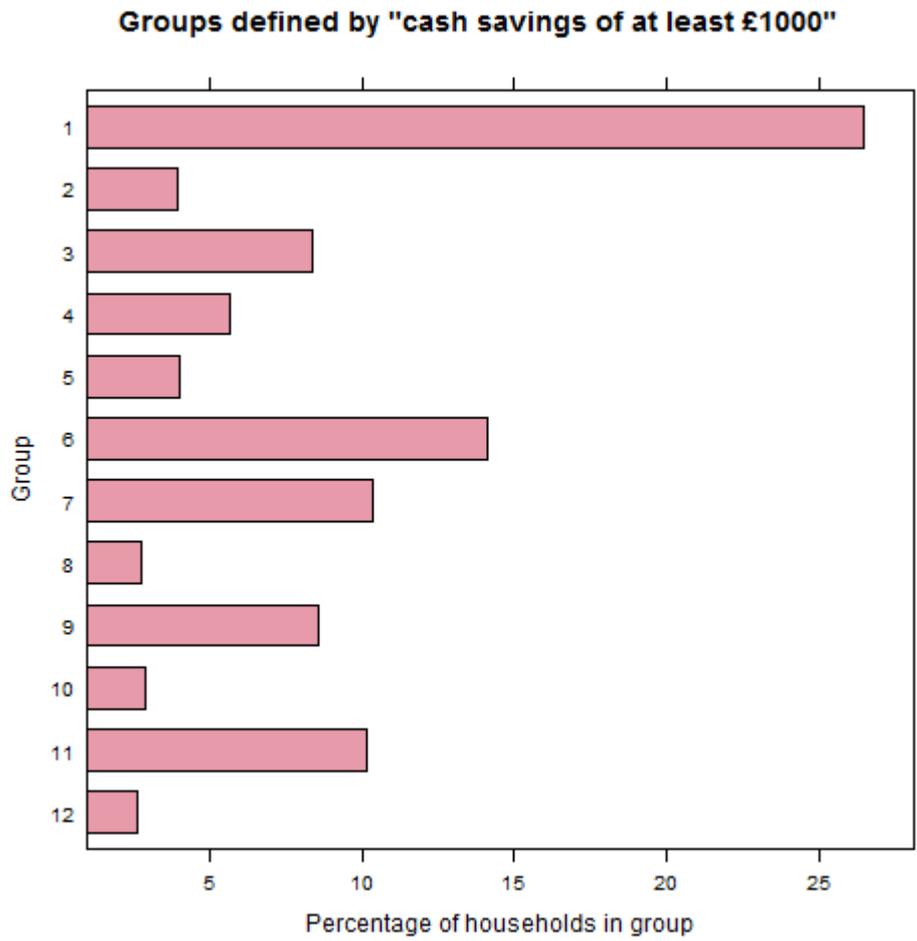


Figure 4: The distribution of groups defined by whether they have cash savings of at least £1000. The group numbers correspond to those in Table 3.

