International Review of Economics and Finance xxx (xxxx) 104567

Contents lists available at ScienceDirect

International Review of Economics and Finance

journal homepage: www.elsevier.com/locate/iref

Factors affecting UK household financial risk-taking and their implications for consumption of financial investments

Amee Kim[a,*], Frederique J. Vanheusden[b], Mamunur Rashid[a]

[a] Christ Church Business School, Canterbury Christ Church University, Canterbury, United Kingdom
[b] Department of Engineering, School of Science and Technology, Clifton Campus, Nottingham Trent University, Nottingham, United Kingdom

ARTICLE INFO

Keywords:
Risk-based bank selection
Household finance
Financial risk-taking
United Kingdom
Theory of planned behavior
COVID-19

ABSTRACT

Household financial risk-taking (FRT) diminishes during economic downturns or periods characterized by high cost of living to preserve household wealth, economic safety and wellbeing, leading to significant reductions in consumption. Yet the exact mechanisms behind these changes in FRT are not understood. The study investigates FRT within households residing in the UK using a structured questionnaire survey on 215 families. The study is designed around the theory of planned behavior. Data are analyzed using confirmatory factor analysis (CFA) and Structural Equation Modeling. Results are validated using bootstrapping. Multiple regression analysis and mean difference tests are conducted to examine sensitivity of FRT to various demographic and social factors. The results indicate profound influence of attitude, subjective norms, and perceived behavioral control, alongside culture, on FRT practices within UK households. We forward that FRT is intentional, utilized in situations where it is deemed safe for the family and eschewed by families with a higher level of behavioral control. Results also imply an urgent need to address effectively the key aspects pertaining to household wellbeing, gender diversity, and power sharing among partners within the family.

1. Introduction

Despite decades-long scientific endeavors, our understanding of the factors affecting financial risk-taking (FRT), and their influence on the selection of banks, investment opportunities and financial institutions is very limited. This study intends to fill this gap by studying the direct and indirect factors affecting risk-taking decisions by UK households and their implications for financial institutions. This is particularly relevant in the post-COVID-19 context, where many households have experienced a reduction in investable assets, in some cases resulting in increased risk aversion that has persisted beyond the immediate aftermath of the pandemic (Alhenawi & Yazdanparast, 2022; Yue et al., 2020). Other studies found a strong effect of financial status on financial decisions, with households that were financially vulnerable pre-COVID feeling the pandemic negatively impacted their finances, while those with higher security feeling a positive effect (Bruce et al., 2022). Both situations potentially lead to altered financial behavior in households, and its potential longer-term impact is worth investigating. Furthermore, the pandemic forced many households into gaining skills in using FinTech and relying on robo-advisors to guide their investments, in addition to worrying about their health and financial status (Fox & Bartholomae, 2020), which could influence financial decision-making.

* Corresponding author. Christ Church Business School, Canterbury Christ Church University, Kent, Canterbury, CT1 1QU, United Kingdom.
E-mail address: amee.kim@canterbury.ac.uk (A. Kim).

https://doi.org/10.1016/j.iref.2025.104567
Received 18 September 2024; Received in revised form 1 August 2025; Accepted 28 August 2025
1059-0560/© 20XX

In a rational setting, consumers take financial risks if they find them rewarding in terms of higher returns, social status, or other tangible achievements (Rolison & Shenton, 2020; Schoemaker, 1993; Sekścińska & Rudzinska-Wojciechowska, 2022). Complemented by a higher degree of financial knowledge and awareness, rational financial decisions are generally instrumental and objective-driven (Bender et al., 2022; Rogers et al., 2013). Within an irrational environment, the intention to engage in financial risks is dominated by a host of individual, social, and behavioral factors, including personality traits, self-esteem, religion, and belief systems (Apergis, 2023; Egan & Bull, 2020; Ramazanova et al., 2022; Sekścińska & Rudzinska-Wojciechowska, 2022). A cohort of these intentional and behavioral factors carry important implications for financial markets.

FRT is defined in many ways, with risk and utility maximization being essential components. Some of the simplest definitions of FRT involve the notions of chances of gains and losses in uncertain conditions (Figner & Weber, 2011; Josef et al., 2016; Zou et al., 2019). The choice of risky (re-)investment, therefore, depends on perceived overall utility, family values, culture, and other social and financial benefits (Bender et al., 2022; Rogers et al., 2013; Rolison & Shenton, 2020; Sekścińska & Rudzinska-Wojciechowska, 2022). This is also a challenge from a financial marketing standpoint.

