Savings goals and wealth allocation in household financial portfolios

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Abstract

We investigate how savings goals relate to wealth allocation and how this relationship is moderated by financial advice and numerical ability. Using panel data from a large household survey we find that as the number and the time horizon of savings goals increases, portfolios shift from safe assets to both fairly safe assets and risky assets. We also find that households with access to multiple sources of financial advice and independent financial advice hold more fairly safe and risky assets and that independent financial advice enhances the influence of savings goals on wealth allocation to fairly safe and risky assets. Overall we find that the possession of savings goals is associated with long term saving activity, and this is particularly evident for those with low levels of numerical ability. By enabling the formation of savings goals, the financial planning process can facilitate long-term investment in risky assets.

JEL Codes: D10; D14; D15; G11; G41.

Keywords: mental accounting, savings goals, wealth allocation, financial advice, numerical ability, financial goals, household portfolios.

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1. Introduction

The setting of goals is part of everyday life and helps with achievement in areas as diverse as learning, health and organizational performance, as well as achievement of financial wellbeing. In fact, when deciding how to invest savings, clarification of personal consumption goals is identified as central to the financial planning process by the Financial Planning Standards Board and its affiliated professional societies around the world.[1] Indeed, goal-setting theory (e.g. Locke and Latham, 1990, 2002) focuses on the question of why the setting of goals enables some individuals to perform tasks better than others. For instance, setting specific goals increases commitment to the goals (Gómez-Miñambres, 2012) and also enhances self-control, thereby increasing the likelihood that goals will be achieved (Baumeister, 2002). In the context of behavioral portfolio theory, households view their portfolios as a pyramid of assets, where each layer corresponds to a specific savings goal and where attitudes toward risk vary across the layers (Shefrin and Statman, 2000). Our study explores how the number, time horizon, and type of household savings goals (also commonly referred to as financial goals) affects the allocation of savings among asset classes and how this relationship is moderated by financial advice and numerical ability.

When allocating savings to asset classes, households' investment portfolios do not appear to coincide with the predictions of portfolio theory as they are often under diversified and underinvested in stocks, despite the long-term risk premium available from stock market investments (Mehra and Prescott, 1985; Campbell, 2006). This is despite clear evidence of the long-term benefits of investing in riskier assets, demonstrated by the historical returns achieved by stocks, bonds and bills in relation to inflation and to each other (Dimson et al., 2002). In particular, low stock market participation has persisted despite the growth of stocks held

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[1] The Financial Planning Standards Board Ltd is a non-profit association that operates certification and education programs for financial planning organizations internationally. As such it oversees regional member organisations responsible for awarding the professional Certified Financial Planner (CFP) designation, such as the Certified Financial Planner Board of Standards in the U.S. and, in the U.K., the Chartered Institute for Securities and Investments.

indirectly through collective vehicles such as mutual funds (Haliassos and Bertaut, 1995). One reason for low levels of household participation in the stock market is a general lack of trust in others (Guiso et al., 2008; Changwony et al., 2015). More specifically, revelation of corporate fraud undermines trust in the stock market (Gianetti and Wang, 2016). Low stock market participation is especially concerning at a time when individuals bear more responsibility for investing their money (Campbell et al., 2011).

When households make choices between saving and immediate consumption the justification for their decisions depends upon how the information they use is mentally framed. Specifically, households frame their portfolios as collections of mental accounts, each devoted to a separate savings goal (Thaler, 1985; Shefrin and Statman, 2000; Pan and Statman, 2012). Saving activity motivated by multiple consumption goals arguably results in more money being saved as the mental accounts act as mechanisms to control immediate consumption by putting money off-limits (Shefrin and Thaler, 1988). The conscious process of goal formation also facilitates engagement with the financial education and planning processes associated with effective saving behavior (Ameriks et al., 2003, 2007). Furthermore, knowledge of investors' financial goals helps investment advisors to construct portfolios that better meet their clients' needs (Das et al., 2011).

In the context of our study, individual savings goals represent pre-commitments of funds to attain specific financial objectives. Savings invested in risky assets (stocks and bonds) are (mentally) tied up for a given period of time and are unavailable for current consumption. Increasing the number of savings goals (mental accounts) serves to mitigate the problem of self-control by making savings less accessible for immediate consumption, thereby enabling households to minimize their vulnerability to impulsive spending (Gathergood and Weber, 2014). Households with established goals are less likely to indulge in impulsive spending and

so are better able to manage their wealth and more likely to have higher net wealth positions (Baumeister, 2002). Furthermore, we argue that the identification of multiple savings goals is indicative of a propensity to plan, which has been identified by Ameriks et al. (2003) as another means of achieving self-control. They suggest that planning activity generates information about asset returns which reduces subjective uncertainty about investing in stocks and bonds, thereby increasing the likelihood of investing in these risky assets.

We contribute to the literature in several ways. First, we build on an emerging literature that links savings goals with households' financial decisions, although the findings of this literature are mixed (e.g., Soman and Cheema, 2004; Shum and Faig, 2006; Fisher and Montalto, 2010; Soman and Zhao, 2011; Ülkümen and Cheema, 2011). For example, Shum and Faig (2006) investigate the determinants of household stock holdings using data from the U.S. Survey of Consumer Finances (SCF) from 1992 to 2001 and find a positive correlation with some longer-term savings goals, and with wealth, age, risk attitude, and financial advice. We go further and investigate whether differences in the number, time horizon, and type of savings goals identified by U.K. households can explain differences in their asset allocations. Second, we contribute to a broad strand of literature that investigates the relationship between financial advice and households' wealth allocation decisions (e.g., Shum and Faig, 2006; von Gaudecker, 2015; Hoechle et al., 2017; Stolper, 2018). Here, our contribution concerns the question of whether, conditional on identification of savings goals, differences in asset allocation can be explained by financial advice - that is, the quality and number of sources of advice sought by households. Third, we build on a strand of literature that links numerical and other related forms of cognitive ability with household asset allocation decisions (e.g., Christelis, et al., 2010; Grinblatt et al., 2011) and also with goal setting (e.g., Kanfer and Ackerman, 1989; Latham et al., 2008). In this case, our contribution involves evaluating whether numerical ability complements or substitutes for savings goals in determining

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household asset allocation decisions. Finally, our use of panel data derived from a large-scale survey of an adult population, from five waves of the U.K. Wealth and Assets Survey (WAS) covering the period 2006 to 2016, overcomes well-documented limitations associated with laboratory studies that use student samples (Reis and Gosling, 2010). With over 40,000 individuals in more than 21,000 private households across the U.K., the WAS is larger than other household surveys around the world. Additionally, unlike previous studies that focus entirely on the likelihood of saving and savings rates (e.g., Soman and Cheema, 2004; Fisher and Montalto, 2010; Soman and Zhao, 2011), and those that use subsets of household portfolios (e.g., Christelis, et al., 2010; von Gaudecker, 2015), we use the whole household financial portfolio broken down into risky assets, fairly-safe assets, and safe assets. As a result, we account for the possibility that choices made in individual accounts that appear irrational in isolation may in fact be justified by offsetting effects in the rest of the household financial portfolio.

The rest of| the paper is organized as follows. Section 2 describes our theoretical framework and develops our hypotheses. We then describe the data and our empirical strategy in Section 3. Thereafter we present and discuss our results in Section 4 and detail our robustness checks in Section 5. Our conclusion in Section 6 also includes a brief discussion of the implications of the study.

2. Savings Goals and Asset Allocation

2.1. Goal-setting theory and savings behavior

Goal-setting theory asserts that setting a goal influences task performance by motivating a person to achieve it (Locke and Latham, 1990). This goal-performance relationship manifests itself through at least four goal mechanisms. First, goals direct attention and effort towards goal-linked activities; second, they energize, leading to more effort towards task accomplishment; third, they elongate and intensify effort, and hence incentivize

persistence; and fourth, goals motivate the discovery of task-relevant knowledge and strategies (Locke and Latham, 2002). Studies show that setting specific rather than vague goals leads to a higher level of task performance, and that if an individual is committed to a goal, has the required ability to attain it, and has no conflicting goals, there is a positive and linear relationship between goal difficulty and task performance (Locke and Latham, 2002, 2006). Additionally, goal commitment increases with a person's belief that they can accomplish their goals, referred to as self-efficacy (Bandura, 1977). Over the years goal-setting theory has been extended and enriched, allowing for the inclusion of other important underlying goal mechanisms and moderating factors, including the number of goals, implementation intentions, self-control problems, and self-regulation (e.g., Soman and Zhao, 2011; Dalton and Spiller, 2012). This growing body of literature explores the effects of goal setting on savings behavior.

Goal-setting affects individual savings behavior by improving the ability to resist temptation, i.e. self-control (Gul and Pesendorfer, 2001). For example, the setting of goals creates reference points that make substandard performance painful (Koch and Nazfiger, 2016). The commitment to pre-set goals is one of three behavioral characteristics identified by Baumeister (2002) that affect the strength of self-control, the other two being goal-setting ability and monitoring of the behavior necessary to achieve goals. Biljanovska and Palligkinis (2018) find a strong association between these three traits and three measures of household net wealth, namely total wealth, real wealth, and financial wealth. Fisher and Montalto (2010) find that households that identify emergency and retirement savings goals are more likely to save regularly while those with medium and long term saving horizons are not only likely to save regularly but also increase their savings. Shum and Faig (2006) show that the probability of owning and the share of wealth invested in stocks increase among households that identify education bills, household purchases, and retirement as their savings goals. Meanwhile, Lee and Hanna (2015) find a relationship between the likelihood of saving and savings goals

categorized according to Maslow's (1954) hierarchical theory of human needs, and they also find that savings decisions are related to a willingness to take risk.

Setting a goal does not in itself guarantee that it will be achieved. Success may also depend on the number of goals set and whether there is a plan that specifies an implementation intention. Findings are mixed about the impact of the number of set goals on performance. Some studies show that having multiple goals increases the accomplishment of goals because they tend to complement one another rather than compete against each other (Locke and Latham, 1990, 2002). In contrast, compared to having no goal, multiple goals can be counterproductive and reduce savings, especially when goals are not attained, as failure can be demotivating (Soman and Cheema, 2004). Similarly, having multiple savings goals (or no savings goal) relative to a single savings goal reduces savings rates if the incremental goals are difficult to accomplish or if they compete with one another (Soman and Zhao, 2011). This finding is consistent with the argument that planning may be less beneficial when applied to multiple goals versus a single goal because it draws attention to the difficulty of executing planned actions, which undermines commitment and, in turn, goal success (Dalton and Spiller, 2012).

2.2. *Savings goals, mental accounting and behavioral portfolio theory*

An expanding body of literature has sought to explain wealth allocation in households' portfolios, drawing upon goal-setting theory in conjunction with mental accounting theory. According to mental accounting theory, funds set aside for different purposes (savings goals) are allocated to separate mental accounts, and wealth in these accounts is non-fungible (Thaler, 1999). By naming a goal, such as saving for retirement or paying for college education, and allocating money to the corresponding mental account, households can accomplish their savings goals and exert self-control over that money, so that it is untouchable (Soman and Ahn, 2010). The need to exert self-control derives from what psychologists' view as the 'divided

self', in which individuals face an internal conflict between a farsighted 'planner' motivated by lifetime satisfaction and a myopic 'doer' concerned only about current satisfaction (Thaler and Shefrin, 1981). In this planner-doer framework, those dominated by the former are likely to have longer term savings goals while those dominated by the latter are likely to have shorter term savings goals. Aware of these internal conflicts and the temptations they face, individuals choose rationally to engage in commitment mechanisms that impose constraints on their consumption behavior, such as joining a pension plan, or internally enforced rules-of-thumb that involve segregating money into mental accounts.

The setting of goals and mental accounts as a means to achieve financial outcomes is also central to behavioral portfolio theory (Shefrin and Statman, 2000). They account for the possibility that investors do not always display risk aversion when making financial decisions, in contrast to the mean-variance model of Markowitz (1952). The behavioral portfolio theory developed by Shefrin and Statman (2000) envisages portfolios as layered pyramids where each layer (or mental account) is associated with a particular aspiration level (relating to a goal). Das et al. (2010) develop a goal-based mental accounting portfolio framework which combines the work of Shefrin and Statman (2000) with features of the mean-variance theory of Markowitz (1952). They demonstrate that the optimization of sub-portfolios can result in an aggregate allocation that is mean-variance efficient, thus providing an essential link between investor consumption goals and portfolio construction. They argue that "goal-based mental account sub-portfolios let investors articulate each goal, the horizon of each goal, and the attitude toward risk for each goal" (p. 29). The Das et al. (2010, 2011) framework has been augmented to incorporate the delegation to portfolio managers of asset allocation decisions (Alexander and Baptista, 2011), background risk (Baptista, 2012) and estimation risk (Alexander et al., 2017).

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The idea that investors view portfolios as layered mental accounts has parallels with the work of Maslow (1954) who proposes that human needs can be represented as a layered hierarchy. In this framework, needs are stacked like a pyramid, with basic needs, such as food and safety, at the bottom, and more aspirational needs, to achieve "self-actualization", at the top. In order to move up the hierarchy to higher levels needs, lower level needs have to be met first. Since households save to achieve human needs, it is possible to frame savings goals using Maslow's theory. Xiao and Noring (1994) find that when households have greater financial resources their savings goals expand from "daily expenses" to "emergency" to "retirement, children, and growth", a hierarchical pattern consistent with Maslow's (1954) theory. Devaney et al. (2007) find that the age of the household head, household size, and the length of the planning horizon are associated with advancement from no savings goal to lower and then higher level savings goals. In addition to the empirical evidence in support of Maslow-type behavior by households, De Brouwer (2009) has produced a Maslowian portfolio theory by applying Maslow's framework to the portfolio construction process. The basic idea is that investors with a goal-based approach keep separate mental accounts for each important life goal. Therefore, each life goal has its own portfolio selection method and risk tolerance, with basic goals catered for by very safe investments and greater risk tolerance applied to higher-level goals since they are less urgent.

If a person achieves a goal it is likely to increase their self-efficacy, leading them to increase their efforts to achieve other goals. Hence, while the initial process of goal formation arguably increases the portfolio share of risky assets as the number of goals increases, it is also possible that when the number of goals decreases due to goal achievement the portfolio share in risky assets might also increase due to increased self-efficacy (Chatterjee et al. 2011). Furthermore, in line with Maslowian portfolio theory, as households shift up the hierarchy of needs by achieving shorter term goals, such as daily expenses, it enables them to focus more

on higher level self-actualisation goals that may be fewer in number but longer term in nature, such that households only require "to fill the needs of a certain layer if the layer below is already filled" (De Brouwer 2009, p. 360).

Because the mental accounting process provides a planning and self-regulation framework through which investors evaluate and keep track of their investments (Thaler 1985), we argue that the information costs faced by investors decline as the number of savings goals increase. We also argue that as households identify more savings goals they will increase their investment skills over time and become more confident about achieving their savings goals, and that this self-efficacy (Bandura, 1977) increases their appetite for risk. Investors also face the temptation to spend, which is induced by self-control problems (Thaler and Shefrin 1981; Shefrin and Thaler 1988; Gathergood and Weber, 2014). Investors who have no savings goals are less likely to resist the temptation to spend. In contrast, investors with a single savings goal, and even more those with multiple savings goals, can counteract self-control problems by pre-committing their savings to each goal; in so doing, they develop the willpower to resist impulsive spending habits. Furthermore, prospect theory (Kahneman and Tversky, 1979) suggests that households with multiple savings goals are less likely to feel regret about losses sustained in trying to achieve a single savings goal because they think about the value of their aggregate portfolio across all savings goals. This suggests that households with more savings goals are more risk tolerant than those with fewer savings goals and thus more inclined to invest in riskier assets. Furthermore, investors who have more goals are likely to have a greater range of investment time horizons, therefore corresponding with smaller holdings of cash relative to risky assets as longer term goals are achieved by harvesting the premium available from risky assets.

The above arguments concerning: (1) the pre-commitment of savings to identified goals as a means of exercising self-control; (2) the role of goal formation in financial planning and the development of self-efficacy; (3) households' changing perception of goal specific losses as they move from individual mental accounts to the wider household portfolio context as the number of goals increases; (4) the progression from goals associated with basic needs through to self-actualisation goals as basic needs are met; and, (5) the incorporation of an increasing range of investment time horizons as the number of goals increase, all lead investors to expand their portfolios from safe, to fairly safe and risky assets as the number and diversity of savings goals increase, and as goals are subsequently achieved. Hence, our first hypothesis:

Hypothesis 1: The time horizon, and the number of savings goals identified by households are positively associated with their allocation to risky and fairly safe assets relative to safe assets.

2.3. Financial advice and savings goals

There is a growing consensus that financial advice, education, and counselling can lead to positive financial planning behavior and practices, and can ultimately enhance financial literacy and long-term financial well-being (e.g., Collins, 2012; van Rooij et al., 2012; Carpena and Zia, 2020). Indeed, assisting clients with goal formation is a central part of the financial planning process of guiding clients towards long term saving activity. It is also acknowledged within the financial planning industry that a goals-based approach provides a more intuitive way of assisting clients with asset allocation and wealth management, as it helps to simplify complex portfolio models and terminology (e.g., Brunel, 2011; Das et al., 2018). However, not all households seek financial advice, and even among those that do, a majority of them do not follow the recommendations given to them, raising the question of whether those who stand to benefit more from financial advice are the least likely to seek it (Bhattacharya et al., 2012) and

whether financial advice substitutes for or complements financial literacy (Collins, 2012) and, in our case, whether it substitutes for or complements goal-setting.

Studies that focus on the likelihood of households seeking financial advice have documented mixed impacts of economic, sociodemographic, and psychological factors, including levels of financial planning, satisfaction, knowledge, literacy, confidence, and self-efficacy (see e.g., Chang, 2005; Lusardi and Mitchell, 2011; van Rooij et al., 2011). For example, households with higher socioeconomic status are more likely to seek financial advice from professional sources such as independent financial advisors whereas households with lower socioeconomic status, either do not seek financial advice or rely on informal sources such as family, friends, or acquaintances (e.g., Collins, 2012; Hackethal et al., 2012).[2] However, conflicting evidence also suggests a reverse relationship: households with low income, educational attainment, and financial literacy are more likely to invest through a financial advisor to bolster their financial knowledge (Chalmers and Reuter, 2010) whereas affluent and more educated households tend to self-direct their investments and are less likely to seek financial advice as they have greater financial self-efficacy (Kramer, 2016). Furthermore, households with low socioeconomic status use fewer sources of financial advice and rely more on social networks, in contrast to those with high socioeconomic status (Chang, 2005). However, the use of multiple sources of advice may not necessarily lead to good judgements if individuals ignore advice that differs significantly from their opinions (Yaniv and Milyavsky, 2007).

It is also not clear from the literature whether those households that seek financial advice benefit from it. In comparison to households that do not receive financial advice, some

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[2] The use of informal sources of advice is documented by Brown et al. (2008) who show that the decision about whether to participate in the stock market is influenced by word-of-mouth communication between friends, co-workers, and neighbors.

studies document that households receiving financial advice accumulate more assets and have more retirement income (Brancati et al., 2017), achieve more efficiently diversified portfolios (Von Gaudecker, 2015), and hold significantly less equity and more fixed income securities (Kramer, 2012). There is also evidence that the financial advice received by some households does not match their risk profiles (Foerster et al., 2017) and that the portfolios of households that receive it do not perform better than those that do not, either because such households don't always follow the advice given, or because they fail to improve their portfolio efficiency (Bhattacharya et al., 2012; Hoechle et al., 2017). Although there appears to be no consensus on the portfolio efficiency gains arising from financial advice, most of these studies conclude that households that seek financial advice are more likely to set goals, develop a plan, invest in equities, and hold diversified portfolios. Furthermore, they also experience lower psychological costs associated with the anxieties of trading in volatile markets and handling complex financial products and economic crises (e.g., Marsden et al., 2011; van Rooij et al., 2012; Forester et al., 2017).[3]

Consistent with goal-setting theory, we question whether the setting of goals in and of itself can substitute for or complement financial advice, as goal-setting mechanisms can not only enhance self-control, but also increase financial knowledge and facilitate financial planning. The financial planning process typically begins with goal-setting, assessment of investment preferences, and the determination of the investment targets required to achieve those goals. A series of implementation plans, monitoring, and evaluation activities then follow. Activities that follow goal-setting can have different influences on asset allocation and related financial decisions, depending upon whether investors rely on financial advisors or not. Several studies provide crucial insights into the possible connection between goal setting,

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[3] These studies also suggest that financial advice can increase financial literacy, especially among households with low income and educational attainment. Even then, there are mixed findings in the literature (see, e.g., Collins, 2012; van Rooij et al., 2012; Calcagno and Monticone, 2015; Von Gaudecker, 2015; Kramer, 2016).

financial advice, and household financial decisions (e.g., Howlett et al., 2008; Winchester et al., 2011; Carpena et al., 2017). For instance, Marsden et al. (2011) report that those who seek financial advice are more likely to set long-term goals and to be successful in implementing their plans. Winchester et al. (2011) find that those who have a written financial plan, or seek financial advice, are more likely to rebalance their investment portfolios or maintain a long-term investment goal. Carpena et al. (2017) find that peoples' likelihood of making a positive behavioral change (e.g., opening a bank account or saving) significantly increases when subjected to three financial planning interventions simultaneously, namely: goal setting, financial education, and financial counselling. They conclude that goal setting can help to alter ingrained financial behavior and that financial counseling facilitates sustained behavioral changes, suggesting a plausible, complementary relationship.

Engagement of an independent financial advisor and the ensuing goal-setting process implies a propensity to plan, which has been linked positively to self-control and the capacity for financial wealth accumulation (Ameriks et al. 2003, 2007; Lee and Kim 2016). There is also evidence that household net worth is positively associated with financial literacy, which is in turn positively related to both the likelihood of investing in the stock market and the propensity to plan for retirement (van Rooij et al. 2012). Additionally, the propensity for financial planning is positively related to risky asset investment, after controlling for financial literacy and a range of demographic and control variables (Eugster 2019).

If access to financial advice facilitates goal formation, and hence self-control, one would expect to find a positive association between a household's allocation of funds to risky assets and the quality and quantity of financial advice that households are able to access. Alternatively, in line with Stolper (2018) financially literate households might use financial advice as just another source of information, suggesting that financial advice is substitutable

for goal formation, or that more, and better quality, financial advice leads to greater investment in risky assets, but only for financially literate households. For such households, the relation between savings goals and asset allocation may be attenuated. While, the provision of financial advice arguably makes households more comfortable about investing funds in riskier assets our second hypothesis provides a framework for evaluating these competing possibilities.

Hypothesis 2: The quality and quantity of financial advice influences the relationship between the number of savings goals and asset allocation.

2.4. *Numerical ability and savings goals*

The link between numerical and related forms of cognitive ability and asset allocation is explored in a growing body of research that finds an overwhelmingly positive effect of traits such as numeracy, verbal fluency, memory, and IQ on asset allocation (e.g., Banks and Oldfield, 2007; Christelis et al., 2010; Grinblatt et al., 2011). Ability in these traits can determine households' information gathering and processing costs, willingness to bear risk, and risk perceptions, and thus the likelihood of investing in different financial assets. For instance, Christelis et al. (2010) find that numeracy, fluency, and recall all have a strong association with stockholding but have a weak association with bondholding. Banks and Oldfield (2007) also document a strong relationship between numerical ability and measures of retirement saving and investment portfolios, knowledge and understanding of pension arrangements, and perceived financial security. Along with several other studies (e.g., Lusardi, 2012; Guiso and Viviano, 2014), these studies suggest that numerical ability increases financial literacy and knowledge, which according to Hilgert et al. (2003) increases the likelihood of engaging in several financial practices such as paying bills on time, diversifying investments, and setting financial goals. This latter finding suggests an important connection between numerical ability, goal-setting, and asset allocation.