### Have you saved any income in the last 2 years?

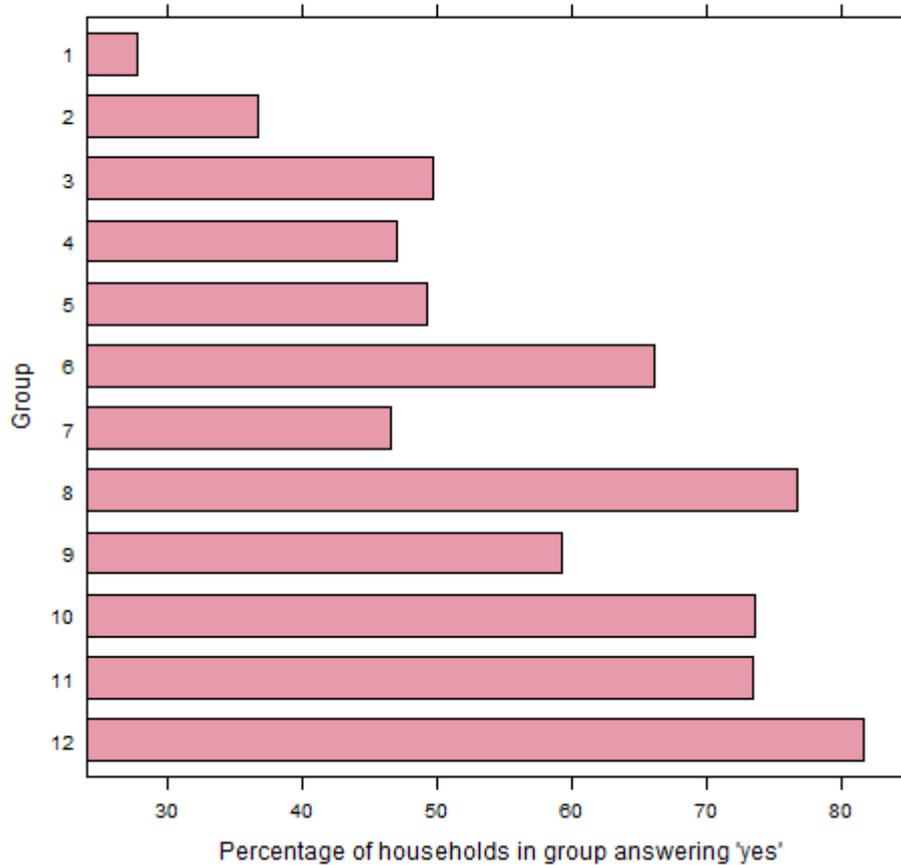


Figure 5: The percentage of households in each group that have saved any income in the last two years. The group numbers correspond to those in Table 3.