Due to behavioral processes, it is extremely difficult to find common factors explaining FRT. Religiosity emerges as a significant factor, particularly in communities characterized by collective values and religious dominance (Apergis, 2023; Ashqar & Lobão, 2023). Although there exists a notable disparity among various religious factions (Li, 2022), households adhering to religious beliefs tend to engage less with financial risk (León & Pfeifer, 2017). The cultural background of individuals influences risk-taking (Xue et al., 2021). The inclination towards gambling in some cultures is also a distinct characteristic of individuals, influenced by social and cultural factors (Kim et al., 2021; Mishra & Bhardwaj, 2022; Ramazanova et al., 2022; Wang et al., 2017; Zang et al., 2023).

Sex is a longstanding and widely utilized demographic marker for discerning individual levels of risk (Brahma et al., 2023; Wagner & Walstad, 2023; Weber et al., 2002). Dominance within household relations influences risk-taking attitude (Haran Rosen et al., 2021; Ke, 2021). For instance, households led by women may consider taking social risks while averting financial risks (Friedl et al., 2020). Financial knowledge, awareness, and availability of financial information also strongly influence FRT (Cupák et al., 2021; Lusardi, 2012; van Rooij et al., 2012).

While most studies on risk-taking consider the cases of individuals as decision-makers, FRT in a household context has also become important in recent years for several reasons. *First*, due to the pressing challenges posed by the escalating cost of living, limited general and financial knowledge, and even social and peer pressure, many households resort to engaging in high-risk investments and gambling activities (Cardak et al., 2019; Midões & Seré, 2022).

Second, the attitude towards risk-taking is different between individuals caring for themselves and individuals caring for their families. They are not only different in terms of their religious beliefs (León & Pfeifer, 2017) but also in gender diversity (i.e., dominant male versus female partner - Robson & Peetz, 2020; Wagner & Walstad, 2023), financial and general market literacy (Johnston et al., 2016; Lusardi, 2012; van Rooij et al., 2012) and leadership of the head of the family (Ke, 2021; Lim et al., 2022).

Third, while it is well established that rational individuals consider family safety and well-being before making risky decisions (Chaulk et al., 2003; Haran Rosen et al., 2021; Kim et al., 2017), household decisions are often influenced by how well the decision-makers handle the consequences of their decision. Therefore, the behavioral control and self-awareness (Bazley et al., 2021; Robson & Peetz, 2020) and cognitive and personality traits (Johnston et al., 2016) of the household decision-makers have been the subject of academic and professional interest.

Despite being one of the most demographically, religiously, and culturally diverse economies globally, studies on household FRT in the United Kingdom (UK) are rare. Household FRT has become an area of massive importance in the wake of multiple economic crises involving the UK, including its historically slow recovery from COVID-19 leading to a high cost of living and the reliance of a larger number of households on government funds for survival (Du & Shepotylo, 2022).

This study contributes to the growing literature on FRT and how it affects financial choices. Its core objective is to examine the determinants of FRT in a UK household setting. We conceptualized the study based on the theory of planned behavior (TPB), the cushion hypothesis, Hofstede's 6-D cultural dimensions, and the central religiosity scale (CRS).

TPB is a perception-based model that helps identify the determinants of any specific behavior (Ajzen, 1991). The model has three basic independent variables: attitude, perceived behavioral control, and subjective norms. The connection between these variables and the actual behavioral outcome (here FRT) is mediated by behavioral intention. Due to the experimental nature of studies on FRT, there is limited evidence of the use of TPB in FRT studies, with some exceptions to studies on lottery participation and gambling (Flack & Morris, 2017; León-Jariego et al., 2020; Walker et al., 2006).

The cushion hypothesis states that people in collective societies are more willing to take financial risks because they perceive a stronger social safety net (Hsee & Weber, 1999). The 6-D (six dimensions) cultural factors assume that humans behave randomly and value relationships with other individuals, family, groups, and society that carry significant impact on decision-making (Hofstede, 1980; Hofstede & Minkov, 2010). Both the cushion hypothesis and Hofstede's cultural dimensions support understanding the influence of culture on FRT. We considered the Centrality of Religiosity Scale (CRS) by Huber and Huber (2012) to capture the influence of religiosity on FRT.

Data from UK households (n = 215) were collected using a structured questionnaire and analyzed using Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM), which allowed accounting for direct and indirect effects (through a mediation effect). The results indicate a robust positive and direct association between *risk intention* and *perceived behavioral control* on FRT. *Subjective norms* negatively influence FRT both directly and indirectly through risk intention. *Risk attitude* has an indirect positive impact while culture exhibits an indirect negative impact on FRT. From the mean difference tests, religious orientation, income source, and net savings do not exhibit any significant influence on FRT. The *financial affiliation* of the households (i.e., affiliation with banks, financial clubs and other networks) exhibits a significant influence on FRT.