In the goal-setting literature it is argued that ability in areas such as general science, arithmetic reasoning, paragraph comprehension, and numerical operations, is not only a strong predictor of goal achievement but also moderates the goal-performance relationship (Kanfer and Ackerman, 1989; Latham and Locke, 1991). One explanation is that those with greater ability strive to acquire and enhance their knowledge, and so engage in a problem-solving and learning process that involves continuous knowledge acquisition (Bandura, 1991). As a result, those possessing greater ability set more challenging goals (such as providing for retirement), consider mistakes as part of the learning process, and evaluate their skills in the context of personal improvement and not in comparison to others. In contrast, those with lower ability set less challenging goals and focus more on low effort tasks that minimize the likelihood of making mistakes. Compared to people with high ability, however, those with low ability tend to set goals more frequently than those with high ability (Kanfer and Ackerman, 1989) and to improve their own performance when they set more challenging and complex goals (Latham et al., 2008). These impacts of ability on the goal-performance relationship suggests that numerical ability can substitute for or complement the role of savings goals on asset allocation.

Another explanation is that numerical ability may moderate the goal-performance relationship through its effects on self-efficacy, which affects motivation and incentivizes persistence and perseverance (Kanfer and Ackerman, 1989; Lathan and Locke, 1991). The idea here is that high-ability individuals are likely to exhibit high levels of self-efficacy as they can accomplish difficult tasks and benefit from the experiences and knowledge acquired in completing those tasks (Chen et al., 2001; Bell and Kozlowski, 2002). In contrast, those with lower ability are less likely to accomplish complex tasks and exhibit lower levels of self-efficacy.[4] Several studies focus specifically on the relationship between financial self-efficacy

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[4] Furthermore, it is also arguable that having high numerical ability does not necessarily assure goal attainment, and that individuals must have a strong belief in their ability to overcome constraints in order to accomplish their goals. Since self-efficacy affects goal orientation, commitment, and implementation intention, and how people respond to feedback, those with high self-efficacy are likely to set more goals, and also more challenging

– that is, confidence in managing personal finances, coping with challenges, and attaining financial goals – and wealth allocation and other related financial decisions (e.g., Fernandes et al., 2014; Farrell et al., 2016; Netemeyer et al., 2017). These studies use different ways of measuring financial self-efficacy, but they all conclude that it influences financial decisions and well-being, although they do not explicitly account for numerical ability and goal setting in their analyses.[5] Overall, these findings provide further insight into the different ways in which numerical ability can influence both savings goals and asset allocation.

In the context of our study, we predict that the impact of the number of savings goals on asset allocation varies depending on self-perceived numerical ability. For households that have no savings goals, we expect high numerical ability to substitute for the self-control mechanisms induced by savings goals: hence, when compared to low ability households, high ability households are expected to hold higher proportions of their wealth in risky assets and fairly-safe assets relative to safe assets. Regarding households that have multiple savings goals, we posit that high numerical ability either complements or substitutes for the role of savings goals; again, when compared to low ability households, high ability households are also likely to hold more of their wealth in risky assets and fairly-safe assets relative to safe assets. Finally, for those households that have a single savings goal, we also posit either a complementary or a substitutory relationship between savings goals and numerical ability. Hence our third and final hypothesis:

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goals, leading them to perform tasks better than those with low self-efficacy (Locke and Latham, 1990; Phillips and Gully, 1997). For example, Phillips and Gully (1997) show that numerical ability has a direct effect on performance and also influences the goal-performance relationship indirectly through self-efficacy.

[5] For example, Netemeyer et al. (2017) find that financial self-efficacy positively correlates with perceptions about future financial security. They argue that those with high levels of financial self-efficacy exhibit more confidence and resilience in gathering information to facilitate financial decisions, make more informed decisions, respond to more financial constraints, and avoid irresponsible behaviour more than those with low financial self-efficacy levels. Farrell et al. (2016) show that the likelihood of holding financial investment and savings products increases with the level of financial self-efficacy while the likelihood of holding debt-related products decreases. Fernandes et al. (2014) show that financial self-efficacy is positively correlated with financial literacy, numeracy, saving for an emergency fund, and other dimensions of financial engagement.

Hypothesis 3: Numerical ability influences the relationship between the number of savings goals and asset allocation.

2.5. Other determinants of savings goals and asset allocation

Household savings goals and asset allocation are also affected by socio-demographic variables, including income, housing, health, age, gender and marital status, the presence of children, education, religion, trust in others, and ethnicity/race. Labor income, total wealth, housing, and health represent background risks as they cannot be avoided. They can decrease households' appetite for financial risk and so result in smaller allocations to equity (e.g., Hochguertel 2003; Chetty, et al. 2017). We take account of the background risk arising from labor income and housing as these studies show that they affect asset allocation (Guiso and Jappelli, 2002). We also control for the background risk associated with health, which has been shown to be a predictor of asset allocation (e.g., Atella et al., 2012; Bogan and Fertig, 2013). The findings in these studies are consistent with goal-based asset allocation because those who face a health risk are more likely to segregate a health goal from other savings goals. In addition to background risk, the following variables have been shown to influence asset allocation: age (Huggett and Ventura, 2000; Fagereng et al., 2017), gender (Jianakoplos and Bernasek, 1998), marital status (Säve-Söderbergh, 2012), the presence of children (Love 2010), education (Fisher and Montalto, 2011), religion (Renneboog and Spaenjers, 2011), trust (Guiso et al., 2008) and ethnicity/race (Lee et al., 1997). In summary, these socio-demographic variables have important influences on households' decision making and thus we control for all of them when examining the impact of household savings goals on asset allocation.

3. Data and methods

3.1. Data

We use five waves of the UK WAS, published by the Office for National Statistics, Social Survey Division (2019), which surveys private households and individuals aged 16 and

above, and excludes those in full-time education aged 16-18 over the period July 2006 through to June 2016. The WAS is a biennial longitudinal survey of a representative sample of 20,000 U.K. households, on average, randomly selected with quarterly and monthly samples. For example, Wave 3 of the WAS covered the period July 2010 to June 2012 and achieved interviews with over 40,000 individuals in more than 21,000 private households across the country. [6] When compared to other household surveys around the world, the WAS is larger than surveys such as the US Survey of Consumer Finances (SCF) with a sample size of about 6,500 households and the Household, Income and Labour Dynamics Australia (HILDA) survey that has about 7,000 households. However, as is common in household surveys, the WAS is prone to low response rates and high attrition rates. Thus, to mitigate the impact of attrition and maintain sample representativeness, new households/individuals were introduced in Waves 3, 4, and 5. We use the weights provided in the WAS data (Office for National Statistics, 2018) to account for any biases in our analysis that might arise from low response and attrition. [7]

The WAS data captures details about the wellbeing of a representative sample of UK households and individuals. The first part of the WAS questionnaire is completed by the head of the household and consists of household level information, including: number of occupants, relationships, details of property and mortgages, and household assets. Each adult in the household then completes the second part of the questionnaire, which collects comprehensive economic wellbeing information and attitudes regarding financial planning. In our analysis, we use household level data together with individual level data for the person identified as the household representative. The data generated from these two files yield 82,670 observations

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[6] The sampling period and the number of households interviewed for the waves available are: Wave 1, July 2006 to June 2008 (30,000); Wave 2, July 2008 to June 2010 (20,000); Wave 3, July 2010 to June 2012 (21,000); Wave 4, July 2012 to June 2014 (20,000); and Wave 5, July 2014 to June 2016 (18,000).
[7] For example, among households contacted (eligible cases) the response rate (co-operating households) was 55% during Wave 1, 68% in Wave 2, 65% in Wave 3, 66% in Wave 4, and 65% in Wave 5 (Crawford et al., 2016). Apart from introducing new households to maintain sample representativeness, a three-stage weighting approach is also used to address selection probability, non-response, and attrition.

covering Waves 1 to 5. The variables measured include households' assets, savings, and debt, along with attitudes towards saving and investment.

3.2. Variable descriptions

Table 1 describes how each variable is constructed. First, to construct our dependent variable, asset allocation, we use responses to several questions regarding the type of financial asset owned by households and the estimated value of each. Consistent with the literature (e.g. Bertocchi et al., 2011; Atella et al., 2012; Guiso and Jappelli, 2002),[8] we classify formal financial assets into three classes: (1) *Risky assets,* including U.K. or overseas stocks in listed or unlisted companies, employee shares, and 'stocks and shares' Individual Savings Accounts (ISAs); (2) *Fairly-safe assets,* including fixed-term investment bonds, unit or investment bonds, overseas and UK government bonds, national savings products, insurance products, or other financial assets; and (3) *Safe assets*, including cash and unspecified Individual Savings Accounts (ISAs), savings accounts and current accounts. The financial assets included in our *Safe assets* and *Fairly-safe assets* category are consistent with those used in Atella et al. (2012). However, unlike Guiso and Jappelli (2002), we include long-term government bonds or other bonds in our *Fairly-safe asset* class rather than *Risky asset* class. For *Risky assets*, we include stocks and shares ISAs, in addition to stocks or shares invested in listed or unlisted companies, consistent with Atella et al. (2012). ISAs are a popular means of sheltering investment returns from tax in the UK and each individual has an annual limit after tax that can be invested in either a cash ISA, stocks and shares ISA, innovative finance ISA, or a Lifetime ISA, or any combination up to an annual limit. Once inside the ISA, funds are exempt from investment

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[8] For example, Atella et al. (2012) use three financial assets categories: (1) *Risky assets*, which includes stocks or shares (listed or unlisted); (2) *Fairly-safe assets*, which consists of government or corporate bonds, individual retirement accounts, contractual savings for housing, and term or whole life insurance policies; and (3) *Safe assets*, which includes bank, transactions or savings accounts. Guiso and Jappelli (2002) also use a similar classification approach comprising three financial asset classes: (1) *Clearly safe financial assets* – transaction accounts and certificate of deposit; (2) *Fairly safe financial assets* – treasury bills and cash value of life insurance; and (3) *Risky financial assets* – stocks, long-term government bonds, other bonds, mutual funds, managed investment accounts, and defined contribution pension plans.

income and capital gains tax. The WAS data allows us to distinguish stocks and shares ISAs from other ISAs. For each asset class we generate a binary variable for ownership which equals 1 if a household owns at least one type of asset and 0 otherwise, while for asset allocation we calculate the fraction of wealth invested in each asset class as a proportion of total gross financial assets.

[Insert Table 1 here]

The key independent variables are the type of savings goals, the number of savings goals, the horizon of savings goals, the quality and quantity of financial advice, and numerical ability, as defined in Table 1. Savings goals are constructed from a question about the main reasons for household savings, to which respondents rank the reasons based upon a list largely derived from the work of Keynes (1936). Three categorical variables are derived for savings goals: the first is *savings goal type*; the second is *savings goal horizon*; and the third is *number of savings goals*, which is a three-level categorical variable. For each of these variables, households that do not readily identify a reason are the reference group.

Firstly, for the variable *savings goal type*, the categories are no savings goals (base group) and saving for: unexpected expenditures; family members (gifts or inheritance); regular income; retirement; planned expenditure; deposit to buy property; holidays or other leisure; speculation; and good interest to see my money grow. Secondly, we generate the variable *savings goal horizon* with four categories: no savings goals = 1 if respondents do not identify a savings goal (base group); short term = 2 if the goal for saving is to provide regular income and for unexpected expenditure; medium term = 3 if it is for a deposit to buy property or if it is for holidays or other leisure; and long term = 4 if the goal is for retirement, for family members, for planned expenditure, for good interest and for speculation as specified in Table

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1.[9] This mapping of savings goals to planning horizons is consistent with those used in the literature (Devaney et al., 2007; Nam et al., 2016). Thirdly, we generate the variable *number of savings goals*, with the following three categories: no savings goals = 1 if respondents do not identify a savings goal (base group); single savings goal = 2 if respondents identify a single savings goal and zero otherwise; multiple savings goals = 3 if respondents identify two or more goals and zero otherwise.[10]

We assume that financial advice can be proxied by either the source from which an individual received financial advice or the institutions or individuals that investors trust for financial advice about saving for retirement. In fact, the degree to which individuals trust financial service providers for investment advice has also been used as a measure of trust (Guiso et al., 2008). A combination of responses to three questions about financial advice are used to generate a variable *financial advice source* with the following four categories: *no financial advice* = 1 if no financial advice is sought; *family, friends and social media* = 2 if respondents identify a partner, spouse, friends, family, work colleagues, or trust print and social media; *consumer and other professional bodies* = 3 if respondents identify a bank or building society, insurance company, accountant, solicitor, insurance broker, mortgage adviser, stockbroker, employer, trade union, the Pensions Advisory Service (PAS), Financial Services Authority (FSA), and other consumer bodies e.g. Citizens Advice Bureau (CAB); *Independent Financial Advisors* (IFAs) = 4 if respondents identify independent financial advisors. In addition, to distinguish the number of sources of financial advice identified by respondents, we generate a variable *number of financial advisors* with the following three categories: *no advice*, same as above; *single source*, if the respondent identifies a single source of financial advice;

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[9] We interpret the WAS savings reason "for unexpected expenditure" to mean savings for emergency spending and hence a short-term horizon.
[10] We also generate a five-level categorical variable for the number of saving goals identified by a household. No savings goals = 1 and zero otherwise; one savings goal = 2 and zero otherwise; two savings goals = 3 and zero otherwise; three savings goals = 4 and zero otherwise; and four or more savings goals = 5 and zero otherwise.

and *multiple sources*, if the respondent identifies more than one source of financial advice. Our proxy for *numerical ability* is based on respondents' answers to the question *"If you were to rate your mathematical skills for daily life, would you say they are ...?"* For this variable, we group responses into four categories: 1 = poor or no opinion, 2 = moderate, 3 = good, and 4 = excellent. As with the main variables of interest, all control variables are defined in Table 1.

3.3. Descriptive statistics

Panel A of Table 2 presents summary statistics for household financial wealth across the three asset classes. The average total household wealth is about £439,000, the average total household income is about £42,000, while the average total household financial wealth is about £60,000. The proportion of households owning *Risky assets* is 27%, for those owning *Fairly-safe assets* the proportion is 60%, and it is 98% for those owning *Safe assets*. The share of household financial wealth invested in each of the three asset classes is lower: for *Risky assets* it is 8%, while for *Fairly-safe assets* it is 31% and for *Safe assets* it is 61%. An indication of the role of savings goals is evident when total household wealth, financial wealth, income, and the above shares are broken down by the number of savings goals. Total household wealth, household income, and financial assets all increase with the number of savings goals (Figure A.1). The share of wealth invested in both *Risky assets* and *Fairly-safe assets* is an increasing function of the number of savings goals whereas *Safe assets* is a declining function of the number of savings goals, in line with hypothesis 1 (Figure A.2). For example, households with no savings goal invest 6% in *Risky assets*, 25% in *Fairly-safe assets* and 69% in *Safe assets*. As the number of savings goals increases to four or more, households invest 16% in *Risky assets*, 43% in *Fairly-safe* assets, and 42% in *Safe assets*.

[Insert Table 2 here]

Panel B of Table 2 presents the summary statistics for the key variables of interest, namely savings goals, financial advice and numerical ability measures. We note that 49% of households do not identify a savings goal while 8% identify four or more savings goals. Regardless of whether a household has a single savings goal or multiple savings goals, the most important goal for saving money identified by households is to meet *unexpected expenditure* (33%). This is consistent with the finding that the precautionary motive is the most important savings goal in the 15 Euro Area countries (Le Blanc et al., 2014). The next two most important savings goals are for *a holiday or for recreation* (24%), and for *planned future expenses* (16%). Although a lower fraction of households identify saving money for *retirement* (11%), for *other family members* (11%), and to *see it grow or for good interest* (9%), we would expect such households to be more inclined to invest in *Risky assets*. For households that save money to *provide regular income* (3%) or for *deposit for purchase of property* (3%), we might expect these goals to be connected with investment in *Fairly-safe assets*. The proxies for financial advice include a categorical variable and dummies for households that *do not seek advice* (33%), that have *a single source of advice* (27%) and those that have *multiple sources of advice* (40%). Among household that seek financial advice, 11% trust *family, friends, or social media* (such as their spouses, relatives and friends); 26% trust *consumer and other professional bodies* (such as accountants, banks, insurers and solicitors); and 30% trust *independent financial advisors*. These statistics suggest that most households trust financial intermediaries (*independent financial advisors*) as well as their agents (*providers of professional services*) which could induce them to invest (or increase the proportion of money invested) in *Risky assets* and/or *Fairly-safe assets*.

Summary statistics for the control variables are presented in Panel C of Table 2. Panel D presents bivariate analysis for the key independent variables by savings goals and shows that households in different categories of savings goals significantly differ in terms of total wealth,

total financial wealth, household income, financial advice sources, and numerical ability. For example, the total wealth and financial wealth for households with four or more goals is about 2.5 and 3.5 times, respectively, more than those of household with no savings goals. Among households with no savings goals, 37% do not seek financial advice, 30% seek advice from a single source while 33% of these households have multiple sources. This pattern changes among households with four or above savings goals, with 59% of these households seeking advice from multiple sources, 16% from a single source, while the remaining 25% do not seek advice. All in all, households with no savings goals have low mean values for these variables compared to those in the other categories of savings goals. Finally, Panel E of Table 2 presents transitional probabilities for ownership of the three asset classes over the panel period. We can see that households that have no savings goals are more likely to opt out of *Risky assets* (35%) in the next period whereas those that exhibit four or more savings goals are less likely to opt out of *Risky assets* (12%) in the following period. This pattern is also replicated for ownership of *Fairly-safe assets*.

3.4. Empirical strategy

We begin by examining the effect of different types of savings goals on asset allocation decisions and the embedded effect of financial advice and numerical ability. We posit that, holding other determinants of asset allocation constant, savings goals can explain additional variations in asset allocation decisions across households and across three different asset classes. However, because the decision to invest in *Risky assets, Fairly-safe assets,* and *Safe assets* are not mutually exclusive and may be interrelated and subject to the same household budget constraint, separate models may be biased by common unobserved factors that influence the three decisions. Thus, instead of separate regressions, we estimate a three-equation panel tobit model and allow for contemporaneous correlation between the error terms of these equations consistent with the literature (Hochguertel et al., 1997), using a conditional mixed

process estimator (Roodman, 2011). This estimator uses seemingly unrelated regressions (Zellner, 1962) and allows for non-zero error correlations between equations. The correlation in the error terms is derived using the Geweke, Hajivassiliou, and Keane (GHK) algorithm (Geweke, 1989; Hajivassiliou and McFadden, 1998; Keane, 1994). In our analysis, we cluster standard errors at the household level and report average marginal effects. All the models contain the same set of regressors.

The five waves are modelled using the three-equation panel system as:

$$AC_{ir} = SG_{ir}\beta_1 + FA_{ir}\beta_2 + NA_{ir}\beta_3 + IT_{ir} + CV_{ir}\alpha + \varepsilon_{ir}, \tag{1}$$

$$AC_{if} = SG_{if}\beta_1 + FA_{if}\beta_2 + NA_{if}\beta_3 + IT_{if} + CV_{if}\alpha + \varepsilon_{if}, \tag{2}$$

$$AC_{is} = SG_{is}\beta_1 + FA_{is}\beta_2 + NA_{is}\beta_3 + IT_{is} + CV_{is}\alpha + \varepsilon_{is}, \tag{3}$$

$$Cov(\varepsilon_{ir}, \varepsilon_{if}) \neq 0,$$
$$Cov(\varepsilon_{ir}, \varepsilon_{is}) \neq 0,$$
$$Cov(\varepsilon_{if}, \varepsilon_{is}) \neq 0,$$

where for household *i, AC* (Asset Class) represent the asset allocation in *Risky assets*, *r,* in *Fairly-safe assets*, *f*, or in *Safe assets*, *s*. The key independent variable of interest is *SG*, a categorical variable representing different categories of savings goals with *no savings goal* as the base level. The mediating variables are financial advice, *FA*; numerical ability, *NA*; and a set of interaction terms, *IT,* which consist of different combinations of savings goals interacted with the measures of financial advice, and numerical ability. *CV* is a set of control variables and represents other behavioral attitudes, and socioeconomic and demographic characteristics of a household. The error terms are given by $\varepsilon_{ir,}$ ε_{if}, and ε_{is} and account for possible non-zero correlations of common unobserved factors in the three-equation system.

In the results that follow, we use trivariate tobit regressions and report average marginal effects. Additionally, because the magnitude of the interaction effect in non-linear models is not simply the marginal effect of the interaction term only (Ai and Norton, 2003), we calculate

the marginal effects of all interaction terms using the characteristics of a typical head of a household, which we refer to as a reference person. That is, a white British male aged 50 who is married, has a degree or above qualification, is employed, has children, is a Christian, has good health, is risk tolerant, has time preference, lives in an urban area in the East of England, and is an outright homeowner. To determine the mediating impact of the number of savings goals on asset allocation, we vary sequentially the variables financial advice, and numerical ability.

4. Results

For the result reported in Tables 3 through 5, we report marginal effects for all variables except year and regional dummies.

4.1. *Savings goals*

We begin our analysis by exploring the impact of different types of savings goals, the time horizons of savings goals, and the number of savings goals. Table 3 presents results from trivariate tobit models, in which we regress the share of money invested in the three asset classes against these three variables separately. Households that do not identify a savings goal are the reference group. Overall, in line with Hypothesis 1, the allocation of money to *Risky*, *Fairly-safe*, or *Safe assets* varies across the different categories of savings goals, goal horizons, and number of savings goals. Columns 1 to 3 of Table 3 report the results where the different savings goal types are the key independent variable. As can be seen from Column 1, when compared to having no savings goal, all the types of savings goal are positively associated with the allocation to *Risky assets* except the short term liquidity goals: saving money for *unexpected expenditure*, for *regular income*, and for *deposit for property purchase*. Saving money for *unexpected expenditure* has a negative and significant effect while saving money for *regular income* or for *deposit for property purchase* have an insignificant effect. Column 2 of Table 3 shows that households exhibiting any of the nine savings goals have significantly different and

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higher proportions of their financial wealth invested in *Fairly-safe assets*, when compared to households that do not have a savings goal. Conversely, the results reported in Column 3 show that exhibiting any of the nine savings goals is associated with lower proportions of savings in *Safe assets*. Our results are consistent with Lee and Hanna (2015) and Shum and Faig (2006), who show that savings decisions and attitudes to risk vary with savings goal type. Our results show how the magnitude and the sign of the effects of saving goals vary across asset classes.

[Insert Table 3 here]

We now turn to the regressions where we group the different savings goals into four time horizons. The results reported in Column 4 of Table 3 shows that households with long term goals hold significantly higher proportions of financial assets in *Risky assets* and *Fairly-safe assets*, when compared to households that do not have a savings goal. Households that have short-term goals hold lower proportions of *Risky assets*, when compared to households that do not have a savings goal. Column 5 indicates that the proportions of assets invested in *Fairly-safe assets* increases with the time horizon. In contrast to these results, Column 6 shows that the different time horizons are negatively and significantly associated with the proportion of financial assets held in *Safe assets,* when compared to having no savings goals. These results are also similar to those in Lee and Hanna (2015) and Fisher and Montalto (2010) but, again, our results clarify the effect of savings goals on the allocation of savings to different asset classes.