### What were your reasons for not saving in the last two years?

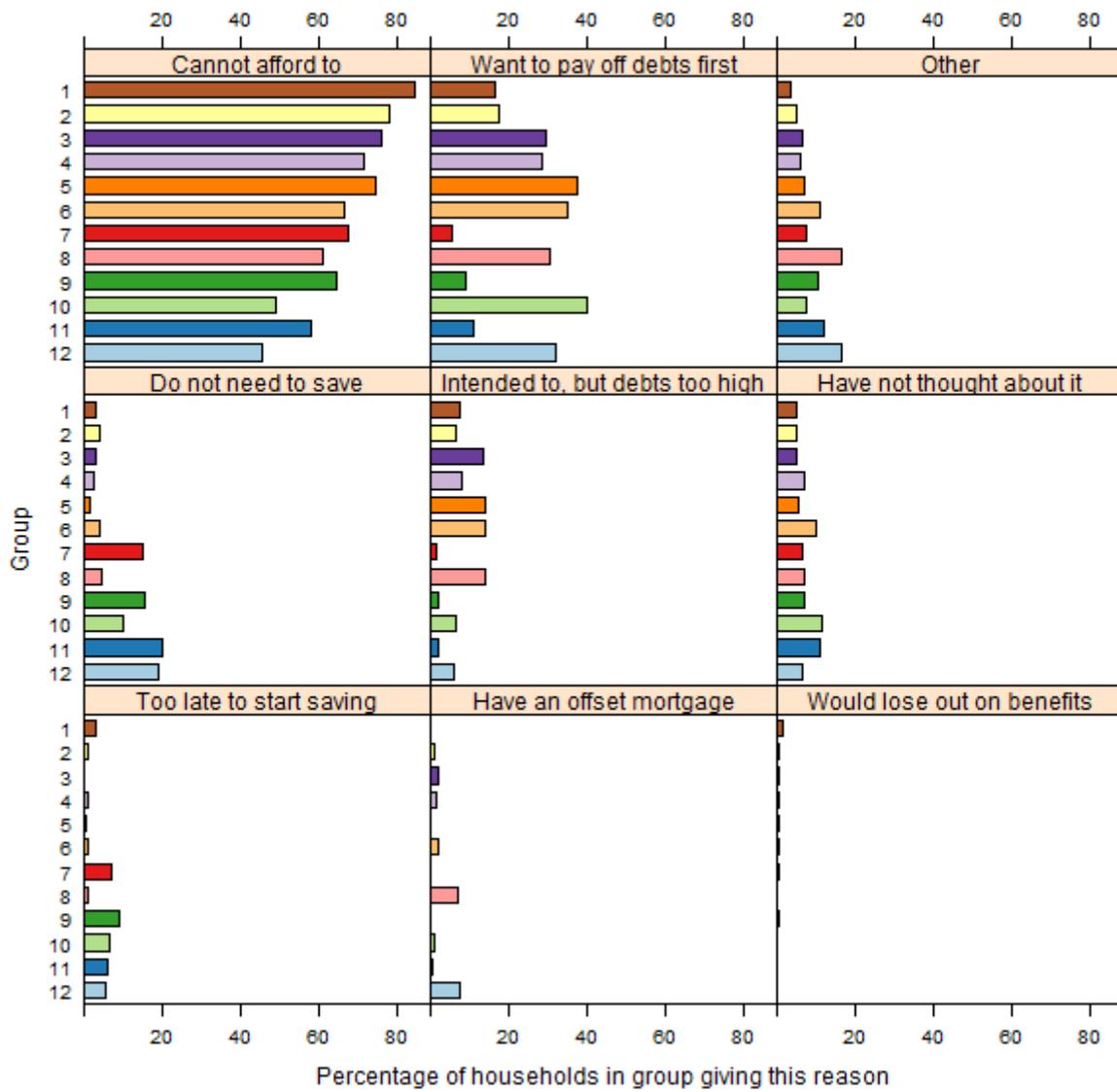


Figure 6: The percentage of households that have not saved in the last two years giving each of the possible reasons, broken down by group. The group numbers correspond to those in Table 3.

### I prefer to buy things on credit rather than save up and wait

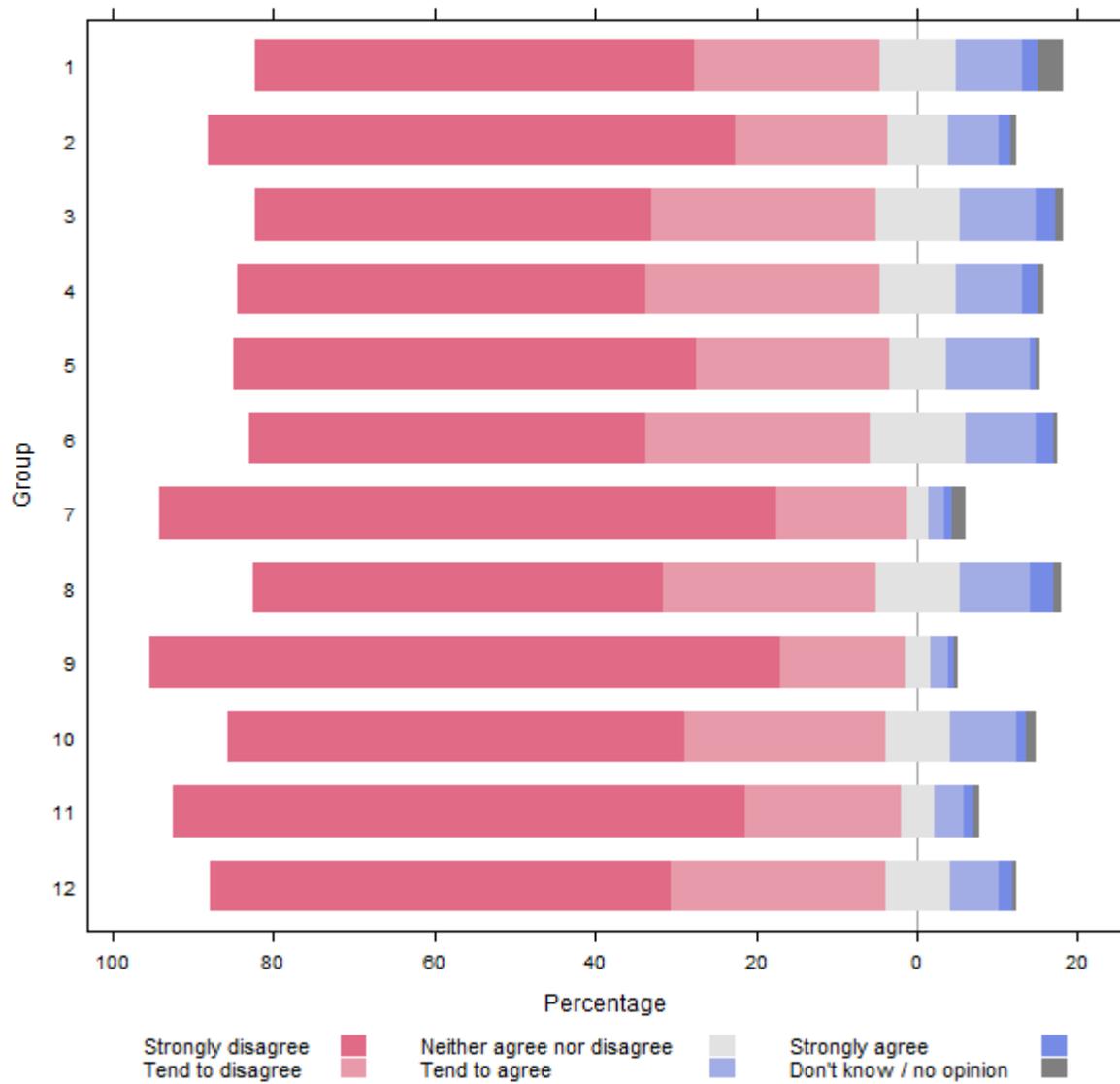


Figure 7: Opinion on buying on credit. The group numbers correspond to those in Table 3.