The novelty of these findings lies not only in their relevance to a society characterized by individualism, religious pluralism, a robust financial market, and personal freedom, but also in the profound consequences they carry in the post-COVID crisis era. Households with a positive attitude, intention, and perceived control over the consequences of risky decisions will take more risk. FRT is further characterized by an instrumental and strategic approach, with a strong emphasis on planning, networking, and financial knowledge (Rogers et al., 2013). This suggests that households may consider investments in new initiatives with higher levels of risk based on their *long-term* affiliations with and trust in financial services providers.

Results on subjective norms strongly support the notion that FRT is influenced by social, family, and peer pressure. A family that cares about the health, wellbeing and comfort of its members will generally not take risky decisions. While long-term family wellbeing is the primary reason behind this (Kim et al., 2017), the impact of COVID-19 and high cost of living cannot be ignored. Similar to Wang et al. (2017), households characterized by high levels of masculinity and power distance tend to engage in lower levels of risky investment. A family lacking diversity and equality in power dynamics between partners is likely to exhibit a lower propensity for assuming risk (Guiso & Zaccaria, 2023). Financial institutions should revise their financial products based on family power sharing, degree of financial awareness, and relationship between banks and the customers.

The remainder of the study is organized as follows. Section 2 provides an analysis of the relevant literature, and hypotheses. *Section 3* provides an in-depth analysis of the data, materials, and procedures employed in the study. The findings are summarized in *Section 4* and discussed in *Section 5*. *Section 6* concludes the study, highlighting potential implications and limitations.

2. Theory and hypotheses development

2.1. Theory of planned behavior (TPB) and FRT

The theoretical premise of this study is grounded in three assumptions. *First*, there has been a significant divergence in the extent to which factors affect FRT between groups and individuals (Li, 2022; Olivola et al., 2020). Since risk-taking is often a choice, intention of and attitude towards risk-taking act as primary drivers of FRT.

Second, adherence to family values and a focus on household orientation, particularly during crisis periods, serve as limiting factors for families, reducing gambling and high-risk venturing (Kim et al., 2017; Rogers et al., 2013). Household risk-taking is strongly influenced by culture, social, family, and peer pressure. As opposed to the norms of a collective society (Hsee & Weber, 1999), household responsibility may help reduce risk-taking in an individualistic society such as the UK (Chaulk et al., 2003; Görlitz & Tamm, 2020).

Third, the 'ability' to take and manage risks is often a preferred trait compared to 'preferring' to take risk (Millroth et al., 2020). Hence, households with higher perceived behavioral control possess the capacity to take more risks. Higher awareness and knowledge, financial literacy, and training strengthen households' confidence in handling risky decisions (Lusardi, 2019).

Drawing from TPB, this study posits that risk-taking behavior is contingent upon one's attitude towards and perception of risk, customary norms, as well as perceived behavioral, cultural, and social control factors (Ajzen, 1991).

There are limited studies using TPB in FRT. Flack and Morris (2017) employed TPB to study the intention to gamble. They reported a direct connection between attitude and intention-to-gamble behavior. Walker et al. (2006) reported the intention to play lottery among respondents from diverse ethnic groups was affected by attitude, norms, and controllability, alongside self-efficacy.

2.2. Risk intention

Intention is defined as the degree of effort, willingness, and planning to execute a behavior (Ajzen, 1991). For FRT, intention explains the motivation to take risks, either because a household intends to take risks or has no alternatives. It is expected that higher intention to take risk is positively connected to FRT. Household FRT is considered a conscious and planned action driven by an assessment of the advantages and disadvantages linked to the overall welfare of the family (Bender et al., 2022; Rolison & Shenton, 2020). The presence of financial risk is anticipated to be 'business as usual', with certain households potentially opting to allocate their resources towards investments carrying higher degrees of risk (Alhenawi & Yazdanparast, 2022; Andrieş et al., 2023; Gomes et al., 2021; Kling et al., 2023).

Intention requires resources as well as planning that may result in a habit (Redish et al., 2008). The intention to engage in a risky activity is also driven by a positive attitude towards the perceived benefits associated with this activity (Bottasso et al., 2022; Robson & Peetz, 2020), and influenced by attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). Therefore, intention acts both as a driver and mediator of FRT. Given this, we hypothesize that:

H1.1. Risk intention is positively connected to FRT.

H1.2. Risk intention mediates the relationship between determinants (attitude, subjective norms, perceived behavioral control, culture, religiosity) and FRT.