Finally, the results reported in Columns 7 to 9 show that the number of savings goals identified by households influence asset allocation across the three asset classes. Households that have multiple savings goals hold higher proportions of their financial wealth in *Risky assets* and *Fairly-safe assets* but lower proportions in *Saf*e *assets*, when compared to households that have no savings goal or a single goal. Indeed, having multiple savings goals has a greater

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impact than having a single savings goal across the three equations. Overall, these results support our first hypothesis, as the number and time horizon of savings goals are positively related to investment in *Risky assets* and *Fairly-safe assets*. These results are also consistent with the arguments that multiple goals increase self-control and the propensity to plan (Ameriks et al, 2003, 2007; Lee and Kim, 2016) and enhance self-efficacy (Bandura, 1977). Our results do not support studies on consumer spending and saving behavior which suggest that multiple goals can be counterproductive by reducing implementation intentions (Soman and Cheema, 2004; Soman and Zhao, 2011). Indeed, having no savings goals can lead households to make investment mistakes, considering that these households not only have lower proportions of financial assets invested in both *Risky assets* and *Fairly-safe assets* but also have a higher proportion of financial assets invested in *Safe assets*.

4.2. Financial advice

We begin by examining the direct effects of financial advice reported in Panel A of Table 4, columns 1 to 6. In line with the literature we should expect that both the quality (sources of financial advice) and quantity (number of advice sources) of financial advice accessed can positively influence households' allocation to risky assets (e.g. Shum and Faig 2006). The results reported in Columns 1 to 3 show that households that seek financial advice from an independent financial advisor have higher proportions of financial wealth invested in both *Risky assets* and *Fairly-safe assets* but lower proportions in *Safe assets*, when compared to households that do not seek advice. In contrast, households that rely on either *family, friends, and social media* or *consumer and professional bodies* have lower proportions of financial wealth invested in *Risky assets* but higher proportions in *Safe assets*, when compared to households that do not seek financial advice. Our results are consistent with the finding of Kramer (2012) that investors who seek professional financial advice have portfolios with different compositions from those who self-direct their investments. Our results also suggest

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that community effects, in the form of *family, friends, and social media*, are less likely to influence the allocation of household funds to risky assets, in contrast to Brown et al. (2008).

[Insert Table 4 here]

Regarding the number of financial advice sources, the results reported in Columns 4 to 6 of Panel A show that households with multiple sources of financial advice invest higher proportions of their financial wealth in *Risky assets* and *Fairly-safe assets* but invest lower fractions in *Safe assets* when compared to those that do not seek financial advice. In contrast, households that seek advice from a single source invest lower proportions of financial wealth in *Risky assets* and *Fairly-safe assets* but invest higher fractions of wealth in *Safe assets,* when compared to those that do not seek advice. The impact of the number of savings goals remains virtually unchanged across these two models. These results suggest that households that consult independent financial advisors are also likely to seek advice from multiple sources, consistent with Chang (2005), and this can increase their knowledge and willingness to take risks by investing in risky assets.

Hypothesis 2 predicts that the quality and quantity of financial advice influences the relationship between the number of savings goals and asset allocation. Panel B of Table 4 presents the marginal effects of the interaction terms between the number of savings goals and both the categories and number of financial advice sources. The results reported in Columns 1 and 3 show that households that seek independent financial advice increase the allocation of financial wealth to *Risky assets* regardless of the number of savings goals but reduce allocation to *Safe assets* when compared to those that do not seek financial advice. These results suggest that financial advice substitutes for the impact of goal-setting among households with no savings goals but complements it among those who either have a single savings goal or multiple savings goals. The results reported in Column 2 show that, among households that have

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multiple savings goals, consulting an independent financial advisor does not affect the allocation of wealth to *Fairly-safe assets*, suggesting that there is no complementarity. However, consulting an independent financial advisor increases wealth allocation to *Fairly-safe assets* among households with no savings goals, indicating a substitutability relationship. These results support the observation that because fairly-safe assets are less complex and less informationally intensive (Christelis et al., 2010) financial advice and goal-setting provide no incremental benefits to households that have multiple goals.

In contrast, households that seek financial advice from either *family, friends, and social media* or *consumer and other professional bodies* hold lower proportions of *Risky assets*, regardless of the number of savings goals, when compared to those that do not seek financial advice. Considering that about 37% of the households in the WAS dataset rely on these two sources of advice, it is likely that the overall detrimental impact on asset allocation and long-term financial wellbeing is substantial.

Turning to the results reported in Columns 4 to 6 of Panel B, again, we can see that compared to seeking no financial advice having multiple sources of financial advice substitutes for the impact of goal-setting on asset allocation among households with no savings goal but complements it among those with a single savings goal. However, having multiple sources of financial advice and also multiple savings goals does not affect asset allocation to *Risky assets*, although it reduces asset allocation to *Safe assets*. Although financial advice reduces information asymmetry, households with multiple savings goals are likely to be more knowledgeable about investments, and thus access to several financial advice sources is arguably less likely to affect their asset allocations. In contrast to the above results, we can also see that households that seek financial advice from a single source hold lower proportions of wealth in *Risky assets* but hold higher fractions of wealth in *Safe assets* when compared to

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those that do not seek advice. This finding, again, suggests that seeking advice from a single source can also lead to investment mistakes. One possible explanation for this result is that households that rely on a single source are likely to discount advice if they have less access to evidence from other sources that support their views, or underweight advice that deviates substantially from their opinions (Yaniv and Milyavsky, 2007).

4.3. *Numerical ability*

Our third hypothesis predicts that numerical ability can substitute for or complement goal formation in guiding households towards long-term *Risky asset* investments. Table 5 reports the results. Beginning with the direct effects of numerical ability, the results reported in Columns 1 to 3 of Panel A show that households with excellent numerical ability hold higher proportions of their financial wealth in *Risky assets* when compared to those with poor numerical ability. However, there is no significant difference in the proportions of wealth invested in *Risky assets* between households with moderate numerical ability and those with poor numerical ability. In addition, we find that households with moderate, good, or excellent numerical ability hold significantly higher proportions of their financial wealth in *Fairly-safe assets* but hold lower proportions in *Safe assets*, when compared to households with poor numerical ability. These results are consistent with the findings in Christelis et al. (2010), who argue that relative to bondholding, stockholding is associated with higher information intensity, and that complex financial transactions and products can be uncomfortable for households with low numerical ability. They are also in line with the financial literacy literature (e.g., Lusardi and Mitchell, 2011; van Rooij et al., 2011) and suggests that those with higher numerical ability are more likely to understand stock and bond markets. We can also see that including numerical ability in our analysis changes the sign of the effect of a single source of financial advice to be negative, supporting the argument advanced by Brounen et al. (2016) that financial literacy captures some dimensions of numeracy ability.

[Insert Table 5 here]

We now turn to the interaction effects between the number of savings goals and numerical ability reported in Panel B of Table 5. When compared to households with poor numerical ability, those with excellent numerical ability hold higher proportions of wealth in *Risky assets*. This finding is consistent with our complementarity and substitutability argument. As numerical ability increases from the base level (poor) through moderate, good and excellent, its impact upon allocation to *Fairly-safe assets* is more pronounced among households that have no savings goal, followed by those with a single savings goal. Numerical ability has less influence on asset allocation to *Fairly-safe assets* and *Safe assets* among households with multiple savings goals. Again, this supports further the substitutability and the complementarity argument between numerical ability and savings goals motivating our third hypothesis. [11] [12] [13] It also reinforces our argument that having multiple savings goals provides

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[11] Considering that the standard approach in the literature is Tobit regressions on the portfolio share of stocks alone, it is possible that our results are driven by the tri-variate estimation approach. To counter this argument, we checked our analysis using univariate panel Tobit regression on asset allocation to *Risky assets*. The results from these regressions show that not only do the positive effects of the number of savings goals on asset allocation to *Risky assets* remain unchanged but also the magnitude of the effects increase. These results are not reported but are available from the authors.

[12] To examine further interaction effects, we checked whether the effect of savings goals horizon on asset allocation is influenced by financial advice and numerical ability using the specifications in Table 4 and Table 5, respectively. We find that households with no savings goals or those that have short term goals benefit more if they seek financial advice from multiple sources or have good or excellent numerical ability. These results are not reported but are available from the authors.

[13] We also checked whether there is an interaction effect between savings goals, financial advice, and numerical ability: for example, whether households that have no savings goals and also do not seek financial advice benefit from their numerical abilities. Compared to those who seek help from professional financial advisors, van Rooij et al. (2011) report that those who rely on parents, friends, and acquaintances tend to have low levels of financial literacy, suggesting a plausible relationship between numerical ability and financial advice. However, van Rooij et al. (2012) do not find a strong relationship between financial literacy and the likelihood of seeking help from a financial intermediary. According to Von Gaudecker (2015), households that do not seek external advice and also have low financial numeracy ability incur higher under-diversification losses than those that seek help. We replayed the specifications in Table 5 but included an interaction term between savings goals, numerical ability, and financial advice. The results from this specification show that households that have excellent numerical ability and also seek advice from an *independent financial advisor, consumer and other professional bodies* or multiple sources allocate a high proportion of their wealth to *Risky assets* and *Fairly-safe assets* but less in *Safe assets* regardless of their number of savings goals. This finding is consistent with those in Carpena et al. (2019). These results are not reported but are available from the authors.

no increase in asset allocation to *Fairly-safe assets* as these assets are relatively easy to understand (Christelis et al., 2010) in the presence of excellent numerical ability.

4.4. Results in the context of the broader portfolio choice literature

In the context of the broader portfolio choice literature, our control variable results are consistent with those reported in several studies. For instance, in line with the findings in Fagereng et al. (2017), our results suggest that households do indeed rebalance their financial portfolios across the three asset classes as they tend towards and beyond retirement age. Trust, gender, higher education, religion, and ethnic background are all associated with asset allocation (see e.g., Lee et al., 1997; Jianakoplos and Bernasek, 1998; Guiso et al., 2008; Fisher and Montalto, 2011; Renneboog and Spaenjers, 2012), and our results also show that these characteristics increase allocation to *Fairly-safe assets* but reduce allocation to *Safe assets*. Married or cohabiting households invest a lower proportion of their portfolios in *Risky assets* and *Safe assets* but have a higher share invested in *Fairly-safe assets*, although the literature documents mixed findings (Love, 2010; Säve-Söderbergh, 2012). The presence of children in a household is negatively associated with portfolio share in *Risky assets* and *Fairly-safe assets* but has a positive impact on *Safe assets*. Regardless of how health is measured, our results support the findings in Bogan and Fertig (2013) and Atella et al. (2012) and indicate that good health status increases allocation to *Risky assets*.

5. Robustness tests

We first consider whether there is a reverse relationship between savings goals and wealth allocation as some asset classes or financial products can facilitate goal formation and thus easily lend themselves to specific savings goals. For example, long-term investment vehicles such as ISAs may nudge households towards the formation of a retirement savings goal or a family member's savings goal. In this case, causality runs from asset classes to goal formation and not the reverse. We address this causality concern by including one-period lags

for the three dependent variables in the trivariate Tobit models in Table 4 (Columns 4 to 6) and Table 5. The results reported in Table A.1 in the appendix are consistent with our main results: the effects of savings goals remain significant, although the magnitudes of these effects decline slightly. A closely related issue we also consider concerns unobserved individual fixed effects. It is possible that expected future income can drive both savings goals and the asset allocation to *Risky assets*, making identification difficult. Devaney et al. (2007) show that an increase in households' income is associated with a shift from having no savings goals to having savings goals higher up the savings goals hierarchy. For robustness, we run a linear fixed effects OLS regression with the same control variables. Again, the results reported in Table A.2 support our main findings, although the coefficients on savings goals and the levels of significance reduce in some regressions, as expected.

An alternative approach to evaluating whether savings goals drive asset allocation is to examine the impact of changes in households' number of savings goals on asset allocation between observations. If indeed savings goals influence asset allocation, when compared to households that do not change their number of savings goals, we should expect that an increase in the number of savings goals also increases the asset allocation to either *Risky asset*s or *Fairly-safe assets*. To examine this, we generate a variable *savings goal change* with three categories: '*no change'* (base group), takes the value one if a household's number of savings goals does not change and zero otherwise; '*decrease in goals'*, takes the value one if a household's number of savings goals reduces and zero otherwise; and '*increase in goals'*, takes the value one if a household's number of savings goals increases and zero otherwise. We then replace our savings goals measure with this variable, including the same control variables as before, and run panel trivariate Tobit regressions.

The results reported in Table A.3 show that, when compared to households that do not change the number of their savings goals, both those that decrease and those that increase their savings goals increase their allocation to both *Risky assets* and *Fairly-safe assets* but hold a lower allocation of *Safe assets*. There are several possible explanations for our finding that merit further investigation. For example, it is plausible that having initially formed goals as part of the conventional financial planning process, households are capable of achieving some of them. To state the obvious, it also follows that the goals that are achieved first are likely to be shorter term goals simply because longer term goals take longer to realise. Given that conventional financial advice recommends that shorter term goals are met by investment in shorter term (*Safe* and *Fairly safe*) *assets*, once these shorter term goals are realised, the relative weight of the household portfolio will shift towards longer term goals financed by longer term (*Fairly safe* and *Risky*) *assets* (e.g. in line with the findings of Shum and Faig 2006). Furthermore, it is plausible that some goals are likely to reflect onetime events (e.g. getting married) and hence are unlikely to be replaced. Such a reduction in the number of goals due to goal achievement frees up saving capacity to invest in longer term goals better met by risky asset investments. This is consistent with the prediction of our first hypothesis that allocation to risky assets is positively associated with the time horizon of savings goals as well as the number of savings goals. Our findings are also consistent with the Maslowian Portfolio Theory argument that as households achieve short term goals it enables them to shift their focus towards saving for higher level self-actualisation goals that are longer term in nature. When it comes to interaction effects, our findings in respect of multiple sources of financial advice and numerical ability reported in panel B of Table A.3 are consistent with those reported in section 4.3 and 4.4 respectively.

Another issue we consider is whether the distribution of income and total wealth in our sample may be driving our results and whether these two variables are endogenous. As depicted

in Figures A.1 and A.2 of the appendix, not only does the number of savings goals increase with income and wealth but it also increases with the allocation to *Risky assets* and *Fairly-safe assets*, and decreases with the allocation to *Safe assets*. Thus, although we control for household income and wealth, it is possible that households with high income or wealth save more money and are thus likely to have more savings goals – that is, they are likely to be categorised as having multiple savings goals. It could also be the case that households struggling to meet basic needs are unlikely to have extra money to save and might only have a small amount of emergency funds for unexpected expenses in the future – that is, they are likely to have either no savings goals or a single savings goal. To address this issue, we re-run the regressions in Table 4 (Columns 4 to 6) and Table 5 using a sub-sample that excludes households that have a total wealth of less than £67,046 (falling under the 25th percentile) and those that have a total wealth of more than £458,512 (falling above the 75th percentile). Although this truncation process reduces the number of observations by more than a half, the regression results reported in Table A.4 in the appendix do not alter our conclusions. Following Chetty et al. (2017) and Dahlquist et al. (2018) we also included 10 piece linear splines with knots at percentiles of household wealth and income, to enrich our analysis. The results are reported in Tables A.5a (wealth splines) and A.5b (income splines) of the appendix.[14] Although the levels of significance drop slightly for some interaction effects, the magnitudes increase for the effect of having no savings goals and also seeking financial advice from multiple sources or exhibiting excellent numerical skills, thereby reinforcing our conclusions.

Additionally, and more formally, we address the issue of income, wealth and asset allocation endogeneity by running three stage least squares (3SLS) regressions. We allow household wealth (or income) to be endogenous by adding a reduced form wealth (or income)

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[14] Additional robustness tests that include splines of both household wealth and income in the same model do not alter our conclusions, although the number of observations substantially drop. These results are available from the authors.

equation to the three asset allocation systems of equations. In this wealth (or income) equation, the dependent variable is log of household wealth (or income) and we include the same control variables, except year dummies and the background variables *time preference* and *risk tolerance*. The variables *has children* and *housing tenure* are excluded from the asset allocation equations. The 3SLS results from these systems of equations are reported in Tables A.6a and A.6b with endogenous income, while Tables A.6c and A.6d report the results where wealth is considered to be endogenous, using the specifications in Table 4 (Columns (4) to (6)) and Table 5, respectively. The results from these regressions are in line with those reported in Tables 4 and 5. A Hausman test shows that the coefficients from these 3SLS regressions and those from OLS regressions are significantly different, indicating the likely presence of endogeneity. These results hold even when we include lagged dependent variables in the respective equations along with the variables parent's education and occupation status, and interaction terms between mother's and father's education as exogenous variables.[15]

Although we control for the typical range of social and demographic variables in the results reported in Tables 3 to 5, it is likely that our key variables of interest may also be capturing the effects of additional household characteristics described in Table 1. For example, impulsive spending and heavy discounting are commonly associated with self-control problems (Biljanovska and Palligkinis, 2018) suggesting that our savings goals measure may be capturing an independent effect of self-control that is not correlated with financial planning. As discussed in Section 2.4, it is also possible that household characteristics, such as whether they understand pensions, are financially organised, and shop for good interest, may be capturing the effects of numerical ability, financial advice, and other underlying goal-setting mechanisms like self-efficacy. In addition, we make use of two questions asked in the WAS

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[15] These variables are crucial because upbringing and experiences of parents, family, and friends can influence the acquisition of knowledge and financial planning (see e.g., Webley and Nyhus, 2006; van Rooij et al., 2012; Brounen et al., 2016).

about awareness among households of external events that affect savings and awareness of changes in government policy relating to pensions and savings. Because these external events can be triggered by a financial crisis, it is possible that the association between asset allocation and savings goals that we find is driven by those events (Bricker et al., 2012; Weber et al., 2013).[16] To overrule these issues, however, we re-run the models in Table 4 (Columns 4 to 6) and Table 5 and include the above, additional control variables. The results from these regressions are reported in Table A.7 of the appendix and remain largely unchanged and do not alter our conclusions.

In classifying financial assets, we make assumptions regarding the financial products that fall under the three asset classes, and this also could be driving our results. As mentioned earlier, methods of classifying financial products into *Risky assets*, *Fairly-safe assets*, or *Safe assets* varies across studies (see e.g., Guiso and Japelli, 2002; Christelis et al., 2010; Atella et al., 2012). This is because some financial products provide tax benefits (e.g., ISAs) while others possess varying levels of risk depending on the asset mix. To overrule this issue, we construct an alternative classification to address the possibility that our asset classification approach might be influencing our results. First, we reclassify the *Risky assets* category to include unit or investment bonds in line with Guiso and Japelli (2002), in addition to direct holdings of stock in U.K. or overseas (listed or unlisted) companies, employee shares, and stocks and shares ISAs. Second, we reclassify *Fairly-safe assets* to consist of investments in fixed-term investment bonds, overseas and U.K. government bonds, endowment or regular premium policies, single premium policies, lump-sum insurance policies, national savings products, individual retirement accounts or other financial assets and friendly society saving plans.

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[16] It is estimated that during the global financial crisis that started in 2007 households' net financial wealth in the U.K. dropped by 12% (financial assets declined by 9% while debt rose by 5%) and that the market value of residential property fell by 9%, although the effects of these shocks varied across households depending on income distribution, the proportion of wealth tied up in housing, and demographic factors (Bricker et al., 2012).

Finally, we reclassify *Safe assets* to comprise investments in cash ISAs and current accounts. The results derived from these alternative classifications are reported in Table A.7 of the appendix and are consistent with the findings reported in Table 4 (Columns 4 to 6) and Table 5. Finally, we replayed all of the results reported in appendices A.1 through A.8 using controls for both income and wealth, which resulted in the use of a smaller subsample of data. While not reported, these results are available from the authors and either support, or strengthen, the findings reported here. Additionally, we replayed the results reported in Table 4 columns 4 through 6, in Table 5, and in Table A.3, using changes in long term savings goals only. These results also support, and indeed strengthen, those reported here.

6. Conclusion

In recognition of goal setting and the importance that the financial planning profession accords to the formation of personal goals in the financial planning process and of the role of mental accounting in goal-based asset allocation, this study uses survey data to investigate whether savings goals can explain differences in the share of household portfolios across *Safe*, *Fairly-safe* and *Risky assets*. We also investigate whether financial advice and numerical ability play a mediating role in the relationship between savings goals and asset allocation.

Overall we find that as the number and time horizon of savings goals increases, the asset allocation to *Risky assets* also increases. This is consistent with the idea that identification of savings goals is a means of achieving self-control, as well as being indicative of a propensity to plan. Likewise, it supports the idea that households learn more about investments as they adopt more savings goals, with the result that they are comfortable increasing their allocations to stocks, once a particular knowledge threshold is reached. When households have access to multiple sources of advice, or a professional financial advisor, allocation to *Risky assets* increases, and it does so the most for households with either no savings goal or a single savings goal. This is in line with the conjecture that financial advice reduces information asymmetry but that the incremental effect fades as the pre-existing financial knowledge of households increases with the number of savings goals. We also find that numerical ability is positively associated with the allocation of savings to *Risky assets* for households with no savings goal or a single savings goal.

Prior research identifies many impediments in the journey by households towards financial wellbeing. These include: difficulty accessing sound and unbiased advice, overcoming psychological barriers to seeking such advice when it is available and implementing advice that is actually received. In addition, and as suggested by Pan and Statman

(2012), the process of advising should include "asking clients about their wants and goals, listening carefully and empathizing, educating, prescribing, and following up, again and again" (p. 62). Our results are consistent with the idea from behavioral portfolio theory that the mental accounting processes embodied in the identification of savings goals facilitate financial engagement and asset allocation. Our results therefore endorse the process adopted by the Financial Planning Standards Board of identifying goals for saving as a necessary precursor to the provision of investment advice.

Although we address endogeneity concerns in our analysis, we caution the reader that the causal inferences in our study may be the result of other behavioral attributes within our theoretical framework as we do not directly measure self-control and self-efficacy, nor financial literacy. It is possible that these factors influence the impact of savings goals on asset allocation in addition to financial advice and numerical ability. Future research using psychometric instruments to measure financial self-control and financial self-efficacy can help to establish the extent to which they directly influence savings goals and asset allocation. Furthermore, studies that use a continuous measure of financial literacy rather than the indicator variable used in our study will shed more light on its relative importance. Finally, it is also likely that attitudes towards risk may influence goal-setting as posited in behavioral portfolio theory and that this could be driving our mediation analysis. Future research that captures willingness to risk experiencing a less favorable outcome in pursuit of a goal (see e.g., Pan and Statman, 2012) rather than our binary risk tolerance measure, will better capture the impact of this important variable.

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Tables

Main results (Waves 1 to 5)

Table 1: Variable descriptions

The table presents variable descriptions. The sample is from five biennial waves of the UK Wealth and Assets Survey covering the period June 2006 to July 2016.

Variable	Description	Value
Dependent Variables		
Safe assets	Various questions regarding holding and amount saved or invested in financial instruments.	The proportion of money investment in savings and/or current accounts to total household financial wealth.
		A binary variable which equals 1 if a household holds a savings and/or current account and equals 0 otherwise.
Fairly safe assets	Various questions regarding holding and amount saved or invested in financial instruments.	The proportion of money invested in fixed-term investment bonds, unit or investment bonds, overseas and U.K. government bonds, national savings products, insurance products, cash and unspecified ISAs, or other financial assets to total household financial wealth.
		A binary variable which equals 1 if a household has invested in any of the above financial products and equals 0 otherwise.
Risky assets	Various questions regarding holding and amount saved or invested in financial instruments.	The proportion of money invested in U.K. or overseas shares or stocks in listed or unlisted companies, employee shares, or investment ISAs to total household financial wealth.
		A binary variable which equals 1 if a household has invested in any of the above financial products and equals 0 otherwise.
Financial wealth	Represents the net value of all financial assets excluding endowments.	Log of financial wealth.
Key independent variables		
Savings goals type	What are the main reasons why you have saved this particular money? Respondents can identify a main reason and also list other reasons for saving money. We generate dummies for each reason for saving money identified regardless of its ranking. For example, if the reason for saving money is for family members the variable equals one if this is identified as either the main reason, the second reason and so on, and zero otherwise.	Dummies include unexpected expenditures; for family members (gifts or inheritance); to provide regular income; to provide income for retirement; to cover planned expense in the future; for deposit to buy property; for holidays or other leisure; as speculation; and to see my money grow.
Savings goal horizon	Using the reasons identified by households, we also generate a four-level categorical variable that groups savings goals by investment horizon.	No savings goals = 1; short term = 2 if to provide regular income and for unexpected expenditure; medium term = 3 if for deposit to buy property and for holidays or other leisure; long term = 4 if for retirement, for family members, planned expense in the future, for speculation and to see money grow.