**If you had a choice of receiving £1000 today or £1100 next year, which would you choose?**

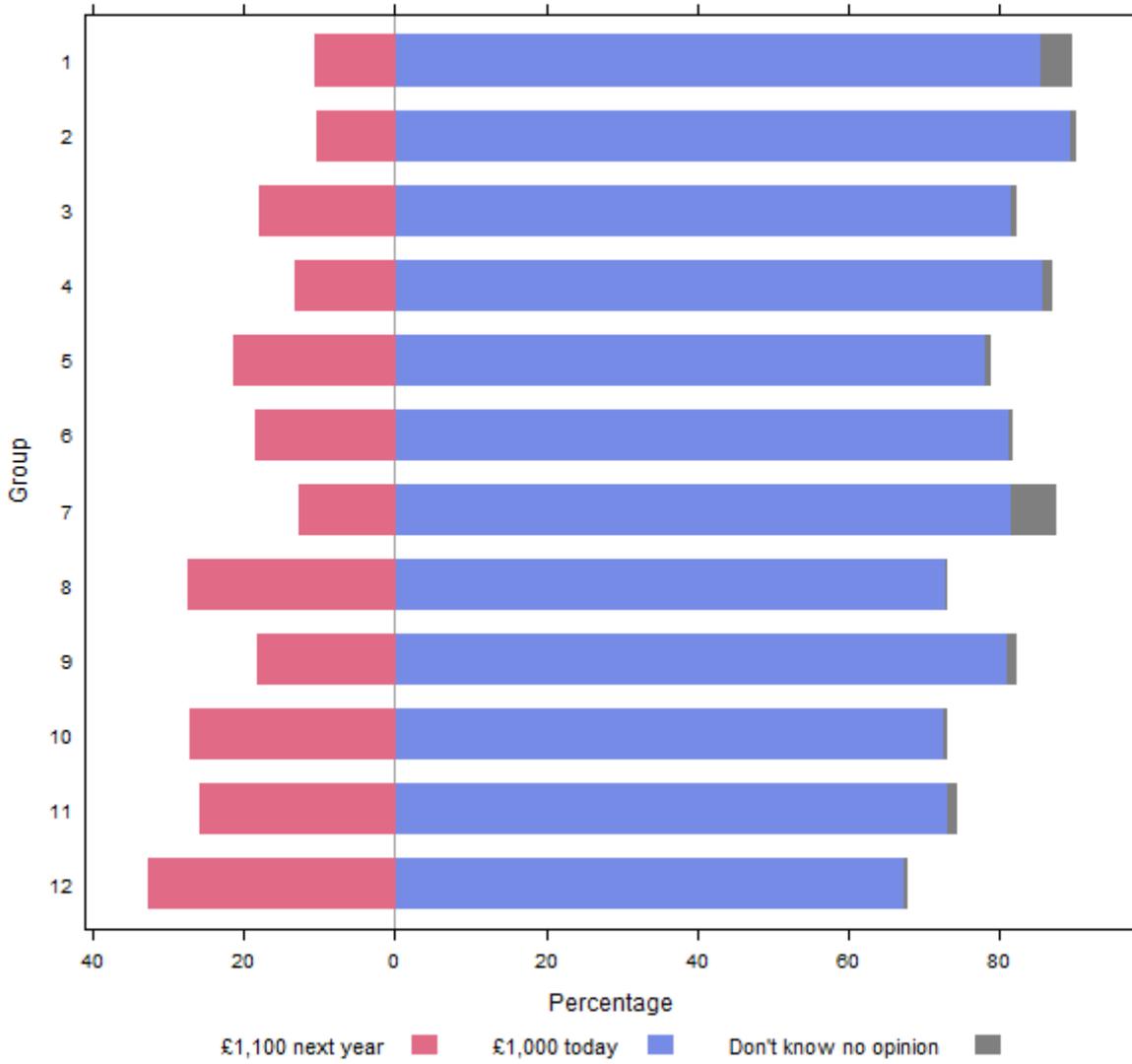


Figure 8: Opinion on receiving £1000 today or £1100 next year. The group numbers correspond to those in Table 3.