2.3. Attitude

Attitude towards risk has been evaluated in numerous studies, including how it differs amongst financial experts (Bottasso et al., 2022), ethnicities (Tan et al., 2021), and sexes (Robson & Peetz, 2020).

Variation in risk-taking behavior can be broken down into three components: the extent to which risk is perceived, the anticipated benefits, and the individual's risk attitude, which refers to their level of tolerance for risk in pursuit of expected gains (Rolison & Shenton, 2020). Preference for a risky bet typically stems from a strong positive evaluation of the higher expected utility associated with that option. compared to low-risk options with lower/usual returns (Rolison & Shenton, 2020). Bender et al. (2022) found that strong attitudes can undermine enduring ideals and established practices. They showed that high-net-worth investors encountered many risk considerations, predominantly of a non-financial characteristic, such as health risks and the occurrence of uncommon disasters. Expertise in FRT and prior knowledge about risky investments induces a more relaxed attitude towards FRT (Bottasso et al., 2022; Shou & Olney, 2021), whereas most studies show that ageing makes individuals more conscious about FRT (König, 2021), indicating a systematic reduction in risk-attitude over time. Therefore, we hypothesize that:

H2. A progressive attitude towards risk is positively connected to risk intention and FRT.

2.4. Perceived behavioral controls (PBC)

PBC is defined as the 'ability' of the individual to control factors that lead to certain intention and behavior (Ajzen, 1991), which often leads to the perception surrounding the 'ease' or 'difficulty' associated with certain behavior. It does not only depend on the individual's internal control but is also influenced by their perceptions of their ability to understand external factors (e.g. risks involved).

Self-control and self-esteem show a strong impact on FRT. Individuals exhibiting elevated levels of self-esteem showed a proclivity towards increased involvement in financial ventures and gambling, hence participating in activities characterized by heightened financial risk (Sekścińska et al., 2021). Self-control was found to be negatively associated with lottery-based risk-taking, while higher self-esteem and sense of power led to higher gambling-based risk-taking (Sekścińska & Rudzinska-Wojciechowska, 2022).

Financial know-how and experience play a crucial role in facilitating the ability to make informed and prudent financial decisions. According to León and Pfeifer (2017), there exists a widely held assumption that individuals possessing a fundamental understanding of financial matters are inclined to engage in risky endeavors solely when there is a commensurate potential for gain. Having a comprehensive grasp of fundamental concepts pertaining to terms of trade, as well as possessing a broader perspective on the market and other financial instruments, facilitates the process of making informed decisions that entail a certain degree of risk. Individuals having a wider control over risk, financial and market information tended to exhibit a greater propensity for engaging in FRT or selecting portfolios comprised of high-risk assets (Cupák et al., 2021). The disparity in financial knowledge among different demographic groups was significant and was frequently influenced by factors such as culture, financial attitude, and financial self-efficacy (Farrell et al., 2016; Rink et al., 2021). We hypothesize that:

H3. Higher perceived behavioral control is positively connected to intention and FRT.

2.5. Subjective norms

Risky financial decisions are social constructs. Some household's risky financial decisions (ranging from the purchase of real estate to gambling) are strongly influenced by familial, peer, and social pressures. Subjective norms are these collective pressures that modify our intentions and commitment to a behavior (Ajzen, 1991). Subjective norms have occasionally shown weak effects on intention, however (Morren & Grinstein, 2021), as they can be evaluated as those which others believe an individual should do (injunctive norms) and what others do (descriptive norms - Cialdini, 2003; Veissière et al., 2019), and an individual's personal norms (Schwartz, 1968). The combination of these various aspects leads to individual conflicts between what is right to do and what one intends to do.

While Egan and Bull (2020) found social support from family and friends a weak mediator between personal characteristics and risk-taking, Zou et al. (2019) reported that pressure from family members mediated this relationship. Lim et al. (2022) equally showed some evidence for a mediating role of family support. Reasons for this difference may lie within the realm of power distributions among family members and their ability to control the decision of others (Dema-Moreno, 2009; Hu, 2021; Morsy, 2020). Due to differences in roles played by husbands and wives in a household decision, a growing body of literature finds that women are particularly strong in social risk-taking but weaker in FRT (Booysen & Guvuriro, 2021; Friedl et al., 2020).

Concerns about household wellbeing and long-term development of household financial value may impose implicit pressures on risk-taking, particularly during post-crisis recovery period. Kim et al. (2017) found that family wellbeing negatively influences member's engagement with risky financial decisions. A household's expectations of economic crisis and high inflation rates influence its financial behavior (Burke & Ozdagli, 2023; Yue et al., 2020). Ajzen (1991) and La Barbera and Ajzen (2020) also argued that exact nature of subjective norms might be less robust due to conflict between personal considerations and perceived social pressure of the *behavior* in question.