Variable	Description	Value
Number of saving goals	We generate a five-level categorical variable for the number of saving goals identified by a household.	No savings goals = 1 and zero otherwise; one savings goal = 2 and zero otherwise; two savings goals = 3 and zero otherwise; three savings goals = 4 and zero otherwise; and four or more savings goals = 5 and zero otherwise.
Financial advice source	We use three questions. The first asks respondents whether they had received financial advice. The second asks respondents to identify from whom they received financial advice. This question was asked in interviews carried out between July 2006 and June 2007. The third, asked after July 2007, asks respondents to choose from a list of providers of financial advice those that they would trust for advice about saving for retirement. We combine these questions and generate a categorical variable with four dummies that distinguish the various sources of financial advice.	We generate four dummy variables: base = 1 if no financial advice is sought; family, friends and social media = 2 if respondents identify a partner, spouse, friends, family, work colleagues, or trust print and social media; consumer and other professional bodies = 3 if respondents identify bank or building society, insurance company, accountant, solicitor, insurance broker, mortgage adviser, stockbroker, employer, trade union, the pension service, financial services authority (FSA), and other consumer bodies e.g. citizens advice bureau (CAB); independent financial advisors (IFAs) = 4 if respondents identify independent financial advisors.
Number of financial advisors	From the financial advice question, we also generate three dummies that represent the number of sources of financial advice identified by households.	No financial advice = 1 and zero otherwise; single source of financial advice = 2 and zero otherwise; and multiple sources of financial advice = 3 and zero otherwise.
Numerical ability	If you were to rate your mathematical skills for daily life, would you say they are …?	Poor or no opinion = 1; moderate = 2; good = 3; excellent = 4
Control variables		
Time preference	If you had a choice of receiving a thousand pounds today or one thousand one hundred pounds in a year's time, which would you choose?	£1,000 today = 0; £1,100 next year = 1
Risk tolerance	If you had a choice between a guaranteed payment of one thousand pounds and a one in five chance of winning ten thousand pounds, which would you choose?	Guaranteed payment of £1,000 =0; One in five chance of £10,000 = 1
Age group	Derived variable: uses date of birth variables on survey database.	Below 35 = 1; 35 or below 45 = 2; 45 or below 55 = 3; 55 or below 65 =4; and 65 or above = 5.
Male	Interviewer check sex of the respondent.	Male = 1; female = 0
Couple	Marital status is represented by married, separated, divorced, widowed or never married from which we generate categorical and dummy variables.	Married or cohabiting = 1; single, widowed, divorced, or separated = 0
Degree level or above	Derived variable - yearly updated qualification of new entrants and existing panel members.	No qualification, commercial qualification, no o-levels, CSE grade 2-5 or Scotland grade 4-5, GCE A-levels, GCE o-levels or equivalent, teaching, other higher or nursing qualifications = 0; and first or higher degree = 1
Employed or self-employed	Please look at this card and tell me which best describes your current situation? Self-employed, in paid employment, unemployed, retired, family care, FT student, long term sick/disabled, on maternity leave, government training or other.	Unemployed, maternity leave, family care, full time student, sick, disabled, government training scheme, or other, retired = 0; self-employed or employed = 1
Has child(ren)	Number of own children derived from a set of questions.	One, two, three or more kids = 1; none = 0
Lives in urban area	An indicator that shows whether households live in a rural area or urban area.	Urban = 1; rural = 0

Variable	Description	Value
Christian	We generate a dummy variables from the question asking respondents about their religious identity, to which the response could be Christian, Buddhist, Hindu, Jewish, Muslim, Sikh, any other religion, and no religion.	No religion or other religious identity = 0; Christian = 1
Has good health	How is your health in general? Would you say it was …?	Fair, bad, or very bad = 0; very good or good = 1
White British	Ethnicity of household representative.	African, Asian and others = 0; White British = 1
Housing tenure	In which of these ways do you occupy this accommodation?	We generate three dummy variables: renting = 1 and zero otherwise; through a mortgage = 2 and zero otherwise; and own outright = 3 and zero otherwise.
Log of household wealth	Represents the net household wealth including both financial and non-financial wealth.	Total wealth in £
Government office region	Internally computed.	North East = 1 ; North West = 2 ; Yorkshire and Humber = 3 ; East Midlands = 4 ; West Midlands = 5 ; East of England = 6 ; London = 7 ; South East = 8 ; South West = 9 ; Wales = 10 ; Scotland = 11 ; and Northern Ireland = 12
Additional controls		
Log of household income	Represents household income reported during Waves 3 to 5, while for Waves 1 and 2, it represents imputed income using interpolation and extrapolation based upon total household wealth.	Household income in £
Impulsive spender	I am impulsive and tend to buy things even when I can't really afford them.	Agree strongly or tend to agree = 1; neither agree nor disagree, tend to disagree, disagree strongly or do not know/not sure = 0
Financial organisation	I am very organised when it comes to managing money.	No opinion, don't know, tend to disagree, or strongly disagree = 0 ; strongly agree or tend to agree = 1
Aware of external events	Have there been any external events in the last 12 months which affected savings?	Yes = 1; no = 0
Aware of Government policy changes	Have you heard of any changes, in the last 12 months, in government policy relating to savings?	Yes = 1; no = 0
Heavy discounter	I am prepared to spend now and let the future take care of itself.	Agree strongly or tend to agree = 1; neither agree nor disagree, tend to disagree, disagree strongly or do not know/not sure =0
Shops for competitive interest	I tend to shop around for the best deal on interest rates etc.	Neither agree nor disagree, tend to disagree, or strongly disagree = 0 ; strongly agree or tend to agree = 1
Understands pensions	I feel I understand enough about pensions to make decisions about saving for retirement.	Neither agree nor disagree, tend to disagree, or strongly disagree = 0 ; strongly agree or tend to agree = 1

Table 2: Summary statistics

The table displays weighted summary statistics for five waves of the WAS data. Panel A presents summary statistics for household wealth variables and their breakdown by asset class. Panel B presents summary statistics for the key variables of interest including savings goals, financial advice, and numerical ability; while Panel C presents statistics for the control variables. Bivariate analysis is presented in Panel D for the key independent variables by savings goals and includes Wald Chi-Square tests of equal means. Panel E presents transitional probabilities for ownership of the three asset classes over the panel period.

Variable description		Mean	Std. Dev.	Obs.		Mean	Std. Dev.	Obs.
Panel A: Asset class, ownership and portfolio share					*Panel B. Key explanatory variables*			
Asset class					Savings goals			
Total household wealth (£)		438917	1260886	82670	No savings goals	0.49	0.50	82670
Household income (£)		42068	85566	60601	Single savings goal	0.21	0.41	82670
Household financial wealth (£)		60103	981617	82670	Two savings goals	0.13	0.33	82670
Risky assets (£)		15526	616700	82670	Three savings goal	0.09	0.29	82670
Fairly-safe assets (£)		25852	347058	82670	Four or more savings goals	0.08	0.27	82670
Safe assets (£)		18739	199334	82670	Savings goal type			
Participation rates					For no reason	0.49	0.50	82670
Risky assets		0.27	0.44	82670	For unexpected expenditure	0.33	0.47	82670
Fairly-safe assets		0.60	0.49	82670	Provide regular income during year	0.03	0.18	82670
Safe assets		0.98	0.14	82670	For other family members	0.11	0.31	82670
Proportion of financial wealth					Provide income for retirement	0.11	0.31	82670
Risky assets		0.08	0.20	82670	Planned future expense	0.16	0.37	82670
Fairly-safe assets		0.31	0.35	82670	Deposit for property	0.03	0.17	82670
Safe assets		0.61	0.38	82670	Holiday or recreation	0.24	0.43	82670
Proportion of financial wealth by no. of savings goals					See money grow or good interest	0.09	0.28	82670
Four or more savings goals:	Risky assets	0.16	0.24	7349				
	Fairly-safe assets	0.43	0.31	7349	Financial advice			
	Safe assets	0.42	0.31	7349	No advisor	0.33	0.47	82670
Three savings goals:	Risky assets	0.12	0.22	8070	Single advisor	0.27	0.45	82670
	Fairly-safe assets	0.40	0.33	8070	Multiple advisors	0.40	0.49	82670
	Safe assets	0.48	0.35	8070	Financial advice source			
Two savings goals:	Risky assets	0.10	0.21	10890	No advisor	0.33	0.47	82229
	Fairly-safe assets	0.37	0.34	10890	Family, friends or social media	0.11	0.32	82229
	Safe assets	0.53	0.36	10890	Consumer or professional bodies	0.26	0.44	82229
Single savings goal:	Risky assets	0.08	0.20	17745	Independent financial advisors	0.30	0.46	82229
	Fairly-safe assets	0.33	0.35	17745	Numerical ability			
	Safe assets	0.59	0.38	17745	Poor	0.05	0.21	60299
No savings goal:	Risky assets	0.06	0.19	38616	Moderate	0.23	0.42	60299
	Fairly-safe assets	0.25	0.35	38616	Good	0.47	0.50	60299
	Safe assets	0.69	0.39	38616	Excellent	0.25	0.43	60299

Panel C: Control variables

Variable	Mean	SD	N	Variable	Mean	SD	N
Time preference	0.24	0.43	82670	Age	56	17.02	82670
Risk taker	0.20	0.40	82670	Housing tenure			
Take risks to get good return	3.29	1.06	66776	Rents	0.28	0.45	82670
Financial expectations	1.94	0.74	58999	Under mortgage	0.34	0.47	82670
Good health	0.70	0.46	82670	Outright owner	0.38	0.49	82670
Male	0.61	0.49	82670	Impulsive spender	0.06	0.24	82670
Couple	0.57	0.50	82670	Heavy discounter	0.24	0.43	82670
Degree and above qualification	0.24	0.43	82670	Financially organized	0.64	0.48	82670
Employed or self-employed	0.55	0.50	82670	Aware of external economic events	0.21	0.41	82670
Has child(ren)	0.25	0.43	82670	Aware of government policy changes	0.12	0.33	82670
Lives in urban area	0.74	0.44	82670	Shops for good interest	0.10	0.30	82670
Christian	0.73	0.44	82670	Understands pension planning	0.53	0.50	59469
White British	0.89	0.31	82670				

Panel D: Bivariate analysis

Savings goals	Total wealth (£)	Total financial wealth (£)	Household income	No advice	Single source of advice	Multiple sources of advice	Poor numerical ability	Moderate numerical ability	Good numerical ability	Excellent numerical ability
No savings goal	322,427	35,806	33,231	0.37	0.30	0.33	0.07	0.27	0.45	0.21
Single savings goal	462,505	73,606	41,547	0.32	0.32	0.36	0.04	0.23	0.48	0.25
Two savings goals	515,712	68,141	30,797	0.28	0.23	0.48	0.03	0.21	0.49	0.27
Three savings goals	607,046	85,707	71,473	0.24	0.18	0.58	0.02	0.16	0.49	0.33
Four or above goals	779,483	132,021	80,101	0.25	0.16	0.59	0.01	0.14	0.46	0.38
Wald chi2	*2652.84*	*769.96*	*14.1*	*1000.66*	*1495.30*	*3417.20*	*674.16*	*719.89*	*49.82*	*760.32*
P-Value	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*

Panel E: Transitional probabilities

			Probability of ownership during subsequent waves									
			No savings goal		Single savings goal		Two savings goals		Three savings goals		Four or more savings goals	
	Asset Class		No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)
Probability of ownership wave 1	Risky assets	No	92.88	7.12	88.92	11.08	83.29	16.71	80.42	19.58	71.76	28.24
		Yes	34.77	65.23	30.70	69.30	25.59	74.41	15.09	84.91	12.25	87.75
		Total	81.13	18.87	71.12	28.88	60.14	39.86	48.45	51.55	31.60	68.40
	Fairly safe assets	No	81.17	18.83	65.21	34.79	55.83	44.17	51.11	48.89	40.85	59.15
		Yes	20.41	79.59	11.57	88.43	6.13	93.87	4.98	95.02	3.45	96.55
		Total	50.18	49.82	26.81	73.19	15.02	84.98	9.96	90.04	5.66	94.34
	Safe assets	No	25.98	74.02	25.81	74.19	7.69	92.31	0.00	100.00	10.00	90.00
		Yes	1.34	98.66	0.63	99.37	0.97	99.03	0.72	99.28	0.42	99.58
		Total	2.03	97.97	0.92	99.08	1.04	98.96	0.72	99.28	0.50	99.50

Table 3: Marginal effects of savings goals

The table presents trivariate tobit regressions for the effect of different measures of savings goals on wealth allocation. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variables *Savings goal type* (Columns (1) to (3)), *Savings goal horizon* (Columns (4) to (6)), and *Number of savings goals* (Columns (7) to (9)). The control variables, described in Table 1, are *Time preference, Risk tolerance, Age group, Male, Married or cohabiting, Degree level or above, Employed, Has child(ren), Lives in urban area, Christian, Has good health, White British, Housing tenure, Log of net household wealth*, and region and year dummies. The table reports marginal effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Savings goal type			Savings goal horizon			Number of savings goals		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Savings goal type (Base = No savings goal)									
Unexpected expenditure (Short term)	-0.006***	0.014***	-0.004***						
	(-5.60)	(7.99)	(-2.66)						
Family (Long term)	0.006***	0.019***	-0.017***						
	(2.98)	(6.32)	(-6.31)						
Regular income (Short term)	-0.005	0.024***	-0.012**						
	(-1.47)	(4.42)	(-2.47)						
Retirement (Long term)	0.012***	0.025***	-0.025***						
	(6.27)	(9.85)	(-11.02)						
Planned expenditure (Long term)	0.003**	0.021***	-0.015***						
	(2.24)	(9.57)	(-8.09)						
Deposit for property purchase (Medium term)	0.002	0.035***	-0.021***						
	(0.55)	(7.66)	(-4.94)						
Holiday (Medium term)	0.006***	0.031***	-0.025***						
	(6.14)	(21.25)	(-20.13)						
For good interest and for speculation (Long term)	0.022***	0.036***	-0.041***						
	(15.45)	(20.72)	(-27.46)						
Savings goal horizon (Base = No savings goal)									
Short term goals				-0.003***	0.020***	-0.011***			
				(-2.82)	(13.92)	(-8.79)			
Mid Term goals				0.001	0.027***	-0.018***			
				(0.74)	(15.01)	(-11.20)			
Long term goals				0.016***	0.031***	-0.032***			
				(15.17)	(22.54)	(-27.25)			
No of savings goals (Base=No savings goal)									
Single savings goal							-0.000	0.018***	-0.011***
							(-0.00)	(13.27)	(-9.55)
Multiple savings goals							0.011***	0.031***	-0.029***
							(11.59)	(24.46)	(-26.18)
Time preference	0.008***	0.008***	-0.012***	0.008***	0.008***	-0.012***	0.009***	0.008***	-0.012***
	(8.89)	(6.89)	(-11.15)	(8.90)	(6.93)	(-11.20)	(9.47)	(7.06)	(-11.67)
Risk tolerance	0.009***	-0.002*	-0.004***	0.009***	-0.002*	-0.005***	0.009***	-0.002	-0.005***
	(8.58)	(-1.83)	(-3.88)	(8.69)	(-1.66)	(-4.08)	(8.98)	(-1.57)	(-4.36)

Age group (Base = Below 35)									
35-44	-0.005***	-0.005**	0.006***	-0.005***	-0.006**	0.006***	-0.005***	-0.006***	0.007***
	(-3.12)	(-2.44)	(3.09)	(-3.38)	(-2.56)	(3.31)	(-3.37)	(-2.71)	(3.38)
45-54	-0.011***	-0.005**	0.008***	-0.012***	-0.006***	0.009***	-0.011***	-0.006***	0.009***
	(-6.39)	(-2.28)	(3.85)	(-6.97)	(-2.64)	(4.42)	(-6.66)	(-2.70)	(4.24)
55-64	-0.013***	-0.006**	0.008***	-0.014***	-0.007***	0.010***	-0.013***	-0.007***	0.009***
	(-6.89)	(-2.30)	(3.82)	(-7.80)	(-2.85)	(4.76)	(-7.16)	(-2.78)	(4.27)
Over 64	-0.012***	0.008***	-0.003	-0.013***	0.007**	-0.000	-0.013***	0.007**	-0.001
	(-6.01)	(3.07)	(-1.17)	(-6.88)	(2.46)	(-0.21)	(-6.55)	(2.57)	(-0.52)
Male	0.008***	-0.009***	0.002*	0.008***	-0.009***	0.002*	0.008***	-0.009***	0.002
	(8.67)	(-7.17)	(1.70)	(8.75)	(-7.16)	(1.66)	(9.01)	(-7.03)	(1.39)
Married or cohabiting	-0.001	0.009***	-0.007***	-0.001	0.009***	-0.007***	-0.001	0.009***	-0.006***
	(-1.00)	(6.23)	(-5.25)	(-0.79)	(6.52)	(-5.62)	(-1.30)	(6.29)	(-5.15)
Degree level or above	0.018***	0.004***	-0.017***	0.017***	0.004***	-0.016***	0.018***	0.004***	-0.017***
	(15.16)	(2.96)	(-13.37)	(14.97)	(2.88)	(-13.16)	(15.49)	(3.06)	(-13.66)
Employed	0.000	-0.003	0.004***	-0.000	-0.003	0.004***	0.000	-0.002	0.004***
	(0.29)	(-1.60)	(3.00)	(-0.04)	(-1.64)	(3.25)	(0.38)	(-1.50)	(2.90)
Has child(ren)	-0.000	-0.013***	0.008***	-0.001	-0.014***	0.009***	-0.000	-0.014***	0.009***
	(-0.13)	(-7.99)	(5.76)	(-0.49)	(-8.30)	(6.24)	(-0.33)	(-8.25)	(6.07)
Lives in urban area	-0.004***	0.005***	-0.000	-0.004***	0.006***	-0.001	-0.005***	0.005***	-0.001
	(-3.89)	(3.54)	(-0.38)	(-3.80)	(3.70)	(-0.57)	(-3.93)	(3.61)	(-0.41)
Christian	0.002*	0.006***	-0.006***	0.002**	0.006***	-0.006***	0.002*	0.006***	-0.006***
	(1.88)	(4.38)	(-5.18)	(1.98)	(4.46)	(-5.31)	(1.83)	(4.33)	(-5.12)
Has good health	0.007***	0.012***	-0.014***	0.007***	0.012***	-0.014***	0.007***	0.012***	-0.014***
	(7.48)	(8.96)	(-12.35)	(7.80)	(9.30)	(-12.82)	(7.64)	(9.19)	(-12.63)
White British	0.011***	0.020***	-0.021***	0.011***	0.021***	-0.022***	0.011***	0.021***	-0.022***
	(7.41)	(9.74)	(-12.19)	(7.75)	(9.92)	(-12.58)	(7.52)	(9.81)	(-12.33)
Housing tenure (Base = Rents)									
Through a mortgage	-0.006***	0.020***	-0.006***	-0.005***	0.019***	-0.006***	-0.007***	0.019***	-0.005***
	(-3.69)	(8.59)	(-3.11)	(-3.55)	(8.48)	(-3.19)	(-4.31)	(8.29)	(-2.59)
Outright owner	-0.002	0.044***	-0.028***	-0.002	0.044***	-0.028***	-0.002	0.044***	-0.028***
	(-1.12)	(18.15)	(-13.68)	(-1.31)	(18.00)	(-13.50)	(-1.44)	(17.94)	(-13.38)
Log of net household wealth	0.020***	0.020***	-0.025***	0.020***	0.020***	-0.025***	0.021***	0.020***	-0.025***
	(44.69)	(34.03)	(-48.20)	(44.89)	(34.36)	(-48.59)	(45.46)	(34.56)	(-49.18)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82670	82670	82670	82670	82670	82670	82670	82670	82670

Table 4: Effect of number of savings goals and financial advice

The table presents trivariate tobit regressions for the effect of savings goals and financial advice on wealth allocation. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variable *Number of savings goals* and the mediating variable financial advice measured in two ways – *Sources of financial advice* (Columns (1) to (3)) and *Number of financial advice sources* (Columns (4) to (6)). The control variables, described in Table 1, are *Time preference, Risk tolerance, Age group, Male, Married or cohabiting, Degree level or above, Employed, Has child(ren), Lives in urban area, Christian, Has good health, White British, Housing tenure, Log of net household wealth*, and region and year dummies. The table reports marginal effects: Panel A presents the direct effects while Panel B presents the interaction effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Sources of financial advice			Number of financial advice sources		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
Panel A: Direct effects	(1)	(2)	(3)	(4)	(5)	(6)
No of savings goals (Base=No savings goal)						
Single savings goal	-0.000	0.018***	-0.011***	0.000	0.018***	-0.011***
	(-0.30)	(13.01)	(-9.19)	(0.14)	(13.33)	(-9.65)
Multiple savings goals	0.010***	0.031***	-0.028***	0.010***	0.031***	-0.028***
	(10.71)	(23.83)	(-25.09)	(10.87)	(23.60)	(-24.94)
Source of financial advice (Base=None)						
Family, friends and social media	-0.006***	-0.001	0.004***			
	(-4.73)	(-0.45)	(2.88)			
Consumer and professional bodies	-0.006***	-0.003**	0.006***			
	(-6.29)	(-2.09)	(5.04)			
Independent financial advisor	0.007***	0.005***	-0.010***			
	(6.97)	(3.62)	(-7.88)			
No of financial advice sources (Base=None)						
One source of advice				-0.004***	-0.004***	0.005***
				(-4.51)	(-3.25)	(4.67)
Multiple sources of advice				0.003***	0.004***	-0.006***
				(3.22)	(3.48)	(-5.11)
Time preference	0.009***	0.008***	-0.012***	0.009***	0.008***	-0.012***
	(9.31)	(7.02)	(-11.54)	(9.34)	(6.92)	(-11.46)
Risk tolerance	0.009***	-0.002*	-0.005***	0.009***	-0.002	-0.005***
	(8.87)	(-1.73)	(-4.14)	(8.93)	(-1.62)	(-4.29)
Age group (Base = Below 35)						
35-44	-0.005***	-0.006***	0.007***	-0.005***	-0.006**	0.006***
	(-3.37)	(-2.64)	(3.36)	(-3.22)	(-2.55)	(3.15)
45-54	-0.011***	-0.006**	0.008***	-0.011***	-0.005**	0.008***
	(-6.33)	(-2.48)	(3.91)	(-6.35)	(-2.39)	(3.80)
55-64	-0.012***	-0.006**	0.009***	-0.012***	-0.006**	0.008***
	(-6.83)	(-2.53)	(3.92)	(-6.74)	(-2.37)	(3.69)
Over 64	-0.011***	0.008***	-0.003	-0.011***	0.008***	-0.003
	(-5.78)	(3.03)	(-1.35)	(-5.92)	(3.13)	(-1.35)
Male	0.008***	-0.009***	0.002	0.008***	-0.009***	0.002
	(8.85)	(-6.99)	(1.45)	(8.94)	(-7.08)	(1.45)
Married or cohabiting	-0.001	0.009***	-0.006***	-0.001	0.009***	-0.006***
	(-1.28)	(6.20)	(-5.09)	(-1.27)	(6.33)	(-5.20)
Degree level or above	0.017***	0.004***	-0.016***	0.018***	0.004***	-0.016***
	(15.07)	(2.75)	(-13.10)	(15.25)	(2.79)	(-13.28)
Employed	0.000	-0.003*	0.004***	0.000	-0.003*	0.004***
	(0.12)	(-1.66)	(3.18)	(0.20)	(-1.71)	(3.22)
Has child(ren)	-0.000	-0.014***	0.009***	-0.000	-0.014***	0.009***
	(-0.18)	(-8.12)	(5.89)	(-0.26)	(-8.18)	(5.97)
Lives in urban area	-0.004***	0.005***	-0.001	-0.005***	0.005***	-0.000
	(-3.92)	(3.61)	(-0.44)	(-3.97)	(3.58)	(-0.36)
Christian	0.002*	0.006***	-0.006***	0.002*	0.006***	-0.006***
	(1.81)	(4.25)	(-5.05)	(1.83)	(4.32)	(-5.11)
Has good health	0.006***	0.012***	-0.014***	0.007***	0.012***	-0.014***
	(7.17)	(9.01)	(-12.23)	(7.52)	(9.08)	(-12.48)
White British	0.010***	0.020***	-0.021***	0.010***	0.020***	-0.021***
	(7.04)	(9.48)	(-11.80)	(7.35)	(9.65)	(-12.09)
Housing tenure (Base = Rents)						
Through a mortgage	-0.007***	0.018***	-0.004**	-0.007***	0.019***	-0.005***
	(-4.88)	(8.02)	(-2.09)	(-4.32)	(8.29)	(-2.58)
Outright owner	-0.003*	0.043***	-0.027***	-0.002	0.044***	-0.028***
	(-1.88)	(17.66)	(-12.96)	(-1.38)	(18.01)	(-13.48)