I am very organised when it comes to managing my money day to day

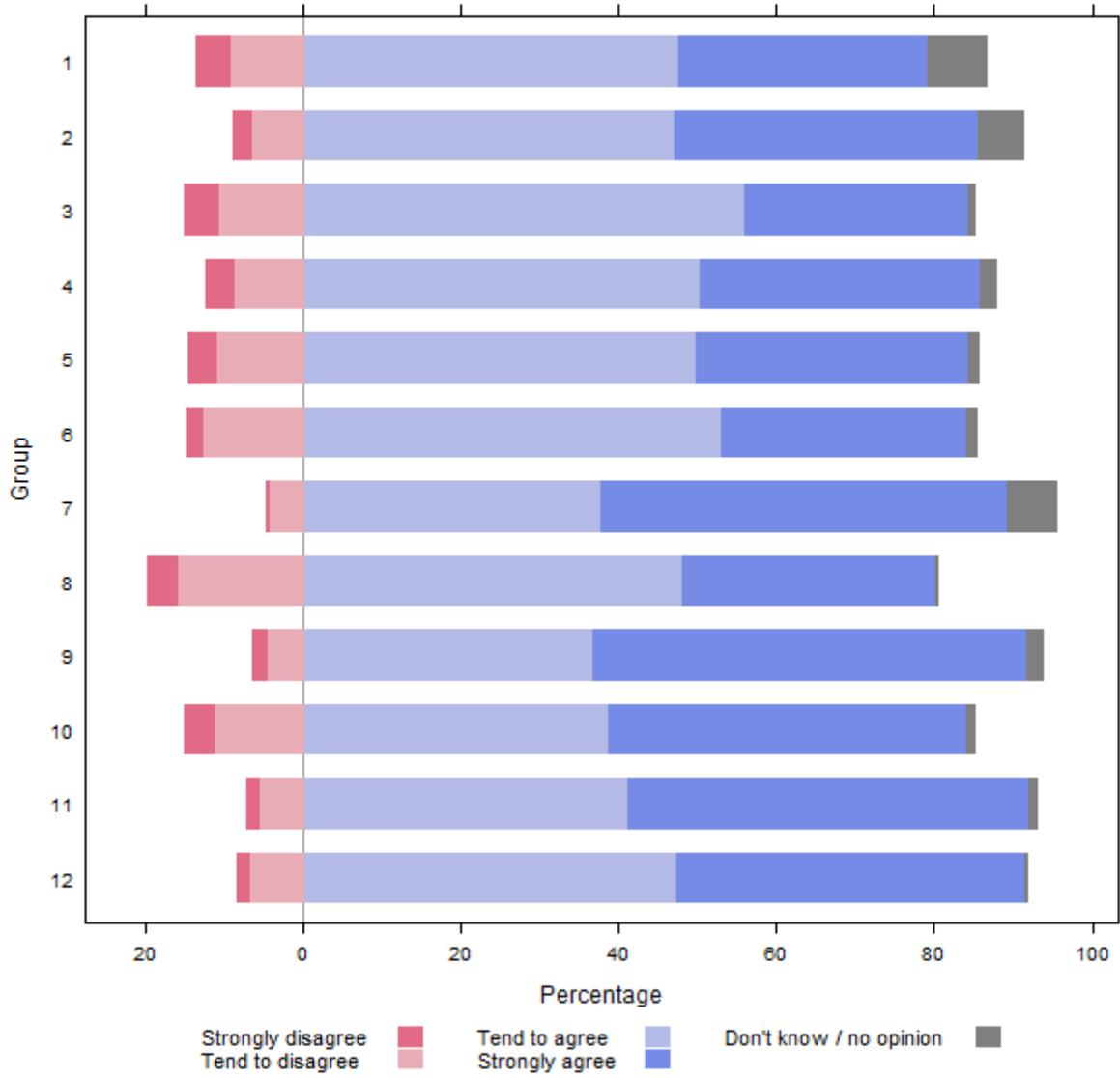


Figure 9: Opinion on money management. The group numbers correspond to those in Table 3.