In the face of increased cost of living, household financial investment is done much more cautiously, considering the potential of future downturns and need for more essential investment in health and education of household members. Therefore, implicit pressure towards 'household orientation' in the post-crisis period would induce lower FRT, leading to the following:

H4. Subjective norms are negatively related to FRT.

2.6. Religiosity

The impact of religious orientation on risk aversion is a subject of considerable contention (Liu, 2010). While the impact of religiosity on risky decision-making is more pronounced than that of mere religious affiliation, overall, the influence of religion was observed to be more robust among individuals identifying as Muslims and Christians, when compared to those identifying as Hindus and Buddhists (Olivola et al., 2020).

Due to the restrictions stated in the Islamic law (*Shariah*), Muslims are explicitly prohibited to engage in excessive and unjustifiable risk-taking, as well as participating in gambling activities (León & Pfeifer, 2017). Canepa and Ibnrubbian (2014) revealed significant correlations between Muslims and their inclination towards selecting Shariah-compliant stocks and investments that are generally less risky compared to non-compliant investments. Li (2022) noted that Protestants and Catholics also face comparable values-driven limitations. Dennin et al. (2022) utilized the CRS (Huber & Huber, 2012) to show that financial decision-making is influenced by intuition derived from religious beliefs.

Household finance and financial behavior of the household decision-maker have been the focus of a growing body of literature (Gomes et al., 2021). However, the nexus of religion on household FRT from Europe and the UK is just emerging. The broader understanding is that the religious practices of individuals and households have a complex effect on risk-taking (Fincher & Thornhill, 2012). Muslim households are generally risk averters while applying for long-term mortgage for their houses and stock market investment when compared to high risk-taking activities exhibited by Catholics, Hindus, and even other minority groups (Ashqar & Lobão, 2023; Das et al., 2019; Kim et al., 2021). There is, however, considerable debate on the propensity to take risk among Catholics and Protestants (Apergis, 2023; Ashqar & Lobão, 2023). We contend that religious households do not find much utility in risky investment sacrificing religious codes, which leads to the following hypothesis:

H5. Higher degrees of religiosity reduce risk intention and FRT.

2.7. Culture

Human behavior in different cultural contexts is non-random, indicating a persistent influence on culture on human decision-making (Hofstede, 1980). Cultural alignment, similarity, dissimilarity, and identity influence financial literacy and how people are dominated by their gender diversity and power distance, farsightedness, and the tendency to avoid risks (Hofstede & Minkov, 2010; Rink et al., 2021). Hofstede's (1980) six-dimensional (6-D) cultural indicators are used by numerous studies to understand how culture influences human behavior. These dimensions encompass power distance, masculinity versus femininity, individualism versus collectivism, uncertainty avoidance, long versus short-term orientation, and indulgence versus restraints.

Cultural dimensions appear to drive conflicts within subjective norms (discussed in Section 1.5) to a certain extent, validating their inclusion in a TPB model. A previous study showed that, in countries with higher scores on Hofstede's individualism dimension (such as the UK), cultural dimensions moderately influenced intention as measured through TPB models (Morren & Grinstein, 2021). Wang et al. (2017) conducted a study including 53 nations to examine the correlation between Hofstede's cultural dimensions and the propensity of individuals to participate in lotteries, showing a positive relationship between individualism, power distance, masculinity, and the tendency to exhibit loss aversion. Meier-Pesti and Penz (2008) found that FRT was affected by levels of masculinity. Hsee and Weber (1999) posited that intention to FRT is higher in a collective-oriented society, since individuals are mor inclined to receive financial assistance when they are in a state of need, potentially serving as a protective (financial) cushion.

Religious culture is not covered under Hofstede's dimensions. An important blend of spirituality and culture dictate the financial management, as seen among American Indian populations where sharing resources is considered an obligation and financial management of Indian households involves an intricate balance of nature, spirituality, and money (Danes et al., 2016). Similarly, extensive social relationships and religious practices reduce the tendency of household financial defaults in Tibet (Zang et al., 2023), while people residing in nations with a greater proportion of Orthodox Christians exhibit a higher degree of loss aversion (Wang et al., 2017).

With cultural norms generally exhibiting a restriction on excessive risk-taking, we hypothesize that:

H6. Culture is negatively connected to risk intention and FRT.