	(1)	(2)	(3)	(4)	(5)	(6)
Log of net household wealth	0.020***	0.020***	-0.025***	0.021***	0.020***	-0.025***
	(44.81)	(34.21)	(-48.73)	(45.27)	(34.35)	(-48.94)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82229	82229	82229	82670	82670	82670

Panel B: Interaction effects	(1)	(2)	(3)	(4)	(5)	(6)
Financial advice * No of savings goals						
(Base = No financial advisor)						
Family, friends and social media						
No savings goal	-0.003**	-0.005*	0.005**			
	(-2.08)	(-1.90)	(2.56)			
Single savings goal	-0.005**	0.001	0.003			
	(-2.26)	(0.38)	(1.09)			
Multiple savings goals	-0.010***	0.004	0.004			
	(-4.62)	(1.33)	(1.45)			
Consumer and other professional bodies						
No savings goal	-0.005***	-0.005***	0.006***			
	(-3.75)	(-2.82)	(3.78)			
Single savings goal	-0.006***	-0.004	0.008***			
	(-3.37)	(-1.52)	(3.23)			
Multiple savings goals	-0.009***	0.002	0.005**			
	(-5.08)	(0.67)	(2.54)			
Independent financial advisor						
No savings goal	0.007***	0.009***	-0.012***			
	(4.61)	(4.55)	(-6.95)			
Single savings goal	0.006***	0.005*	-0.009***			
	(3.30)	(1.81)	(-3.76)			
Multiple savings goals	0.007***	0.002	-0.007***			
	(4.45)	(0.89)	(-3.96)			
No of advice sources * No of savings goals						
(Base = No financial advisor)						
Single source						
No savings goal				-0.003***	-0.007***	0.006***
				(-2.93)	(-3.93)	(4.31)
Single savings goal				-0.005***	-0.004	0.006**
				(-2.73)	(-1.49)	(2.52)
Multiple savings goals				-0.005***	0.001	0.003
				(-2.98)	(0.24)	(1.30)
Multiple sources						
No savings goal				0.003***	0.007***	-0.008***
				(2.58)	(3.53)	(-4.85)
Single savings goal				0.003**	0.005*	-0.006***
				(1.98)	(1.93)	(-2.67)
Multiple savings goals				0.002	0.003	-0.004**
				(1.37)	(1.36)	(-2.13)
Observations	82229	82229	82229	82670	82670	82670

Table 5: Effect of number of savings goals and numerical ability

The table presents trivariate tobit regressions for the effect of savings goals and numerical ability on wealth allocation. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variable *Number of savings goals* and the mediating variable *Numerical ability*. The control variables, described in Table 1, are *Time preference, Risk tolerance, Age group, Male, Married or cohabiting, Degree level or above, Employed, Has child(ren), Lives in urban area, Christian, Has good health, White British, Housing tenure, Log of net household wealth*, and region and year dummies. The table reports marginal effects: Panel A presents the direct effects while Panel B presents the interaction effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Risky assets	Fairly-safe assets	Safe assets
Panel A: Direct effects	(1)	(2)	(3)
No of savings goals (Base=None)			
Single savings goal	-0.001	0.018***	-0.011***
	(-0.92)	(11.23)	(-7.90)
Multiple savings goals	0.010***	0.028***	-0.027***
	(8.89)	(18.92)	(-20.35)
Numerical ability (Base=Poor)			
Moderate	-0.001	0.013***	-0.008**
	(-0.40)	(3.47)	(-2.50)
Good	0.003	0.019***	-0.014***
	(1.16)	(5.37)	(-4.84)
Excellent	0.010***	0.015***	-0.016***
	(4.09)	(4.01)	(-5.28)
No of financial advice sources (Base=None)			
One source of advice	-0.003***	-0.004**	0.005***
	(-3.31)	(-2.26)	(3.32)
Multiple sources of advice	0.003***	0.006***	-0.007***
	(2.95)	(3.74)	(-5.32)
Time preference	0.007***	0.008***	-0.011***
	(6.52)	(5.96)	(-8.98)
Risk tolerance	0.009***	-0.001	-0.005***
	(7.33)	(-0.86)	(-4.12)
Age group (Base = Below 35)			
35-44	-0.006***	-0.005*	0.007***
	(-3.18)	(-1.78)	(2.71)
45-54	-0.012***	-0.004	0.008***
	(-5.86)	(-1.41)	(3.22)
55-64	-0.014***	-0.005*	0.009***
	(-6.42)	(-1.67)	(3.51)
Over 64	-0.014***	0.009***	-0.001
	(-5.84)	(2.62)	(-0.49)
Male	0.007***	-0.009***	0.002*
	(6.78)	(-5.88)	(1.72)
Married or cohabiting	-0.001	0.009***	-0.006***
	(-1.02)	(5.10)	(-4.31)
Degree level or above	0.016***	0.004**	-0.016***
	(11.66)	(2.33)	(-10.52)
Employed	0.000	-0.002	0.003*
	(0.32)	(-0.83)	(1.85)
Has child(ren)	-0.001	-0.012***	0.008***
	(-0.50)	(-6.06)	(4.64)
Lives in urban area	-0.005***	0.005***	-0.000
	(-3.50)	(2.86)	(-0.18)
Christian	0.003***	0.005***	-0.006***
	(2.61)	(3.11)	(-4.40)
Has good health	0.007***	0.011***	-0.013***
	(6.52)	(7.09)	(-10.25)
White British	0.010***	0.020***	-0.022***
	(5.95)	(7.90)	(-9.95)
Housing tenure (Base = Rents)			
Through a mortgage	-0.006***	0.020***	-0.006***
	(-3.51)	(7.21)	(-2.60)
Outright owner	-0.001	0.044***	-0.029***
	(-0.81)	(15.24)	(-11.67)
Log of net household wealth	0.019***	0.019***	-0.024***
	(36.94)	(28.52)	(-39.76)
Region dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Observations	61504	61504	61504

Panel B: Interaction effects	(1)	(2)	(3)
Numerical ability * No of savings goals			
(Base = Poor)			
Moderate			
No savings goals	0.002	0.013***	-0.008**
	(0.81)	(2.95)	(-2.24)
Single savings goal	-0.004	0.016**	-0.009
	(-1.08)	(2.28)	(-1.51)
Multiple savings goals	-0.002	0.007	-0.004
	(-0.43)	(0.88)	(-0.57)
Good			
No savings goals	0.004	0.022***	-0.014***
	(1.46)	(5.18)	(-4.20)
Single savings goal	0.002	0.019***	-0.014**
	(0.40)	(2.68)	(-2.48)
Multiple savings goals	0.003	0.011	-0.012*
	(0.59)	(1.51)	(-1.80)
Excellent			
No savings goals	0.011***	0.025***	-0.021***
	(3.65)	(5.37)	(-5.64)
Single savings goal	0.007*	0.013*	-0.014**
	(1.69)	(1.84)	(-2.33)
Multiple savings goals	0.012**	0.001	-0.010
	(2.13)	(0.12)	(-1.59)
Observations	61504	61504	61504

Appendix

Figure A.1: Wealth and income distribution by number of savings goals

The figure displays the distribution of the log values of total wealth, income and financial wealth (financial assets) in £ across the number of savings goals from 82,670 observations of households using five waves of the WAS.
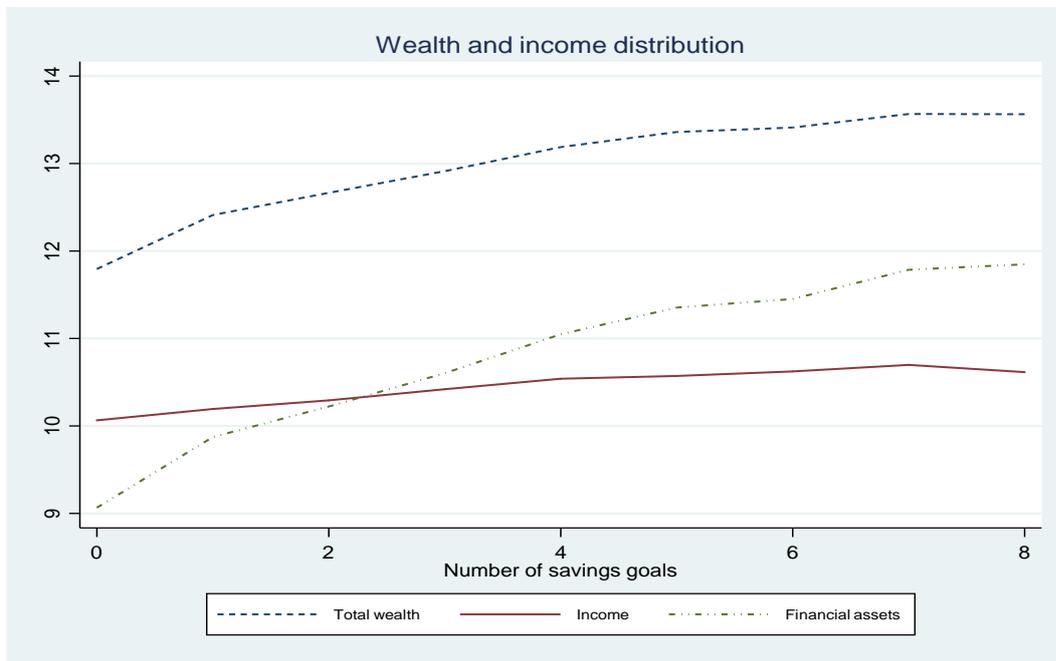
Figure A.2: Ownership rates and asset allocation (portfolio share) by number of savings goals

The figures depict the proportions of (a) ownership rates and (b) asset allocation (portfolio share) across the number of savings goals from 82,670 observations of households using five Waves of the WAS. Assets are classified into three categories: Risky assets, Fairly safe assets and Safe assets.
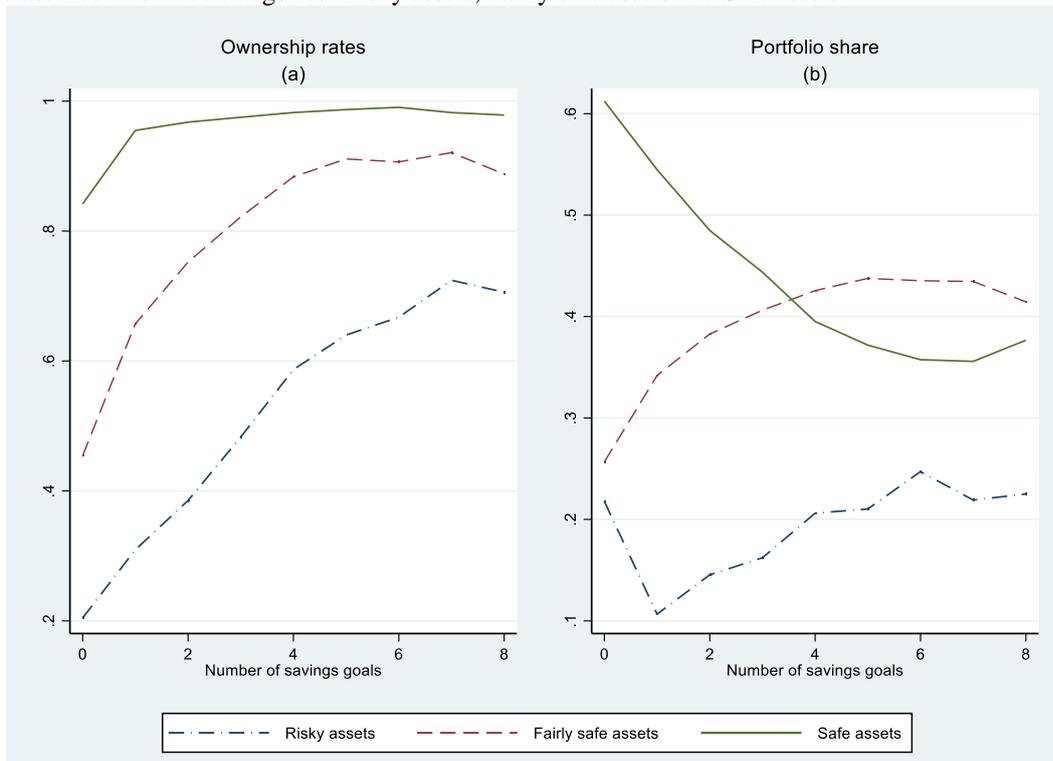
Table A.1: Effects of savings goals, financial advice and numerical ability with lagged dependent variables

The table replays the specifications in Table 4 (Columns (4) to (6)) and Table 5 with lagged dependent variables. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variable *Number of savings goals* and the mediating variables, *Number of financial advice sources* (Columns (1) to (3)) and *Numerical ability* (Columns (4) to (6)). The control variables, described in Table 1, are *Time preference, Risk tolerance, Age group, Male, Married or cohabiting, Degree level or above, Employed, Has child(ren), Lives in urban area, Christian, Has good health, White British, Housing tenure, Log of net household wealth*, and region and year dummies. The table reports marginal effects: Panel A presents the direct effects while Panel B presents the interactive effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
Panel A: Direct effects	(1)	(2)	(3)	(4)	(5)	(6)
No of savings goals (Base=None)						
Single savings goal	0.000	0.011***	-0.008***	-0.001	0.011***	-0.006***
	(0.25)	(7.73)	(-5.84)	(-0.71)	(6.45)	(-4.26)
Multiple savings goals	0.007***	0.017***	-0.018***	0.008***	0.016***	-0.017***
	(7.28)	(12.96)	(-14.76)	(6.82)	(10.31)	(-12.22)
No of financial advice sources (Base=None)						
One source of advice	-0.002**	-0.002	0.003**	-0.002	-0.001	0.002
	(-2.41)	(-1.49)	(2.30)	(-1.60)	(-0.83)	(1.29)
Multiple sources of advice	0.002*	0.003**	-0.004***	0.002	0.005***	-0.005***
	(1.67)	(2.43)	(-3.39)	(1.44)	(2.89)	(-3.74)
Numerical ability (Base=Poor)						
Moderate				-0.003	0.006*	-0.002
				(-1.51)	(1.91)	(-0.65)
Good				-0.001	0.009***	-0.005*
				(-0.54)	(2.87)	(-1.81)
Excellent				0.003	0.006*	-0.006*
				(1.27)	(1.72)	(-1.84)
Lagged asset allocation in fairly-safe assets	-0.146***	0.170***	-0.031***	-0.147***	0.171***	-0.032***
	(-39.95)	(60.34)	(-10.40)	(-36.19)	(53.51)	(-9.61)
Lagged asset allocation in safe assets	-0.151***	0.002	0.118***	-0.153***	0.003	0.119***
	(-43.12)	(0.63)	(40.09)	(-39.15)	(0.98)	(36.05)
Lagged asset allocation in risky asset	0.005*	-0.001**	-0.003	0.004	-0.002**	-0.002
	(1.71)	(-2.37)	(-1.49)	(1.59)	(-2.51)	(-1.33)
Time preference	0.007***	0.005***	-0.009***	0.006***	0.006***	-0.009***
	(7.24)	(3.93)	(-8.01)	(5.63)	(4.00)	(-7.10)
Risk tolerance	0.006***	-0.002	-0.003**	0.006***	-0.001	-0.003**
	(5.72)	(-1.25)	(-2.52)	(4.93)	(-0.91)	(-2.46)
Age group (Base = Below 35)						
35-44	-0.003	-0.002	0.003	-0.005**	-0.000	0.003
	(-1.41)	(-0.80)	(1.15)	(-2.03)	(-0.07)	(0.83)
45-54	-0.007***	-0.003	0.005**	-0.010***	-0.002	0.006*
	(-3.16)	(-1.03)	(1.97)	(-3.71)	(-0.60)	(1.90)
55-64	-0.008***	-0.006**	0.009***	-0.011***	-0.005	0.009***
	(-3.65)	(-1.99)	(3.00)	(-4.29)	(-1.39)	(2.82)
Over 64	-0.006**	0.002	-0.000	-0.008***	0.004	-0.000
	(-2.34)	(0.74)	(-0.11)	(-2.99)	(1.09)	(-0.12)
Male	0.006***	-0.004***	-0.001	0.005***	-0.004***	-0.001
	(6.27)	(-3.59)	(-0.49)	(5.28)	(-2.82)	(-0.50)
Married or cohabiting	-0.003***	0.003**	-0.000	-0.003**	0.003**	-0.001
	(-3.49)	(2.33)	(-0.09)	(-2.53)	(2.12)	(-0.58)
Degree level or above	0.009***	-0.000	-0.007***	0.008***	-0.001	-0.006***
	(8.16)	(-0.22)	(-5.76)	(6.21)	(-0.49)	(-4.19)
Employed	-0.000	-0.003**	0.005***	0.000	-0.003*	0.004**
	(-0.31)	(-2.01)	(3.15)	(0.29)	(-1.81)	(2.38)
Has child(ren)	-0.003*	-0.007***	0.007***	-0.003*	-0.006***	0.007***
	(-1.92)	(-4.10)	(4.23)	(-1.76)	(-3.19)	(3.44)
Lives in urban area	-0.004***	0.004***	-0.000	-0.004***	0.004**	-0.000
	(-3.04)	(2.97)	(-0.30)	(-2.78)	(2.56)	(-0.25)
Christian	0.002	0.004***	-0.005***	0.002**	0.004***	-0.006***
	(1.56)	(3.45)	(-4.24)	(2.15)	(2.91)	(-4.10)
Has good health	0.004***	0.006***	-0.008***	0.003***	0.006***	-0.008***
	(3.95)	(4.86)	(-6.72)	(3.38)	(4.35)	(-5.98)
White British	0.006***	0.009***	-0.010***	0.006***	0.009***	-0.010***

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(3.46)	(3.94)	(-4.95)	(3.04)	(3.58)	(-4.52)
Housing tenure (Base = Rents)						
Through a mortgage	-0.013***	0.010***	0.006***	-0.013***	0.010***	0.006***
	(-7.41)	(4.58)	(2.94)	(-6.63)	(4.10)	(2.70)
Outright owner	-0.008***	0.025***	-0.010***	-0.007***	0.024***	-0.009***
	(-4.55)	(11.04)	(-4.93)	(-3.85)	(9.40)	(-3.97)
Log of net household wealth	0.018***	0.014***	-0.022***	0.017***	0.015***	-0.022***
	(32.89)	(20.12)	(-33.69)	(27.94)	(19.15)	(-30.12)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45420	45420	45420	36257	36257	36257
Panel B: Interaction effects	(1)	(2)	(3)	(4)	(5)	(6)
No of advice sources * No of savings goals (Base = No financial advisor)						
Single source						
No savings goal	-0.002*	-0.004**	0.004**			
	(-1.73)	(-2.04)	(2.31)			
Single savings goal	-0.004*	-0.001	0.003			
	(-1.76)	(-0.48)	(1.19)			
Multiple savings goals	-0.002	0.000	0.001			
	(-0.78)	(0.08)	(0.41)			
Multiple sources						
No savings goal	0.000	0.006***	-0.006***			
	(0.01)	(3.12)	(-3.28)			
Single savings goal	0.002	0.001	-0.002			
	(1.08)	(0.20)	(-0.82)			
Multiple savings goals	0.004**	0.002	-0.004*			
	(2.03)	(0.69)	(-1.84)			
Numerical ability * No of savings goals (Base = Poor)						
Moderate						
No savings goals				-0.003	0.007*	-0.002
				(-1.05)	(1.79)	(-0.57)
Single savings goal				-0.008	0.009	-0.002
				(-1.46)	(1.20)	(-0.23)
Multiple savings goals				0.002	-0.001	-0.002
				(0.42)	(-0.07)	(-0.22)
Good						
No savings goals				-0.001	0.011***	-0.005
				(-0.53)	(2.79)	(-1.43)
Single savings goal				-0.005	0.012	-0.005
				(-0.93)	(1.58)	(-0.75)
Multiple savings goals				0.006	0.001	-0.005
				(1.10)	(0.13)	(-0.77)
Excellent						
No savings goals				0.003	0.011***	-0.008**
				(0.85)	(2.66)	(-2.07)
Single savings goal				-0.003	0.007	-0.003
				(-0.48)	(0.90)	(-0.36)
Multiple savings goals				0.012**	-0.006	-0.004
				(2.13)	(-0.77)	(-0.62)
Observations	45420	45420	45420	36257	36257	36257

Table A.2: Fixed effects linear regressions – Baseline model

The table replays the specifications in Table 3 but using fixed effects linear regressions. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variables *Savings goal type* (Columns (1) to (3)), *Savings goal horizon* (Columns (4) to (6)), and Number of savings goals (Columns (7) to (9)). The control variables, described in Table 1, are *Time preference, Risk tolerance, Age group, Married or cohabiting, Degree level or above, Employed, Has child(ren), Lives in urban area, Christian, Has good health, White British, Housing tenure, Log of net household wealth*, and region and year dummies. The table reports marginal effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Savings goal type			Savings goal horizon			Number of savings goals		
	Risky asset	Fairly-safe asset	Safe assets	Risky asset	Fairly-safe asset	Safe assets	Risky asset	Fairly-safe asset	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Savings goal type (Base = No savings goal)									
Unexpected expenditure	-0.011***	0.010***	0.004						
	(-4.32)	(3.78)	(0.95)						
Family	0.002	0.001	-0.008						
	(0.35)	(0.28)	(-1.08)						
Regular income	-0.011	0.014*	-0.005						
	(-1.38)	(1.66)	(-0.32)						
Retirement	0.001	0.003	-0.011						
	(0.28)	(0.66)	(-1.58)						
Planned expenditure	0.004	0.001	-0.014**						
	(1.11)	(0.42)	(-2.41)						
Deposit for property purchase	0.000	0.004	-0.013						
	(0.04)	(0.47)	(-0.88)						
Holiday	0.006**	-0.000	-0.015***						
	(2.47)	(-0.11)	(-3.95)						
Speculation and good interest	0.004	0.002	-0.016***						
	(1.35)	(0.54)	(-3.42)						
Savings goal horizon (Base = No savings goal)									
Short term goals				-0.004**	0.006***	-0.005			
				(-2.02)	(2.93)	(-1.34)			
Mid Term goals				0.001	0.005	-0.015***			
				(0.34)	(1.61)	(-3.12)			
Long term goals				0.005**	-0.000	-0.012***			
				(2.11)	(-0.18)	(-3.25)			
No of savings goals (Base=No savings goal)									
Single savings goal							-0.008***	0.006***	-0.004
							(-2.60)	(2.91)	(-1.01)
Multiple savings goals							0.007**	0.000	-0.014***
							(2.36)	(0.06)	(-3.99)
Time preference	0.000	0.001	-0.004	0.000	0.001	-0.004	0.002	0.001	-0.004
	(0.20)	(0.36)	(-1.11)	(0.23)	(0.36)	(-1.16)	(0.81)	(0.35)	(-1.16)
Risk tolerance	-0.001	0.002	-0.002	-0.001	0.002	-0.002	-0.002	0.002	-0.002
	(-0.42)	(0.67)	(-0.54)	(-0.39)	(0.67)	(-0.58)	(-0.62)	(0.66)	(-0.58)
Age group (Base = Below 35)									
35-44	-0.008	0.003	0.018*	-0.008	0.003	0.017*	0.004	0.003	0.018*