2.8. Other demographic factors

There is a notable variation in financial risk attitudes observed across participants with varying levels of finance experience (Bottasso et al., 2022; Kling et al., 2023), age (Eberhardt et al., 2019; Rolison et al., 2014), sex (Booysen & Guvuriro, 2021; Guiso & Zaccaria, 2023; Gupta et al., 2022) and a group of financial profilers, such as household savings (Haran Rosen et al., 2021) access to finance (Mishra & Bhardwaj, 2022), and numeracy and literacy (Bucher-Koenen et al., 2021; Lusardi, 2019). There is however very limited knowledge about the influence of household income and savings on their tendency to take risks. It is also important to examine how social connections through membership of a financial club or network influence household intention to FRT. Income source and savings offer financial motivation behind FRT, while being part of a financial club or network can help explain the influence of social inclusion and cultural ties on FRT.

3. Materials and methods

3.1. Definitions, variables, and measures

Fig. 1 presents the modified TPB-based model used in this study. This model employs four distinct types of variables. The primary category encompasses factors that influence household propensity for engaging in FRT. Five independent variables were included: perceived behavioral control (PBC), subjective norms (SBN), attitude towards risk (ATT), culture (CUL) and religiosity (REL). Risk intention (INT) functions as a mediating variable. The dependent variable is FRT. A set of demographic variables, such as age, gender, dependents and education, are included. The control variables comprise five demographic indicators, including religious orientation, sources of income, net savings, financial affinity, and sex.

Due to the limited use of TPB in FRT studies, an extensive literature search was conducted to identify measures for all constructs. The measurements of five independent factors, the mediating variable, and the dependent variable are based on established definitions derived from pertinent scholarly literature (Table 1). In this study, these items were measured using a seven-point Likert scale, which offer choices from '1' (strongly disagree) to '7' (strongly agree). Demographic identifiers were coded using the dummy variable approach.

3.2. Data

Participants were recruited based on a convenience sampling approach. Recruitment relied on participants engaging with posters spread at the authors' institutions, social media (*Reddit* and *LinkedIn*) posts and word-of-mouth. Posters and social media posts contained a QR code and link, respectively, that sent participants to an MS Forms website containing information about the study and a consent form. If individuals agreed to participate, they were forwarded to another MS Forms website containing the structured questionnaire. Given the anticipation of fast fluctuations in household financial circumstances during the post-pandemic era, we allotted a maximum duration of three months for data collection. The survey was administered in English and required approximately 20 min to complete. Criteria for participation were to contribute in managing household finances, be aged 18 or above, understand written English and reside in the UK. Ethical approval for the study was obtained from the local ethics committee.

3.3. Factor analysis

The analytical process consisted of multiple components. The procedure of data filtering and cleansing was accomplished by examining the frequency distributions within the respondents' profile (Table 2). Next, CFA was employed to ascertain the principal components and establish conceptual constructs. This decreased the number of measures that are used to represent a particular construct and provided a model that could be further examined to investigate the correlations between different constructs using regression models (Abdi and Williams, 2010).

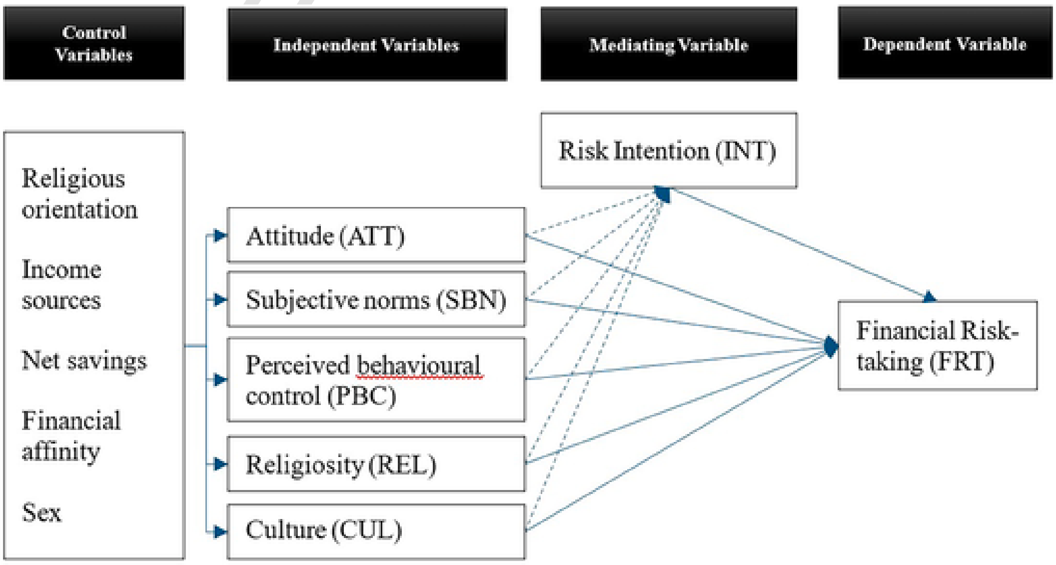

Fig. 1. Model for household FRT. Dotted lines show an indirect relationship mediated through risk intention, and full lines indicate a direct relationship. Attitude (ATT), subjective norms (SBN), and perceived behavioral control (PBC) are the three determinants of risk intention suggested by Theory of Planned Behavior (TPB). Religiosity (REL) is measured using the 5-point CRS. Culture (CUL) is based on the perceived cultural attributes suggested by Hofstede.