	Savings goal type			Savings goal horizon			Number of savings goals		
	Risky asset	Fairly-safe asset	Safe assets	Risky asset	Fairly-safe asset	Safe assets	Risky asset	Fairly-safe asset	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	(-1.18)	(0.46)	(1.67)	(-1.15)	(0.45)	(1.65)	(0.35)	(0.47)	(1.68)
45-54	-0.012	0.008	0.014	-0.012	0.008	0.014	-0.004	0.008	0.014
	(-1.44)	(1.10)	(1.10)	(-1.42)	(1.09)	(1.07)	(-0.31)	(1.10)	(1.10)
55-64	-0.013	0.008	0.020	-0.013	0.008	0.019	-0.010	0.008	0.020
	(-1.46)	(0.95)	(1.33)	(-1.45)	(0.95)	(1.30)	(-0.64)	(0.95)	(1.33)
Over 64	-0.001	0.002	0.003	-0.001	0.002	0.003	0.001	0.002	0.003
	(-0.09)	(0.20)	(0.20)	(-0.05)	(0.19)	(0.17)	(0.03)	(0.20)	(0.20)
Married or cohabiting	0.020***	-0.010**	-0.029***	0.020***	-0.010**	-0.029***	0.026***	-0.010**	-0.029***
	(4.47)	(-2.29)	(-3.68)	(4.49)	(-2.31)	(-3.67)	(3.83)	(-2.30)	(-3.69)
Degree level or above	0.006*	-0.003	-0.009	0.007*	-0.003	-0.009	-0.002	-0.003	-0.009
	(1.67)	(-0.73)	(-1.52)	(1.70)	(-0.75)	(-1.54)	(-0.46)	(-0.74)	(-1.54)
Employed or self-employed	0.001	-0.006*	0.015***	0.000	-0.006*	0.015***	-0.003	-0.006*	0.015***
	(0.15)	(-1.80)	(2.70)	(0.14)	(-1.77)	(2.67)	(-0.64)	(-1.82)	(2.66)
Has child(ren)	0.011**	-0.004	-0.016**	0.011**	-0.004	-0.016**	0.014**	-0.004	-0.016**
	(2.49)	(-0.96)	(-2.12)	(2.50)	(-0.97)	(-2.11)	(2.09)	(-0.97)	(-2.11)
Lives in urban area	0.013**	-0.004	-0.024***	0.013**	-0.004	-0.024***	0.027***	-0.004	-0.024***
	(2.49)	(-0.73)	(-2.79)	(2.51)	(-0.75)	(-2.81)	(3.35)	(-0.74)	(-2.81)
Christian	0.002	0.000	-0.006	0.002	0.000	-0.006	0.004	0.000	-0.006
	(0.69)	(0.06)	(-1.16)	(0.66)	(0.09)	(-1.15)	(0.95)	(0.08)	(-1.15)
Has good health	0.003	-0.002	-0.003	0.003	-0.002	-0.003	0.006*	-0.002	-0.003
	(1.55)	(-0.97)	(-0.74)	(1.53)	(-0.97)	(-0.72)	(1.79)	(-0.94)	(-0.70)
Housing tenure (Base = Rents)									
Through a mortgage	0.012	0.002	-0.042**	0.013	0.002	-0.042**	0.021	0.002	-0.042**
	(1.19)	(0.27)	(-2.34)	(1.22)	(0.23)	(-2.34)	(1.12)	(0.24)	(-2.35)
Outright owner	0.007	0.010	-0.046**	0.007	0.010	-0.046**	0.022	0.010	-0.046**
	(0.68)	(1.09)	(-2.56)	(0.70)	(1.07)	(-2.57)	(1.19)	(1.07)	(-2.57)
Log of net household wealth	0.016***	-0.006***	-0.028***	0.016***	-0.006***	-0.028***	0.019***	-0.006***	-0.028***
	(12.21)	(-4.90)	(-11.95)	(12.22)	(-4.87)	(-12.00)	(8.31)	(-4.90)	(-12.01)
Asset allocation in fairly-safe assets	-0.184***			-0.184***			-0.204***		
	(-47.09)			(-47.04)			(-33.12)		
Asset allocation in safe assets		-0.811***			-0.811***			-0.811***	
		(-203.61)			(-203.59)			(-203.62)	
Asset allocation in risky asset			-0.506***			-0.507***			-0.507***
			(-65.33)			(-65.43)			(-65.38)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.068	0.875***	0.628***	0.074	0.871***	0.625***	0.159***	0.874***	0.625***
	(0.63)	(11.49)	(3.30)	(0.68)	(11.40)	(3.29)	(4.36)	(11.54)	(3.30)
Observations	82683	82683	82683	82683	82683	82683	27217	82683	82683

Table A.3: Effect of changes in number of savings goals

The table replays the specifications in Columns (4) to (6) of Table 4 and Table 5 using a model in which the variable, *Number of savings goals*, is replaced with the variable, *Change in number of Savings goals*. The dependent variables are the proportions of assets held in *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variables *Change in number of savings goals, No of financial advice sources,* and *Numerical ability*. The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *No of financial advice sources, Numerical ability* and *Change in number of savings goals*. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Direct effects						
Change in number of savings goals (Base=No change)						
Decrease	0.007***	0.041***	-0.037***	0.010***	0.036***	-0.034***
	(2.86)	(9.99)	(-9.30)	(3.34)	(7.74)	(-7.53)
Increase	0.010***	0.047***	-0.047***	0.010***	0.047***	-0.046***
	(4.01)	(11.52)	(-12.03)	(3.48)	(10.15)	(-10.49)
No of financial advice sources (Base=None)						
One source of advice	-0.007***	-0.005	0.010**	-0.006*	-0.002	0.005
	(-2.58)	(-1.22)	(2.22)	(-1.82)	(-0.37)	(1.11)
Multiple sources of advice	0.011***	0.023***	-0.029***	0.010***	0.026***	-0.032***
	(3.67)	(5.38)	(-6.98)	(3.20)	(5.40)	(-6.80)
Numerical ability (Base=Poor)						
Moderate				-0.008	0.027**	-0.013
				(-1.16)	(2.14)	(-1.11)
Good				0.000	0.044***	-0.034***
				(0.00)	(3.68)	(-2.94)
Excellent				0.017**	0.031**	-0.036***
				(2.21)	(2.44)	(-2.96)
Time preference	0.023***	0.023***	-0.040***	0.019***	0.024***	-0.037***
	(7.90)	(5.73)	(-10.14)	(5.87)	(5.20)	(-8.41)
Risk tolerance	0.023***	-0.006	-0.014***	0.022***	-0.004	-0.015***
	(7.01)	(-1.29)	(-3.31)	(5.99)	(-0.89)	(-3.17)
Age group (Base = Below 35)						
35-44	-0.018***	-0.005	0.017*	-0.025***	0.001	0.016
	(-3.07)	(-0.57)	(1.90)	(-3.47)	(0.11)	(1.54)
45-54	-0.032***	-0.005	0.024***	-0.038***	-0.001	0.025**
	(-5.10)	(-0.58)	(2.65)	(-5.20)	(-0.08)	(2.30)
55-64	-0.038***	-0.016	0.037***	-0.046***	-0.012	0.039***
	(-5.75)	(-1.64)	(3.86)	(-5.96)	(-1.02)	(3.50)
Over 64	-0.032***	0.032***	-0.010	-0.040***	0.037***	-0.010
	(-4.71)	(3.13)	(-1.02)	(-4.96)	(3.06)	(-0.82)
Male	0.018***	-0.023***	0.006	0.017***	-0.021***	0.006
	(6.40)	(-5.21)	(1.30)	(5.19)	(-4.17)	(1.15)
Married or cohabiting	-0.006*	0.016***	-0.010**	-0.005	0.016***	-0.011**
	(-1.82)	(3.31)	(-2.18)	(-1.39)	(2.78)	(-2.00)
Degree level or above	0.039***	0.004	-0.039***	0.035***	0.002	-0.034***
	(10.82)	(0.79)	(-8.48)	(8.24)	(0.43)	(-6.41)
Employed	0.000	-0.007	0.012**	0.003	-0.005	0.008
	(0.07)	(-1.37)	(2.39)	(0.61)	(-0.90)	(1.42)
Has child(ren)	-0.003	-0.038***	0.033***	-0.003	-0.036***	0.031***
	(-0.76)	(-6.43)	(5.59)	(-0.67)	(-5.16)	(4.51)
Lives in urban area	-0.013***	0.019***	-0.004	-0.014***	0.019***	-0.004
	(-3.24)	(3.52)	(-0.84)	(-3.07)	(3.06)	(-0.67)
Christian	0.004	0.018***	-0.021***	0.006*	0.017***	-0.021***
	(1.38)	(4.11)	(-4.73)	(1.73)	(3.19)	(-4.04)
Has good health	0.013***	0.031***	-0.039***	0.013***	0.029***	-0.037***
	(4.88)	(7.24)	(-9.41)	(4.19)	(5.94)	(-7.88)
White British	0.025***	0.047***	-0.059***	0.025***	0.047***	-0.060***
	(5.25)	(6.07)	(-7.75)	(4.51)	(5.26)	(-6.79)
Housing tenure (Base = Rents)						
Through a mortgage	-0.033***	0.048***	0.003	-0.033***	0.048***	0.004
	(-6.44)	(6.04)	(0.40)	(-5.62)	(5.13)	(0.47)
Outright owner	-0.023***	0.122***	-0.072***	-0.022***	0.118***	-0.068***
	(-4.56)	(14.51)	(-8.84)	(-3.80)	(12.17)	(-7.28)
Log of net household wealth	0.059***	0.061***	-0.095***	0.057***	0.064***	-0.096***

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
	(38.13)	(26.46)	(-42.70)	(32.12)	(23.84)	(-36.82)
Region dummies	Yes	Yes	yes	Yes	Yes	Yes
Year dummies	Yes	Yes	yes	Yes	Yes	Yes
Observations	48262	48262	48262	38549	38549	38549

Panel B: Interaction effects

No of advice sources * Change in no. of savings goals
(Base = No financial advisor)

Single source

	(1)	(2)	(3)	(4)	(5)	(6)
No change	-0.001	-0.004*	0.003			
	(-0.99)	(-1.69)	(1.57)			
Decrease	-0.005***	0.003	0.001			
	(-2.67)	(1.05)	(0.57)			
Increase	-0.002	-0.004	0.005*			
	(-1.07)	(-1.34)	(1.84)			

Multiple sources

	(1)	(2)	(3)	(4)	(5)	(6)
No change	0.004***	0.012***	-0.012***			
	(2.77)	(4.81)	(-5.96)			
Decrease	0.003	0.008***	-0.009***			
	(1.56)	(2.93)	(-3.62)			
Increase	0.005**	0.006**	-0.008***			
	(2.47)	(1.96)	(-3.17)			

Numerical ability * Change in no. of savings goals
(Base = Poor)

Moderate

	(1)	(2)	(3)	(4)	(5)	(6)
No change				-0.003	0.012**	-0.004
				(-0.87)	(2.15)	(-0.96)
Decrease				-0.005	0.017**	-0.011
				(-0.96)	(2.19)	(-1.53)
Increase				-0.002	0.001	0.002
				(-0.50)	(0.10)	(0.20)

Good

	(1)	(2)	(3)	(4)	(5)	(6)
No change				-0.002	0.021***	-0.012***
				(-0.52)	(3.95)	(-2.66)
Decrease				-0.002	0.022***	-0.016**
				(-0.39)	(3.00)	(-2.44)
Increase				0.005	0.005	-0.007
				(1.01)	(0.64)	(-0.97)

Excellent

	(1)	(2)	(3)	(4)	(5)	(6)
No change				0.006*	0.020***	-0.015***
				(1.68)	(3.42)	(-3.23)
Decrease				0.005	0.012	-0.013*
				(0.91)	(1.54)	(-1.91)
Increase				0.010**	-0.000	-0.007
				(2.02)	(-0.02)	(-0.92)

| Observations | 48262 | 48262 | 48262 | 38549 | 38549 | 38549 |

Table A.4: Effects of savings goals, financial advice, and numerical ability using a restricted sub-sample of the wealth distribution

Table replays the specifications in Columns (4) to (6) of Table 4 and Table 5 using a restricted sample of households with total wealth falling between the 25th (£67,046) and 75th (458,512) percentiles. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variable *Number of savings goals* and the mediating variables, *Number of financial advice sources* (Columns (1) to (3)) and *Numerical ability* (Columns (4) to (6)). The table reports marginal effects: Panel A presents the direct effects while Panel B presents the interactive effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Direct effects						
No of savings goals (Base=None)						
Single savings goal	0.008***	0.022***	-0.013***	0.005***	0.022***	-0.013***
	(4.99)	(9.99)	(-7.61)	(3.10)	(8.81)	(-6.24)
Multiple savings goals	0.019***	0.040***	-0.029***	0.017***	0.040***	-0.029***
	(11.82)	(18.93)	(-17.04)	(9.67)	(16.19)	(-14.47)
No of financial advice sources (Base=None)						
One source of advice	-0.004**	-0.004*	0.004**	-0.003	-0.003	0.003
	(-2.38)	(-1.91)	(2.10)	(-1.58)	(-1.19)	(1.20)
Multiple sources of advice	0.006***	0.009***	-0.009***	0.005***	0.009***	-0.010***
	(3.34)	(4.01)	(-4.87)	(2.80)	(3.63)	(-4.58)
Numerical ability (Base=Poor)						
Moderate				0.005	0.018***	-0.013***
				(1.05)	(2.83)	(-2.60)
Good				0.008*	0.021***	-0.015***
				(1.89)	(3.43)	(-3.27)
Excellent				0.014***	0.021***	-0.019***
				(3.24)	(3.22)	(-3.84)
Time preference	0.008***	0.013***	-0.011***	0.008***	0.015***	-0.013***
	(5.42)	(6.34)	(-6.51)	(4.80)	(6.10)	(-6.38)
Risk tolerance	0.009***	0.000	-0.004**	0.008***	0.000	-0.003
	(5.15)	(0.18)	(-2.24)	(4.06)	(0.10)	(-1.60)
Age group (Base = Below 35)						
35-44	-0.011***	-0.012***	0.011***	-0.012***	-0.010**	0.011***
	(-3.58)	(-3.19)	(3.59)	(-3.33)	(-2.36)	(3.01)
45-54	-0.023***	-0.016***	0.018***	-0.024***	-0.015***	0.018***
	(-7.25)	(-4.09)	(5.40)	(-6.31)	(-3.15)	(4.60)
55-64	-0.027***	-0.012***	0.016***	-0.030***	-0.012**	0.018***
	(-7.80)	(-2.76)	(4.28)	(-7.15)	(-2.27)	(3.99)
Over 64	-0.025***	0.009*	0.002	-0.030***	0.010	0.003
	(-6.41)	(1.68)	(0.41)	(-6.43)	(1.62)	(0.65)
Male	0.009***	-0.015***	0.006***	0.008***	-0.015***	0.007***
	(5.38)	(-6.61)	(3.59)	(4.50)	(-5.89)	(3.29)
Married or cohabiting	-0.005***	0.007***	-0.000	-0.007***	0.006**	0.001
	(-3.27)	(2.90)	(-0.22)	(-3.69)	(2.04)	(0.43)
Degree level or above	0.012***	0.010***	-0.012***	0.010***	0.008***	-0.011***
	(5.86)	(3.69)	(-5.39)	(4.43)	(2.72)	(-4.17)
Employed	0.009***	0.002	-0.002	0.009***	0.004	-0.004
	(3.94)	(0.54)	(-0.88)	(3.25)	(1.07)	(-1.29)
Has child(ren)	-0.006***	-0.012***	0.008***	-0.006**	-0.009***	0.007**
	(-3.02)	(-4.28)	(3.50)	(-2.57)	(-2.87)	(2.52)
Lives in urban area	-0.001	0.004	-0.004*	0.000	0.003	-0.003
	(-0.30)	(1.59)	(-1.86)	(0.14)	(0.87)	(-1.14)
Christian	0.001	0.010***	-0.008***	0.004*	0.009***	-0.008***
	(0.67)	(4.23)	(-4.12)	(1.85)	(3.07)	(-3.52)
Has good health	0.009***	0.012***	-0.012***	0.008***	0.012***	-0.012***
	(5.68)	(5.61)	(-6.94)	(4.58)	(4.62)	(-5.83)
White British	0.013***	0.034***	-0.027***	0.012***	0.034***	-0.027***
	(4.93)	(8.96)	(-9.78)	(3.96)	(7.44)	(-7.99)
Housing tenure (Base = Rents)						
Through a mortgage	-0.012***	-0.014***	0.012***	-0.013***	-0.015***	0.014***
	(-4.90)	(-3.99)	(4.34)	(-4.29)	(-3.46)	(4.07)
Outright owner	-0.013***	0.006*	0.001	-0.012***	0.004	0.003
	(-5.00)	(1.72)	(0.29)	(-3.97)	(0.86)	(0.98)
Log of net household wealth	0.042***	0.057***	-0.052***	0.041***	0.058***	-0.054***
	(25.65)	(25.72)	(-30.10)	(22.06)	(22.09)	(-26.01)

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Region dummies	Yes	Yes	yes	Yes	Yes	Yes
Year dummies	Yes	Yes	yes	Yes	Yes	Yes
Observations	36393	36393	36393	27816	27816	27816
Panel B: Interaction effects	(1)	(2)	(3)	(4)	(5)	(6)
No of advice sources * No of savings goals						
(Base = No financial advisor)						
Single source						
No savings goal	-0.004*	-0.006*	0.005*			
	(-1.65)	(-1.80)	(1.96)			
Single savings goal	-0.005	-0.003	0.003			
	(-1.56)	(-0.65)	(0.89)			
Multiple savings goals	-0.004	-0.004	0.003			
	(-1.15)	(-0.94)	(0.91)			
Multiple sources						
No savings goal	0.006**	0.013***	-0.012***			
	(2.55)	(4.03)	(-4.74)			
Single savings goal	0.007**	0.009**	-0.009**			
	(2.17)	(2.09)	(-2.38)			
Multiple savings goals	0.005*	0.004	-0.005*			
	(1.72)	(1.12)	(-1.72)			
Numerical ability * No of savings goals						
(Base = Poor)						
Moderate						
No savings goals				0.009	0.015*	-0.010
				(1.47)	(1.80)	(-1.59)
Single savings goal				0.004	0.023**	-0.019**
				(0.49)	(2.14)	(-2.11)
Multiple savings goals				-0.001	0.022*	-0.018*
				(-0.17)	(1.95)	(-1.80)
Good						
No savings goals				0.011**	0.019**	-0.013**
				(1.98)	(2.41)	(-2.13)
Single savings goal				0.005	0.024**	-0.018**
				(0.62)	(2.29)	(-2.08)
Multiple savings goals				0.006	0.025**	-0.023**
				(0.76)	(2.23)	(-2.44)
Excellent						
No savings goals				0.017***	0.023***	-0.019***
				(2.75)	(2.77)	(-2.90)
Single savings goal				0.015*	0.025**	-0.024***
				(1.95)	(2.24)	(-2.70)
Multiple savings goals				0.011	0.018	-0.022**
				(1.40)	(1.59)	(-2.27)
Observations	36393	36393	36393	27816	27816	27816

Table A.5a: Trivariate linear regressions with splines of household total wealth

Table replays the specifications in Table 4 (Columns (4) to (6)) and Table 5 using trivariate linear regressions with the same controls, but including splines of household total wealth. The dependent variable is asset allocation in *Risky asset*s, *Fairly-safe assets* and *Safe assets*. The key independent variables are *Number of savings goals, Number of financial advice sources,* and *Numerical ability.* The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *No of financial advice sources, Numerical ability* and *Number of savings goals*. Standard errors are clustered at the household level and the corresponding *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Direct effects						
No of savings goals (Base=None)						
Single savings goal	-0.005**	0.037***	-0.032***	-0.007***	0.037***	-0.030***
	(-2.50)	(11.14)	(-9.27)	(-3.13)	(9.56)	(-7.45)
Multiple savings goals	0.009***	0.064***	-0.074***	0.009***	0.060***	-0.069***
	(4.44)	(20.33)	(-22.58)	(3.56)	(16.20)	(-18.04)
No of financial advice sources (Base=None)						
One source of advice	-0.004*	-0.010***	0.014***	-0.003	-0.008**	0.011***
	(-1.84)	(-3.01)	(4.04)	(-1.38)	(-2.00)	(2.77)
Multiple sources of advice	0.008***	0.008***	-0.016***	0.008***	0.012***	-0.020***
	(4.01)	(2.66)	(-4.98)	(3.23)	(3.17)	(-5.04)
Numerical ability (Base=Poor)						
Moderate				-0.000	0.026***	-0.026***
				(-0.06)	(3.07)	(-2.95)
Good				0.003	0.036***	-0.040***
				(0.78)	(4.44)	(-4.69)
Excellent				0.015***	0.028***	-0.043***
				(3.01)	(3.27)	(-4.80)
Time preference	0.011***	0.020***	-0.031***	0.008***	0.021***	-0.028***
	(5.10)	(6.89)	(-10.18)	(3.11)	(5.94)	(-7.90)
Risk tolerance	0.017***	-0.005	-0.012***	0.017***	-0.004	-0.013***
	(7.31)	(-1.56)	(-3.60)	(6.21)	(-0.98)	(-3.40)
Age group (Base = Below 35)						
35-44	-0.002	-0.026***	0.028***	-0.005	-0.025***	0.031***
	(-0.45)	(-4.85)	(4.87)	(-1.18)	(-3.81)	(4.32)
45-54	-0.021***	-0.030***	0.052***	-0.026***	-0.030***	0.057***
	(-6.03)	(-5.35)	(8.69)	(-5.91)	(-4.34)	(7.69)
55-64	-0.029***	-0.027***	0.056***	-0.035***	-0.029***	0.065***
	(-7.46)	(-4.38)	(8.70)	(-7.28)	(-3.90)	(8.15)
Over 64	-0.010**	0.003	0.008	-0.017***	0.001	0.017**
	(-2.54)	(0.38)	(1.21)	(-3.41)	(0.10)	(2.00)
Male	0.015***	-0.023***	0.007**	0.014***	-0.023***	0.009**
	(7.76)	(-7.09)	(2.24)	(6.07)	(-5.95)	(2.20)
Married or cohabiting	-0.011***	0.020***	-0.009**	-0.010***	0.017***	-0.007
	(-4.72)	(5.55)	(-2.49)	(-3.92)	(4.13)	(-1.62)
Degree level or above	0.023***	0.013***	-0.036***	0.020***	0.012***	-0.032***
	(8.40)	(3.73)	(-9.82)	(6.09)	(2.74)	(-7.19)
Employed or self-employed	0.009***	-0.015***	0.005	0.009***	-0.011**	0.001
	(3.71)	(-3.81)	(1.24)	(2.99)	(-2.32)	(0.28)
Has child(ren)	0.001	-0.030***	0.031***	-0.001	-0.029***	0.030***
	(0.19)	(-7.53)	(7.19)	(-0.33)	(-5.80)	(5.80)
Lives in urban area	-0.007***	0.013***	-0.006	-0.007**	0.013***	-0.006
	(-2.58)	(3.47)	(-1.64)	(-2.23)	(2.92)	(-1.37)
Christian	0.006***	0.012***	-0.018***	0.008***	0.010**	-0.019***
	(2.78)	(3.64)	(-5.32)	(3.06)	(2.50)	(-4.41)
Has good health	0.008***	0.027***	-0.035***	0.008***	0.025***	-0.033***
	(4.04)	(8.56)	(-10.65)	(3.63)	(6.65)	(-8.55)
White British	0.018***	0.044***	-0.062***	0.017***	0.046***	-0.063***
	(5.92)	(8.97)	(-11.75)	(4.67)	(7.44)	(-9.60)
Housing tenure (Base = Rents)						
Through a mortgage	0.002	-0.009	0.007	0.001	-0.008	0.007
	(0.56)	(-1.57)	(1.09)	(0.18)	(-1.10)	(0.87)
Outright owner	-0.007*	0.047***	-0.040***	-0.007*	0.043***	-0.036***
	(-1.92)	(7.38)	(-5.90)	(-1.66)	(5.54)	(-4.31)
Splines of household wealth (£)	Yes	Yes	yes	Yes	Yes	Yes
Region dummies	Yes	Yes	yes	Yes	Yes	Yes
Year dummies	Yes	Yes	yes	Yes	Yes	Yes
Observations	82673	82673	82673	61506	61506	61506

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	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)

Panel B: Interaction effects

No of advice sources * No of savings goals
(Base = No financial advisor)

Single source

	(1)	(2)	(3)	(4)	(5)	(6)
No savings goal	-0.001	-0.014***	0.015***			
	(-0.26)	(-3.34)	(3.40)			
Single savings goal	-0.006*	-0.010	0.016**			
	(-1.69)	(-1.55)	(2.48)			
Multiple savings goals	-0.008*	-0.000	0.009			
	(-1.91)	(-0.07)	(1.43)			

Multiple sources

	(1)	(2)	(3)	(4)	(5)	(6)
No savings goal	0.010***	0.014***	-0.023***			
	(3.61)	(3.16)	(-5.08)			
Single savings goal	0.008**	0.007	-0.015**			
	(2.07)	(1.07)	(-2.25)			
Multiple savings goals	0.005	0.004	-0.009*			
	(1.56)	(0.79)	(-1.80)			

No of savings goals * Numerical ability
(Base = Poor numerical ability)

Moderate

	(1)	(2)	(3)	(4)	(5)	(6)
No savings goal				0.004	0.023**	-0.028***
				(0.85)	(2.40)	(-2.70)
Single savings goal				-0.008	0.037**	-0.029*
				(-0.91)	(2.16)	(-1.67)
Multiple savings goals				-0.005	0.018	-0.012
				(-0.41)	(0.95)	(-0.66)

Good

	(1)	(2)	(3)	(4)	(5)	(6)
No savings goal				0.004	0.038***	-0.042***
				(0.87)	(4.02)	(-4.25)
Single savings goal				0.001	0.036**	-0.036**
				(0.11)	(2.22)	(-2.23)
Multiple savings goals				0.002	0.027	-0.028
				(0.16)	(1.50)	(-1.58)

Excellent

	(1)	(2)	(3)	(4)	(5)	(6)
No savings goal				0.015***	0.043***	-0.059***
				(2.80)	(4.20)	(-5.47)
Single savings goal				0.008	0.024	-0.031*
				(0.89)	(1.41)	(-1.83)
Multiple savings goals				0.015	0.007	-0.022
				(1.24)	(0.38)	(-1.21)
Observations	82673	82673	82673	61506	61506	61506

Table A.5b: Trivariate linear regressions with splines of household income

Table replays the specifications in Table 4 (Columns (4) to (6)) and Table 5 using trivariate linear regressions with the same controls, but including splines of household income. The dependent variable is asset allocation in *Risky assets*, *Fairly-safe assets* and *Safe assets*. The key independent variables are *Number of savings goals, Number of financial advice sources,* and *Numerical ability*. The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *No of financial advice sources, Numerical ability* and *Number of savings goals*. Standard errors are clustered at the household level and the corresponding *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Direct effects						
No of savings goals (Base=None)						
Single savings goal	-0.004*	0.045***	-0.041***	-0.007**	0.045***	-0.038***
	(-1.67)	(11.56)	(-10.06)	(-2.28)	(9.04)	(-7.34)
Multiple savings goals	0.018***	0.078***	-0.095***	0.018***	0.072***	-0.090***
	(6.88)	(20.78)	(-24.57)	(5.73)	(15.29)	(-18.60)
No of financial advice sources (Base=None)						
One source of advice	-0.006**	-0.007*	0.013***	-0.004	-0.005	0.010*
	(-2.54)	(-1.83)	(3.32)	(-1.39)	(-1.12)	(1.93)
Multiple sources of advice	0.009***	0.014***	-0.022***	0.009***	0.016***	-0.025***
	(3.48)	(3.69)	(-5.66)	(2.97)	(3.53)	(-5.24)
Numerical ability (Base=Poor)						
Moderate				0.000	0.026**	-0.026**
				(0.08)	(2.15)	(-2.10)
Good				0.009	0.046***	-0.055***
				(1.42)	(3.99)	(-4.51)
Excellent				0.026***	0.036***	-0.062***
				(3.94)	(2.98)	(-4.93)
Time preference	0.022***	0.026***	-0.047***	0.018***	0.026***	-0.043***
	(8.66)	(7.48)	(-13.31)	(5.70)	(5.83)	(-9.66)
Risk tolerance	0.021***	-0.003	-0.018***	0.022***	-0.002	-0.020***
	(7.54)	(-0.83)	(-4.61)	(6.09)	(-0.43)	(-3.99)
Age group (Base = Below 35)						
35-44	0.017***	0.023***	-0.040***	0.012*	0.030***	-0.041***
	(3.96)	(3.33)	(-5.36)	(1.71)	(2.87)	(-3.65)
45-54	0.025***	0.054***	-0.078***	0.017**	0.064***	-0.081***
	(5.60)	(7.79)	(-10.57)	(2.48)	(5.91)	(-6.98)
55-64	0.037***	0.069***	-0.105***	0.028***	0.076***	-0.103***
	(7.93)	(9.25)	(-13.27)	(3.75)	(6.65)	(-8.42)
Over 64	0.041***	0.103***	-0.143***	0.032***	0.112***	-0.144***
	(8.18)	(12.77)	(-16.69)	(4.14)	(9.21)	(-11.06)
Male	0.018***	-0.023***	0.005	0.016***	-0.024***	0.007
	(7.40)	(-5.95)	(1.16)	(5.05)	(-4.62)	(1.35)
Married or cohabiting	-0.005*	0.031***	-0.026***	-0.004	0.029***	-0.025***
	(-1.86)	(7.03)	(-5.50)	(-1.04)	(5.07)	(-4.16)
Degree level or above	0.043***	0.025***	-0.068***	0.042***	0.019***	-0.061***
	(13.17)	(6.05)	(-15.91)	(9.75)	(3.56)	(-11.01)
Employed or self-employed	-0.009***	-0.018***	0.026***	-0.005	-0.014**	0.019***
	(-2.69)	(-3.87)	(5.37)	(-1.29)	(-2.37)	(3.07)
Has child(ren)	-0.000	-0.028***	0.029***	-0.004	-0.024***	0.029***
	(-0.12)	(-5.62)	(5.50)	(-0.79)	(-3.57)	(3.93)
Lives in urban area	-0.017***	0.007	0.010**	-0.016***	0.008	0.008
	(-5.02)	(1.42)	(2.11)	(-3.84)	(1.39)	(1.31)
Christian	0.005*	0.014***	-0.019***	0.008**	0.013**	-0.021***
	(1.82)	(3.70)	(-4.76)	(2.20)	(2.50)	(-3.88)
Has good health	0.017***	0.035***	-0.052***	0.017***	0.033***	-0.050***
	(7.14)	(9.31)	(-13.22)	(5.74)	(6.88)	(-10.06)
White British	0.028***	0.053***	-0.080***	0.027***	0.056***	-0.083***
	(7.20)	(8.37)	(-11.74)	(4.98)	(6.22)	(-8.50)
Housing tenure (Base = Rents)						
Through a mortgage	0.027***	0.115***	-0.143***	0.025***	0.125***	-0.151***
	(8.38)	(20.41)	(-23.65)	(5.78)	(16.03)	(-18.09)
Outright owner	0.054***	0.192***	-0.246***	0.052***	0.198***	-0.250***
	(18.99)	(34.43)	(-41.54)	(14.20)	(26.91)	(-31.92)
Splines of household income (£)	Yes	Yes	yes	Yes	Yes	Yes
Region dummies	Yes	Yes	yes	Yes	Yes	Yes
Year dummies	Yes	Yes	yes	Yes	Yes	Yes
Observations	61069	61069	61069	40724	40724	40724

	Financial advice			Numerical ability		
	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Risky assets (4)	Fairly-safe assets (5)	Safe assets (6)

Panel B: Interaction effects

No of advice sources * No of savings goals
(Base = No financial advisor)

	(1)	(2)	(3)	(4)	(5)	(6)
Single source						
No savings goal	-0.002	-0.015***	0.017***			
	(-0.72)	(-2.97)	(3.25)			
Single savings goal	-0.009**	-0.007	0.016**			
	(-2.00)	(-0.92)	(2.06)			
Multiple savings goals	-0.012**	0.010	0.003			
	(-2.46)	(1.42)	(0.41)			
Multiple sources						
No savings goal	0.012***	0.019***	-0.031***			
	(3.83)	(3.63)	(-5.64)			
Single savings goal	0.007	0.010	-0.016**			
	(1.40)	(1.30)	(-2.07)			
Multiple savings goals	0.003	0.013**	-0.016***			
	(0.71)	(2.18)	(-2.60)			

No of savings goals * Numerical ability
(Base = Poor numerical ability)

	(1)	(2)	(3)	(4)	(5)	(6)
Moderate						
No savings goal				0.004	0.021	-0.025*
				(0.66)	(1.52)	(-1.73)
Single savings goal				-0.013	0.020	-0.007
				(-1.12)	(0.87)	(-0.29)
Multiple savings goals				0.005	0.038	-0.043*
				(0.29)	(1.54)	(-1.68)
Good						
No savings goal				0.008	0.049***	-0.058***
				(1.27)	(3.74)	(-4.09)
Single savings goal				0.003	0.033	-0.036*
				(0.30)	(1.49)	(-1.65)
Multiple savings goals				0.014	0.046*	-0.060**
				(0.91)	(1.93)	(-2.45)
Excellent						
No savings goal				0.026***	0.053***	-0.079***
				(3.46)	(3.78)	(-5.28)
Single savings goal				0.014	0.021	-0.034
				(1.18)	(0.90)	(-1.53)
Multiple savings goals				0.036**	0.023	-0.059**
				(2.20)	(0.95)	(-2.36)
Observations	61069	61069	61069	40724	40724	40724

Table A.6a: 3SLS estimates of the effect of financial advice and savings goals with endogenous household income

Table replays the specifications in Columns (4) to (6) of Table 4 including a reduced form household income equation, using a three stage least squares regression estimator. The dependent variables in Columns (1) to (3) are *Risky assets*, *Fairly-safe assets* and *Safe assets*, regressed against the controls used in Table 4 except the background variables, *Has children* and *Housing tenure*. The dependent variable in column (4) is log of total household income with the same controls, but excluding the variables *Time preference*, *Risk tolerance*, and time dummies but including the variables, *Has children* and *Housing tenure*. The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *No of financial advice sources* and *Number of savings goals*. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Risky assets	Fairly-safe assets	Safe assets	Household income
	(1)	(2)	(3)	(4)
Panel A: Direct effects				
No of savings goals (Base=None)				
Single savings goal	-0.004	0.057***	-0.068***	0.098***
	(-1.47)	(12.55)	(-17.56)	(13.48)
Multiple savings goals	0.017***	0.099***	-0.144***	0.186***
	(5.55)	(21.17)	(-41.15)	(28.24)
No of financial advice sources (Base=None)				
One source of advice	-0.002	-0.002	0.020***	-0.058***
	(-0.87)	(-0.46)	(4.92)	(-7.93)
Multiple sources of advice	0.012***	0.022***	-0.024***	-0.024***
	(4.76)	(5.20)	(-6.26)	(-3.47)
Time preference	0.000	0.068***	-0.045***	
	(.)	(21.16)	(-14.33)	
Risk tolerance	0.038***		-0.005*	
	(16.07)		(-1.88)	
Age group (Base = Below 35)				
35-44	0.019***	0.042***	-0.073***	0.057***
	(3.98)	(5.29)	(-10.46)	(4.28)
45-54	0.036***	0.097***	-0.146***	0.093***
	(7.66)	(12.81)	(-21.84)	(7.36)
55-64	0.059***	0.156***	-0.223***	0.088***
	(13.00)	(20.97)	(-33.73)	(7.03)
Over 64	0.061***	0.221***	-0.297***	0.158***
	(12.23)	(27.59)	(-42.52)	(12.08)
Male	0.020***	-0.023***	-0.003	0.029***
	(8.80)	(-6.21)	(-0.92)	(4.70)
Married or cohabiting	-0.030***	0.055***	-0.090***	0.523***
	(-4.54)	(6.24)	(-27.37)	(81.70)
Degree level or above	0.037***	0.032***	-0.115***	0.330***
	(8.56)	(5.23)	(-33.20)	(50.95)
Employed or self-employed	-0.029***	-0.011	-0.011***	0.376***
	(-5.64)	(-1.45)	(-2.59)	(47.42)
Christian	0.004**	0.016***	-0.020***	
	(1.99)	(4.76)	(-5.71)	
Has good health	0.028***	0.069***	-0.083***	
	(13.13)	(21.38)	(-24.76)	
Lives in urban area	-0.026***	-0.017***	0.013***	
	(-10.92)	(-4.55)	(3.64)	
White British	0.026***	0.064***	-0.108***	0.097***
	(6.44)	(9.76)	(-18.75)	(8.90)
Has children				0.124***
				(24.08)
Housing tenure (Base = Rents)				
Through a mortgage				0.157***
				(24.75)
Outright owner				0.117***
				(25.73)
Log of total household income	0.094***	0.015		
	(8.49)	(1.01)		
Region dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	59603	59603	59603	59603
Panel B: Interaction effects				

Financial advice * No of savings goals

(Base = No financial advisor)

	Risky assets	Fairly-safe assets	Safe assets	Household income
	(1)	(2)	(3)	(4)
Single source				
No savings goal	0.000	-0.014**	0.028***	-0.054***
	(0.08)	(-2.42)	(5.26)	(-5.45)
Single savings goal	-0.005	0.000	0.018**	-0.033**
	(-0.87)	(0.03)	(2.20)	(-2.19)
Multiple savings goals	-0.005	0.014*	0.011	-0.079***
	(-0.93)	(1.65)	(1.37)	(-5.55)
Multiple sources				
No savings goal	0.015***	0.029***	-0.036***	-0.021**
	(4.26)	(4.97)	(-6.85)	(-2.12)
Single savings goal	0.011**	0.018**	-0.021***	-0.010
	(2.06)	(2.08)	(-2.61)	(-0.67)
Multiple savings goals	0.010**	0.015**	-0.010	-0.037***
	(2.20)	(2.11)	(-1.61)	(-3.18)
Observations	59603	59603	59603	59603

Table A.6b: 3SLS regression estimates of the effect of numerical ability and savings goals with endogenous household income

Table replays the specifications in Table 5 including a reduced form household income equation, using a three stage least squares regression estimator. The dependent variables in Columns (1) to (3) are *Risky assets*, *Fairly-safe assets* and *Safe assets*, regressed against the controls used in Table 5 except the background variables, *Has children* and *Housing tenure*. The dependent variable in column (4) is log of total household income with the same controls, but excluding the variables *Time preference*, *Risk tolerance*, and time dummies but including the variables, *Has children* and *Housing tenure*. The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *Numerical ability* and *Number of savings goals*. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Household income (4)
Panel A: Direct effects				
No of savings goals (Base=None)				
Single savings goal	-0.005	0.051***	-0.063***	0.089***
	(-1.42)	(8.74)	(-13.31)	(9.72)
Multiple savings goals	0.021***	0.084***	-0.134***	0.174***
	(5.46)	(13.57)	(-31.26)	(20.94)
No of financial advice sources (Base=None)				
One source of advice	-0.001	0.000	0.015***	-0.044***
	(-0.30)	(0.05)	(3.05)	(-4.86)
Multiple sources of advice	0.013***	0.025***	-0.028***	-0.013
	(4.04)	(4.68)	(-5.97)	(-1.51)
Numerical ability (Base=Poor)				
Moderate	0.003	0.040***	-0.051***	0.030
	(0.47)	(3.25)	(-4.93)	(1.45)
Good	0.011	0.059***	-0.089***	0.107***
	(1.59)	(4.83)	(-8.90)	(5.47)
Excellent	0.028***	0.049***	-0.110***	0.186***
	(3.66)	(3.78)	(-10.63)	(9.19)
Time preference		0.065***	-0.044***	
		(16.23)	(-11.38)	
Risk tolerance	0.038***		-0.006**	
	(12.98)		(-2.01)	
Age group (Base = Below 35)				
35-44	0.016**	0.047***	-0.063***	-0.007
	(2.36)	(3.93)	(-6.27)	(-0.36)
45-54	0.031***	0.104***	-0.133***	0.009
	(4.83)	(9.07)	(-13.73)	(0.50)
55-64	0.053***	0.159***	-0.203***	-0.011
	(8.18)	(13.99)	(-21.17)	(-0.59)
Over 64	0.059***	0.224***	-0.278***	0.034*
	(8.85)	(18.92)	(-27.65)	(1.72)
Male	0.018***	-0.025***	0.003	0.015*
	(6.66)	(-5.23)	(0.63)	(1.86)
Married or cohabiting	-0.016*	0.027**	-0.083***	0.503***
	(-1.92)	(2.22)	(-20.54)	(62.11)
Degree level or above	0.042***	0.014*	-0.105***	0.307***
	(7.71)	(1.69)	(-23.93)	(36.45)
Employed or self-employed	-0.014**	-0.022**	-0.013***	0.311***
	(-2.36)	(-2.35)	(-2.58)	(30.91)
Christian	0.008***	0.015***	-0.022***	
	(2.80)	(3.56)	(-4.90)	
Has good health	0.027***	0.063***	-0.078***	
	(10.55)	(15.95)	(-19.21)	
Lives in urban area	-0.026***	-0.015***	0.010**	
	(-8.80)	(-3.34)	(2.19)	
White British	0.027***	0.057***	-0.103***	0.086***
	(5.17)	(6.17)	(-13.21)	(5.73)
Has children				0.120***
				(16.86)
Housing tenure (Base = Rents)				
Through a mortgage				0.140***
				(17.32)
Outright owner				0.107***
				(18.06)
Log of total household income	0.067***	0.064***		
	(4.50)	(2.99)		
Region dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes

	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Household income (4)
Observations	39390	39390	39390	39390

Panel B: Interaction effects

Numerical ability * No of savings goals
(Base = Poor)

	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Household income (4)
Moderate				
No savings goals	0.006	0.035**	-0.050***	0.018
	(0.74)	(2.47)	(-4.12)	(0.76)
Single savings goal	-0.007	0.048*	-0.045**	0.018
	(-0.49)	(1.85)	(-2.04)	(0.43)
Multiple savings goals	0.006	0.042	-0.058**	0.053
	(0.41)	(1.55)	(-2.53)	(1.19)
Good				
No savings goals	0.010	0.067***	-0.097***	0.095***
	(1.24)	(4.84)	(-8.36)	(4.20)
Single savings goal	0.008	0.062**	-0.087***	0.094**
	(0.58)	(2.48)	(-4.11)	(2.29)
Multiple savings goals	0.015	0.044*	-0.081***	0.133***
	(0.97)	(1.70)	(-3.68)	(3.09)
Excellent				
No savings goals	0.028***	0.075***	-0.137***	0.175***
	(3.20)	(5.02)	(-11.21)	(7.30)
Single savings goal	0.016	0.047*	-0.093***	0.171***
	(1.09)	(1.80)	(-4.28)	(4.04)
Multiple savings goals	0.035**	0.013	-0.084***	0.213***
	(2.27)	(0.50)	(-3.80)	(4.90)
Observations	39390	39390	39390	39390

Table A.6c: 3SLS regression estimates of the effect of financial advice and savings goals with endogenous household wealth

Table replays the specifications in Columns (4) to (6) of Table 4 including a reduced form household wealth equation, using a three stage least squares regression estimator. The dependent variables in Columns (1) to (3) are *Risky assets*, *Fairly-safe assets* and *Safe assets*, regressed against the controls used in Table 4 except the background variables, *Has children* and *Housing tenure*. The dependent variable in column (4) is log of total household wealth with the same controls, but excluding the variables *Time preference*, *Risk tolerance*, and time dummies but including the variables, *Has children* and *Housing tenure*. The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *No of financial advice sources* and *Number of savings goals*. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Risky assets	Fairly-safe assets	Safe assets	Total wealth
	(1)	(2)	(3)	(4)
Panel A: Direct effects				
No of savings goals (Base=None)				
Single savings goal	-0.002	0.030***	0.011***	0.201***
	(-0.94)	(9.77)	(4.72)	(22.33)
Multiple savings goals	0.020***	0.063***	-0.003	0.361***
	(11.23)	(21.04)	(-1.50)	(43.64)
No of financial advice sources (Base=None)				
One source of advice	-0.007***	-0.010***	0.005*	-0.001
	(-3.32)	(-3.04)	(1.96)	(-0.07)
Multiple sources of advice	0.008***	0.009***	-0.007***	0.128***
	(4.27)	(2.75)	(-2.80)	(15.67)
Time preference	0.000	0.035***	0.009***	
	(.)	(12.56)	(11.33)	
Risk tolerance	0.021***		-0.023***	
	(12.09)		(-12.93)	
Age group (Base = Below 35)				
35-44	-0.001	-0.049***	-0.013***	0.729***
	(-0.22)	(-9.47)	(-3.37)	(48.70)
45-54	-0.004	-0.054***	-0.011***	1.208***
	(-1.12)	(-10.24)	(-3.00)	(83.52)
55-64	0.001	-0.045***	-0.013***	1.519***
	(0.27)	(-8.13)	(-3.51)	(99.22)
Over 64	0.002	-0.005	-0.003	1.481***
	(0.62)	(-0.91)	(-0.74)	(89.54)
Male	0.019***	-0.019***	-0.026***	0.078***
	(11.63)	(-6.91)	(-13.34)	(10.12)
Married or cohabiting	0.003*	-0.003	-0.004**	0.495***
	(1.65)	(-1.23)	(-2.03)	(61.93)
Degree level or above	0.049***	-0.003	-0.054***	0.622***
	(27.39)	(-0.72)	(-25.60)	(76.13)
Employed or self-employed	-0.000	-0.034***	-0.010***	0.291***
	(-0.17)	(-10.07)	(-3.97)	(29.04)
Christian	0.004**	0.015***	-0.000	
	(2.14)	(5.18)	(-0.01)	
Has good health	0.014***	0.032***	-0.006***	
	(8.39)	(11.52)	(-2.87)	
Lives in urban area	-0.013***	0.009***	0.017***	
	(-7.18)	(2.93)	(7.58)	
White British	0.024***	0.037***	-0.015***	0.352***
	(8.48)	(8.24)	(-4.46)	(27.34)
Has children				0.036***
				(3.49)
Housing tenure (Base = Rents)				
Through a mortgage				1.831***
				(173.72)
Outright owner				2.281***
				(230.55)
Log of net household wealth	0.024***	0.090***		
	(64.55)	(58.53)		
Region dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Asset allocation in risky assets		-0.360***		
		(-8.50)		
Asset allocation in fairly-safe assets			-1.291***	
			(-595.61)	
Observations	82670	82670	82670	82670