Table 1
Definitions of the variables.

Variable	Definitions	Measures/attributes
Financial risk-taking (FRT)	Indicators measure the perceptions of the respondents preferring risky investments over non-risky alternatives and a desire to reinvest if the asset remains risky (Figner & Weber, 2011; Gupta et al., 2022; Josef et al., 2016).	I prefer risky investment over non-risky alternative. I will reinvest in risky assets. I like to deal with uncertainty. I prefer profits over risk diversification.
Risk-taking intention (INT)	Indicators measure an intention to invest in risky venture while considering FRT as a part of everyday life (Ajzen, 1991; León-Jariego et al., 2020).	I like risk-taking even if these are costly. I recommend risky assets to friends and family. I accept risk-taking as a part of my everyday life.
Attitudes (ATT)	Indicate perceived attitudes participants have towards risky investments, short-term gains, and cryptocurrency (König, 2021; Meier-Pesti & Penz, 2008; Shou & Olney, 2021; Tan et al., 2021).	I like to trade in the market for short-term gain. I think cryptos can make some quick money for us. Risky assets are more profitable than others. I buy lottery tickets often.
Perceived behavioral control (PBC)	Measures include perceived financial and non-financial knowledge, ability and skills that control FRT intentions (Robson & Peetz, 2020; Sekścińska et al., 2021; Shou & Olney, 2021; Wagner & Walstad, 2023).	I understand the terms of the trade. I know when to stop trading/investing. I can identify new opportunities in the market. I understand the broader market. I have knowledge of the economy.
Subjective norms (SBN)	Measures include influence and control exerted by family, friends, society, and other household demands, including the needs for investment in education, health, and savings for future rainy days (Egan & Bull, 2020; Lim et al., 2022; Zou et al., 2019).	Investment in my family health is important to me. I am worried about my family's financial security. I think comfort in my household is important. I want to secure financial freedom for my family. My surroundings influence me while buying new assets.
Culture (CUL)	Perceived cultural attributes are taken from the 6-D cultural measures by Hofstede's six cultural dimensions (Hofstede & Minkov, 2010; Wang et al., 2017).	I live in a male-dominated society. There exists high power distance in my culture. I prefer individualism over collectivism. I prefer certain outcomes over uncertain outcomes. I plan for long-term goals. There are more occasions of indulgence than of restraints.
Religiosity (REL)	The CRS-5 scale proposed by Huber and Huber (2012), measuring the perceived importance of religion within one's life, and to what extent they actively participate in religious events.	I frequently pray. I believe in the existence of God or something divine. I often take part in religious services. I believe that God or something divine intervenes in life. I often think about religious issues.
Religious orientation	Coded as a dichotomous variable.	0 = no religious orientation 1 = religious orientation
Net savings		1 = below 5 % (of total monthly income) 2 = 5 % and more
Sources of income		1 = own business income 2 = other income sources

(*continued on next page*)

Table 1 (*continued*)

Variable	Definitions	Measures/attributes
Dependents		0 = no dependents 1 = dependents
Financial affinity		0 = not affiliated with financial organization 1 = affiliated

Notes: The measures are initial inputs. The actual measures after CFA based on relatively higher reliability score and factor structure are shown in Table 3.

Table 2
Respondents' profile.

Indicators	Freq.	%
Age		
Below 35	89	41.4
36 to 55	96	44.7
56 and above	30	13.9
Total	215	100.0
Gender		
Male	78	37.0
Female	124	57.0
Undisclosed	13	6.0
Total	215	100.0
Sources of income		
Own business income	130	60.5
Other income and funds	85	39.5
Total	215	100.0
Net monthly income (£)		
<1000	55	25.6
1000–3000	95	44.2
3000–5000	49	22.8
>5000	16	7.4
Total	215	100.0