	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Total wealth (4)
Panel B: Interaction effects				
Financial advice * No of savings goals				
(Base = No financial advisor)				
Single source				
No savings goals	-0.004	-0.016***	-0.000	0.014
	(-1.51)	(-3.86)	(-0.05)	(1.15)
Single savings goal	-0.008*	-0.013**	0.005	0.026
	(-1.90)	(-2.01)	(1.00)	(1.46)
Multiple savings goals	-0.011***	0.001	0.013***	-0.040**
	(-2.78)	(0.17)	(2.68)	(-2.30)
Multiple sources				
No savings goals	0.009***	0.012***	-0.007**	0.152***
	(3.52)	(2.91)	(-2.09)	(12.80)
Single savings goal	0.010**	0.007	-0.009*	0.143***
	(2.51)	(1.15)	(-1.82)	(8.04)
Multiple savings goals	0.006*	0.004	-0.005	0.083***
	(1.93)	(0.83)	(-1.37)	(5.98)
Observations	82670	82670	82670	82670

Table A.6d: 3SLS regression estimates of the effect of numerical ability and savings goals with endogenous household wealth

Table replays the specifications in Table 5 including a reduced form household wealth equation, using a three stage least squares regression estimator. The dependent variables in Columns (1) to (3) are *Risky assets*, *Fairly-safe assets* and *Safe assets*, regressed against the controls used in Table B.5 except the background variables, *Has children* and *Housing tenure*. The dependent variable in column (4) is log of total household income with the same controls, but excluding the variables *Time preference*, *Risk tolerance*, and time dummies but including the variables, *Has children* and *Housing tenure*. The table reports marginal effects: Panel A reports the main effects of each variable while Panel B reports the interaction effects between the variables *Numerical ability* and *Number of savings goals*. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Total wealth (4)
Panel A: Direct effects				
No of savings goals (Base=None)				
Single savings goal	-0.004*	0.031***	0.013***	0.185***
	(-1.70)	(8.32)	(4.79)	(17.67)
Multiple savings goals	0.019***	0.055***	-0.003	0.347***
	(9.11)	(15.20)	(-1.41)	(35.94)
No of financial advice sources (Base=None)				
One source of advice	-0.005**	-0.009**	0.003	0.031***
	(-2.25)	(-2.31)	(1.07)	(3.05)
Multiple sources of advice	0.009***	0.008**	-0.007***	0.143***
	(4.01)	(2.17)	(-2.58)	(15.32)
Numerical ability (Base=Poor)				
Moderate	-0.004	0.019**	0.009	0.139***
	(-0.75)	(2.39)	(1.58)	(6.17)
Good	0.004	0.025***	0.003	0.295***
	(0.96)	(3.31)	(0.49)	(13.52)
Excellent	0.022***	0.013	-0.019***	0.430***
	(4.62)	(1.61)	(-3.30)	(18.97)
Time preference		0.032***	0.008***	
		(10.15)	(9.36)	
Risk tolerance	0.020***		-0.021***	
	(10.27)		(-10.82)	
Age group (Base = Below 35)				
35-44	-0.005	-0.047***	-0.007	0.756***
	(-1.23)	(-7.20)	(-1.64)	(41.68)
45-54	-0.009**	-0.050***	-0.004	1.226***
	(-2.39)	(-7.55)	(-0.81)	(69.58)
55-64	-0.006	-0.044***	-0.005	1.523***
	(-1.50)	(-6.42)	(-1.12)	(82.09)
Over 64	-0.004	-0.006	0.004	1.497***
	(-0.99)	(-0.84)	(0.77)	(75.03)
Male	0.017***	-0.023***	-0.024***	0.057***
	(8.84)	(-7.07)	(-10.39)	(6.27)
Married or cohabiting	0.002	-0.002	-0.003	0.467***
	(0.98)	(-0.75)	(-1.17)	(50.07)
Degree level or above	0.044***	-0.011**	-0.048***	0.556***
	(20.85)	(-2.54)	(-19.23)	(56.41)
Employed or self-employed	-0.000	-0.030***	-0.008***	0.271***
	(-0.15)	(-7.13)	(-2.85)	(22.96)
Christian	0.007***	0.012***	-0.004	
	(3.09)	(3.36)	(-1.40)	
Has good health	0.015***	0.027***	-0.007***	
	(7.49)	(7.98)	(-3.09)	
Lives in urban area	-0.013***	0.011***	0.016***	
	(-6.19)	(3.12)	(6.48)	
White British	0.023***	0.034***	-0.014***	0.355***
	(6.92)	(5.89)	(-3.56)	(22.79)
Has children				0.048***
				(3.87)
Housing tenure (Base = Rents)				
Through a mortgage				1.870***
				(148.53)
Outright owner				2.304***
				(199.21)
Log of net household wealth	0.022***	0.083***		
	(53.33)	(49.27)		
Region dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes

	Risky assets (1)	Fairly-safe assets (2)	Safe assets (3)	Total wealth (4)
Asset allocation in risky assets		-0.112** (-2.16)		
Asset allocation in fairly-safe assets			-1.278*** (-470.25)	
Observations	61504	61504	61504	61504
Panel B: Interaction effects				
Numerical ability * No of savings goals (Base = Poor)				
Moderate				
No savings goals	0.001 (0.12)	0.016* (1.77)	0.004 (0.55)	0.205*** (7.87)
Single savings goal	-0.010 (-0.99)	0.029* (1.76)	0.019 (1.57)	0.203*** (4.31)
Multiple savings goals	-0.005 (-0.52)	0.016 (0.92)	0.010 (0.81)	0.001 (0.02)
Good				
No savings goals	0.002 (0.47)	0.028*** (3.13)	0.005 (0.79)	0.376*** (15.03)
Single savings goal	0.003 (0.35)	0.027* (1.69)	0.005 (0.40)	0.358*** (7.92)
Multiple savings goals	0.008 (0.77)	0.021 (1.24)	-0.002 (-0.15)	0.134*** (2.77)
Excellent				
No savings goals	0.019*** (3.34)	0.027*** (2.83)	-0.012* (-1.78)	0.538*** (20.13)
Single savings goal	0.017* (1.70)	0.011 (0.68)	-0.013 (-1.14)	0.469*** (10.05)
Multiple savings goals	0.031*** (2.95)	-0.006 (-0.34)	-0.032*** (-2.62)	0.247*** (5.02)
Observations	61504	61504	61504	61504

Table A.7: Effects of savings goals, financial advice, and numerical ability with additional controls

Table replays the specifications in Table 4 (Columns (4) to (6)) and Table 5 with additional controls. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variable *Number of savings goals* and the mediating variables, *Number of financial advice sources* (Columns (1) to (3)) and *Numerical ability* (Columns (4) to (6)). The additional controls, described in Table 1, are *Impulsive spender, Heavy discounter, Financially organized, Aware of external events, Aware of government policy, shops for good interest rates,* and *Understands pensions*. The table reports marginal effects: Panel A reports the direct effects while Panel B reports the interaction effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Direct effects						
No of savings goals (Base=None)						
Single savings goal	0.001	0.021***	-0.012***	-0.001	0.020***	-0.012***
	(0.57)	(12.54)	(-8.83)	(-0.78)	(10.58)	(-7.20)
Multiple savings goals	0.010***	0.031***	-0.027***	0.009***	0.027***	-0.025***
	(8.85)	(19.91)	(-20.01)	(7.00)	(15.44)	(-15.99)
No of financial advice sources (Base=None)						
One source of advice	-0.004***	-0.006***	0.006***	-0.003***	-0.006***	0.006***
	(-3.88)	(-3.48)	(4.31)	(-2.69)	(-3.20)	(3.76)
Multiple sources of advice	0.003***	0.003**	-0.005***	0.004***	0.003	-0.005***
	(2.68)	(1.98)	(-3.55)	(2.87)	(1.54)	(-3.32)
Numerical ability (Base=Poor)						
Moderate				-0.002	0.013***	-0.007**
				(-0.76)	(3.03)	(-1.99)
Good				0.000	0.019***	-0.013***
				(0.04)	(4.62)	(-3.68)
Excellent				0.007**	0.010**	-0.011***
				(2.49)	(2.42)	(-3.06)
Time preference	0.008***	0.007***	-0.010***	0.006***	0.007***	-0.010***
	(7.40)	(5.10)	(-8.56)	(5.35)	(4.42)	(-6.96)
Risk tolerance	0.009***	-0.002	-0.005***	0.009***	-0.002	-0.006***
	(7.72)	(-1.33)	(-3.70)	(7.03)	(-1.02)	(-3.74)
Age group (Base = Below 35)						
35-44	-0.006***	-0.005**	0.006***	-0.007***	-0.004	0.006**
	(-3.34)	(-2.26)	(2.91)	(-3.22)	(-1.46)	(2.47)
45-54	-0.011***	-0.003	0.005***	-0.012***	-0.002	0.006**
	(-6.32)	(-1.23)	(2.69)	(-5.69)	(-0.52)	(2.38)
55-64	-0.013***	-0.002	0.005**	-0.014***	-0.001	0.007**
	(-6.65)	(-0.74)	(2.20)	(-6.09)	(-0.38)	(2.32)
Over 64	-0.009***	0.020***	-0.015***	-0.010***	0.020***	-0.014***
	(-3.84)	(6.18)	(-5.24)	(-3.69)	(5.31)	(-4.00)
Male	0.008***	-0.011***	0.003**	0.007***	-0.011***	0.003**
	(7.42)	(-7.26)	(2.20)	(5.93)	(-5.97)	(2.01)
Married or cohabiting	-0.002	0.007***	-0.004***	-0.001	0.007***	-0.004**
	(-1.38)	(4.20)	(-2.75)	(-1.10)	(3.57)	(-2.55)
Degree level or above	0.014***	0.005***	-0.014***	0.013***	0.006***	-0.015***
	(10.86)	(3.14)	(-10.27)	(8.52)	(3.16)	(-8.89)
Employed	0.000	0.000	0.002	-0.000	0.000	0.002
	(0.22)	(0.17)	(1.57)	(-0.15)	(0.11)	(1.33)
Has child(ren)	-0.000	-0.012***	0.007***	-0.000	-0.010***	0.006***
	(-0.02)	(-7.19)	(4.70)	(-0.11)	(-5.00)	(3.39)
Lives in urban area	-0.004***	0.005***	-0.000	-0.005***	0.004**	0.000
	(-3.14)	(2.75)	(-0.15)	(-2.92)	(2.05)	(0.19)
Christian	0.002*	0.007***	-0.007***	0.003**	0.006***	-0.007***
	(1.77)	(4.55)	(-5.33)	(2.35)	(3.47)	(-4.59)
Has good health	0.005***	0.010***	-0.010***	0.005***	0.009***	-0.011***
	(4.41)	(6.00)	(-7.82)	(4.14)	(5.17)	(-7.17)
White British	0.012***	0.018***	-0.020***	0.013***	0.017***	-0.021***
	(7.51)	(7.86)	(-10.60)	(6.61)	(6.18)	(-8.78)
Housing tenure (Base = Rents)						
Through a mortgage	-0.003*	0.021***	-0.008***	-0.004*	0.022***	-0.009***
	(-1.93)	(8.38)	(-3.91)	(-1.81)	(7.23)	(-3.66)
Outright owner	0.001	0.045***	-0.030***	0.001	0.046***	-0.032***
	(0.63)	(15.72)	(-12.48)	(0.37)	(13.78)	(-11.17)
Log of net household wealth	0.019***	0.019***	-0.023***	0.017***	0.018***	-0.022***
	(36.14)	(28.31)	(-39.48)	(29.75)	(24.13)	(-33.18)

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Impulsive spender	-0.003	-0.004	0.001	-0.003	-0.005*	0.003
	(-1.32)	(-1.27)	(0.44)	(-1.40)	(-1.75)	(1.04)
Heavy discounter	-0.002	-0.003*	0.002*	-0.002	-0.000	0.001
	(-1.59)	(-1.85)	(1.77)	(-1.42)	(-0.22)	(0.41)
Financially organised	-0.004***	0.004***	-0.001	-0.005***	0.005**	-0.000
	(-3.63)	(2.75)	(-0.36)	(-3.69)	(2.50)	(-0.16)
Aware of external events	0.006***	0.009***	-0.011***	0.004***	0.009***	-0.010***
	(5.61)	(6.23)	(-9.04)	(3.21)	(5.74)	(-7.20)
Aware of government policy	0.008***	0.001	-0.007***	0.008***	-0.000	-0.006***
	(4.80)	(0.70)	(-3.77)	(4.83)	(-0.17)	(-3.08)
Shops for good interest	0.002	0.005**	-0.006***	0.002	0.003	-0.004**
	(1.08)	(2.19)	(-2.95)	(1.01)	(1.35)	(-2.17)
Understands pensions	0.009***	0.002	-0.008***	0.008***	0.004**	-0.009***
	(9.73)	(1.47)	(-6.68)	(7.52)	(2.25)	(-6.25)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	59330	59330	59330	45283	45283	45283
Panel B: Interactive effects	(1)	(2)	(3)	(4)	(5)	(6)
No of advice sources * No of savings goals						
(Base = No financial advisor)						
Single source						
No savings goal	-0.004**	-0.008***	0.006***			
	(-2.49)	(-3.69)	(3.58)			
Single savings goal	-0.004*	-0.008**	0.008***			
	(-1.86)	(-2.54)	(3.01)			
Multiple savings goals	-0.007***	0.001	0.003			
	(-3.10)	(0.32)	(1.17)			
Multiple sources						
No savings goal	0.003**	0.005**	-0.006***			
	(2.14)	(2.22)	(-3.52)			
Single savings goal	0.003	0.000	-0.002			
	(1.56)	(0.06)	(-0.77)			
Multiple savings goals	0.002	0.003	-0.004**			
	(1.09)	(1.42)	(-2.10)			
Numerical ability * No of savings goals						
(Base = Poor)						
Moderate						
No savings goals				-0.002	0.015***	-0.008*
				(-0.51)	(2.99)	(-1.88)
Single savings goal				-0.004	0.015*	-0.008
				(-0.73)	(1.66)	(-1.11)
Multiple savings goals				0.003	0.001	-0.003
				(0.54)	(0.12)	(-0.39)
Good						
No savings goals				-0.001	0.025***	-0.013***
				(-0.34)	(5.02)	(-3.34)
Single savings goal				-0.000	0.015*	-0.011
				(-0.00)	(1.75)	(-1.51)
Multiple savings goals				0.008	0.006	-0.011
				(1.45)	(0.66)	(-1.39)
Excellent						
No savings goals				0.005	0.022***	-0.015***
				(1.50)	(4.12)	(-3.53)
Single savings goal				0.006	0.004	-0.006
				(1.20)	(0.43)	(-0.83)
Multiple savings goals				0.016***	-0.007	-0.007
				(2.81)	(-0.74)	(-0.91)
Observations	59330	59330	59330	45283	45283	45283

Table A.8: Effects of savings goals, financial advice, and numerical ability using alternative financial wealth classifications

Table replays the specifications in Table 4 (Columns (4) to (6)) and Table 5 using alternative financial wealth classifications. The dependent variables are the proportions of *Risky assets*, *Fairly-safe assets* and *Safe assets* regressed against the key independent variable *Number of savings goals* and the mediating variables, *Number of financial advice sources* (Columns (1) to (3)) and *Numerical ability* (Columns (4) to (6)). *Risky assets* consist of direct holding of stock in UK or overseas (listed or unlisted) companies, employee shares, investment in ISAs, and unit or investment bonds; *Fairly-safe assets* include investment in fixed term bonds, overseas and UK gilts, endowment or regular premium policies, single premium policies, lump-sum insurance policies, national savings products, individual retirement accounts or other financial assets and friendly society savings plans; and *Safe assets* include investment in individual savings and current accounts. The table reports marginal effects: Panel A presents the direct effects while Panel B presents the interactive effects. Standard errors are clustered at the household level and *t-statistics* are reported in parentheses. The levels of significance are given by * for 10%, ** for 5%, and *** for 1%.

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Direct effects						
No of savings goals (Base=None)						
Single savings goal	0.000	0.019***	-0.011***	-0.001	0.018***	-0.011***
	(0.05)	(13.90)	(-9.78)	(-0.86)	(11.65)	(-7.98)
Multiple savings goals	0.013***	0.029***	-0.028***	0.012***	0.027***	-0.027***
	(12.15)	(22.24)	(-24.90)	(10.01)	(17.75)	(-20.36)
No of financial advice sources (Base=None)						
One source of advice	-0.004***	-0.005***	0.005***	-0.003***	-0.004**	0.005***
	(-4.23)	(-3.43)	(4.80)	(-2.98)	(-2.48)	(3.41)
Multiple sources of advice	0.004***	0.003**	-0.005***	0.004***	0.004***	-0.007***
	(4.27)	(2.32)	(-4.87)	(3.74)	(2.80)	(-5.13)
Numerical ability (Base=Poor)						
Moderate				-0.002	0.014***	-0.007**
				(-0.68)	(3.76)	(-2.44)
Good				0.002	0.020***	-0.014***
				(0.89)	(5.59)	(-4.83)
Excellent				0.010***	0.015***	-0.016***
				(3.69)	(3.98)	(-5.22)
Time preference	0.010***	0.007***	-0.012***	0.008***	0.007***	-0.011***
	(9.80)	(5.91)	(-11.41)	(6.87)	(5.25)	(-8.96)
Risk tolerance	0.011***	-0.004***	-0.005***	0.010***	-0.003**	-0.005***
	(9.89)	(-3.11)	(-4.19)	(7.93)	(-2.03)	(-3.94)
Age group (Base = Below 35)						
35-44	-0.007***	-0.004*	0.006***	-0.008***	-0.004	0.006***
	(-4.04)	(-1.89)	(3.03)	(-3.68)	(-1.39)	(2.65)
45-54	-0.013***	-0.004*	0.007***	-0.014***	-0.003	0.008***
	(-6.93)	(-1.73)	(3.55)	(-6.13)	(-1.08)	(3.10)
55-64	-0.014***	-0.005**	0.008***	-0.015***	-0.005	0.009***
	(-6.96)	(-2.07)	(3.57)	(-6.47)	(-1.52)	(3.45)
Over 64	-0.014***	0.010***	-0.003	-0.016***	0.010***	-0.001
	(-6.50)	(3.71)	(-1.36)	(-6.28)	(3.07)	(-0.48)
Male	0.009***	-0.010***	0.002	0.008***	-0.010***	0.002*
	(8.55)	(-7.50)	(1.42)	(6.60)	(-6.34)	(1.72)
Married or cohabiting	-0.003***	0.012***	-0.007***	-0.004***	0.012***	-0.007***
	(-3.02)	(8.09)	(-5.48)	(-2.81)	(6.78)	(-4.50)
Degree level or above	0.024***	-0.003*	-0.016***	0.022***	-0.003	-0.015***
	(18.39)	(-1.85)	(-12.80)	(14.28)	(-1.50)	(-10.10)
Employed	-0.004***	0.003*	0.004***	-0.004***	0.004**	0.002
	(-3.36)	(1.71)	(2.71)	(-2.85)	(2.19)	(1.37)
Has child(ren)	-0.001	-0.014***	0.008***	-0.001	-0.012***	0.008***
	(-0.59)	(-8.04)	(5.85)	(-0.78)	(-5.93)	(4.55)
Lives in urban area	-0.005***	0.006***	-0.001	-0.005***	0.006***	-0.000
	(-4.05)	(4.11)	(-0.46)	(-3.43)	(3.20)	(-0.25)
Christian	0.002*	0.006***	-0.006***	0.003**	0.005***	-0.006***
	(1.80)	(4.31)	(-5.19)	(2.31)	(3.24)	(-4.48)
Has good health	0.009***	0.010***	-0.014***	0.009***	0.008***	-0.013***
	(9.00)	(7.40)	(-12.31)	(8.00)	(5.42)	(-10.07)
White British	0.012***	0.020***	-0.021***	0.011***	0.019***	-0.021***
	(7.29)	(9.34)	(-11.99)	(5.96)	(7.52)	(-9.81)
Housing tenure (Base = Rents)						
Through a mortgage	-0.013***	0.027***	-0.006***	-0.012***	0.027***	-0.007***
	(-7.71)	(11.63)	(-2.96)	(-6.21)	(9.83)	(-2.86)

	Financial advice			Numerical ability		
	Risky assets	Fairly-safe assets	Safe assets	Risky assets	Fairly-safe assets	Safe assets
	(1)	(2)	(3)	(4)	(5)	(6)
Outright owner	-0.002	0.045***	-0.027***	-0.001	0.044***	-0.028***
	(-1.04)	(18.12)	(-13.34)	(-0.29)	(15.07)	(-11.44)
Log of net household wealth	0.025***	0.016***	-0.025***	0.023***	0.015***	-0.024***
	(47.30)	(27.13)	(-48.19)	(37.60)	(22.42)	(-39.17)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82670	82670	82670	61504	61504	61504

Panel B: Interaction effects

No of advice sources * No of savings goals
(Base = No financial advisor)

	Risky assets	Fairly-safe assets	Safe assets			
Single source						
No savings goal	-0.003***	-0.008***	0.007***			
	(-2.68)	(-4.20)	(4.44)			
Single savings goal	-0.005***	-0.003	0.006**			
	(-2.84)	(-1.26)	(2.46)			
Multiple savings goals	-0.005***	0.000	0.003			
	(-2.66)	(0.03)	(1.44)			
Multiple sources						
No savings goal	0.005***	0.004**	-0.007***			
	(3.73)	(2.38)	(-4.63)			
Single savings goal	0.005**	0.004	-0.006***			
	(2.43)	(1.49)	(-2.61)			
Multiple savings goals	0.003*	0.002	-0.003**			
	(1.69)	(0.87)	(-1.98)			

Numerical ability * No of savings goals
(Base = Poor)

				Risky assets	Fairly-safe assets	Safe assets
Moderate						
No savings goals				0.002	0.014***	-0.007**
				(0.52)	(3.16)	(-2.10)
Single savings goal				-0.004	0.017**	-0.010*
				(-0.75)	(2.30)	(-1.66)
Multiple savings goals				-0.006	0.010	-0.003
				(-0.86)	(1.25)	(-0.51)
Good						
No savings goals				0.004	0.023***	-0.014***
				(1.15)	(5.55)	(-4.17)
Single savings goal				0.003	0.018***	-0.015***
				(0.67)	(2.63)	(-2.60)
Multiple savings goals				0.001	0.012*	-0.011*
				(0.22)	(1.69)	(-1.73)
Excellent						
No savings goals				0.011***	0.025***	-0.020***
				(3.39)	(5.40)	(-5.46)
Single savings goal				0.009*	0.012*	-0.014**
				(1.92)	(1.71)	(-2.46)
Multiple savings goals				0.010	0.002	-0.010
				(1.62)	(0.25)	(-1.55)
Observations	82670	82670	82670	61504	61504	61504