Indicators	Freq.	%
Financial affiliation		
No	169	78.6
Yes	46	21.4
Total	215	100.0
Religious orientatio		
No religious orientation	83	38.6
Religious orientation	132	61.4
Total	215	100.0
Caring for dependents		
Yes	88	40.9
No	127	59.1
Total	215	100.0
Financial education and experience		
None	156	72.6
Limited education and experience	27	12.6
Financial degrees but no experience	17	7.9
Financial degrees and job experience	15	7.0
Total	215	100.0
Net monthly savings		
Below 5 %	104	48.4
5 % and more	111	51.6
Total	215	100.0

3.4. Reliability and validity of the measures

To establish the validity of CFA, the analysis included factor loadings, composite reliability, and average variance extracted (AVE) scores as indicators of convergent validity, as recommended by Hair Jr. et al. (2022). We conducted cross-correlations to assess discriminant validity, following Fornell and Larcker's (1981) method. During factor loading selection, a threshold of 0.65 was utilized as a criterion for a reliable factor score (Kaiser, 1974). Statistical measures that were used to assess the adequacy and robustness of a model include the Chi-square value (CMIN) and CMIN/DF (DF stands for degrees of freedom) statistics. To achieve an acceptable fit, we set the CMIN/DF value to be less than or equal to 3 (Tabachnick & Fidell, 2020). The study further included a goodness of fit assessment, with goodness of fit index (GFI) and adjusted goodness of fit index (AGFI) thresholds set above 0.90 for a satisfactory level of fit (Hu & Bentler, 1998).

A series of baseline comparison tests were performed utilizing the normed fit index (NFI), relative fit index (RFI), incremental fit index (IFI), Tucker-Lewis index (TLI), and comparative fit index (CFI). Thresholds for all tests were set at 0.90 except CFI, for which we used a threshold of 0.95 (West et al., 2012). We employed a root mean square error of approximation (RMSEA) as a metric to assess the adequacy of the model, indicating a desirable fit having an RMSEA of 0.05 or lower (MacCallum et al., 1996).

For further validation, bootstrapping of the model was performed with 500 samples. The distribution of CMIN over all 500 samples was inspected, and bootstrap results were validated using a Bollen-Stine bootstrap test.

3.5. Regression and multi-group analysis

This study examined the direct and indirect effects of individual characteristics on FRT, as shown in Fig. 1. The measurement of indirect influence was conducted by utilizing risk intention (INT) as the mediating variable. This model was constructed utilizing a Structured Equation Modelling (SEM) technique to elucidate the direct and indirect connections between determinants and FRT. The study additionally performed sensitivity tests using multi-group analysis to investigate the influence of control variables on FRT. The variables under consideration encompass religious orientation, net savings, income source, and financial affiliation.

4. Results

4.1. Respondents' profile

Table 2 shows the respondents' demographics. A higher proportion of the respondents was female (57 %) and did not have any formal financial education or direct working experience in the financial sector (72.6 %). Respondents also reported not having affiliation to or membership of any financial institution (78.6 %). Nearly two-thirds (61.4 %) of respondents aligned themselves with a religion. Most respondents with religious orientations identified as Christian (38 %) or Muslim (12 %). About 79 % reported a monthly salary as a main source of income. Nearly 50 % of respondents had savings of 5 % or more of their monthly income.

4.2. Factor loadings and reliability scores

Table 3 shows factor loadings between each construct and their measures, mean, standard deviation, composite reliability, and AVE for each factor. The relatively low mean score for FRT indicates a low level of household risk-taking in this cohort. Risk-taking intention (INT) and risk attitude (ATT) also align with limited PBC. Religiosity (REL) summarizes the degree of religious practice and indicates a low level of religiosity. PBC has a high score (mean = 3.849), meaning that average households are likely to keep track of economic and market events that influence their general capacity to invest in risky ventures. Hence, it is expected that household risk-taking is extremely low during economic crises, particularly in the post-COVID period.

Table 3
Factor loadings between each construct and their measures.

Measures	Factor loadings	Mean	St. Dev.	Composite Reliability	Average Var. Extracted
Financial risk-taking (FRT)		1.878	1.283	0.858	0.669
Would reinvest even if risk prevails	0.735				
Would invest in more risky assets	0.892				
Risk Intention (INT)		2.292	1.417	0.955	0.805
Risk is business as usual	0.887				
Like to invest in risky ventures	0.908				
Attitude (ATT)		2.681	1.407	0.751	0.849
Risky assets are more profitable	0.780				
Happy with short-term gain	0.754				
Cryptos can make quick money	0.729				
Perceived behavioral control (PBC)		3.849	1.504	0.865	0.567
Macroeconomic knowledge	0.735				
Investment market skills	0.888				
Scan for new opportunities	0.835				
Knows the terms of trade	0.850				
Knows when to stop	0.794				
Religiosity (REL)		2.766	1.453	0.946	0.676
Believe in divine intervention	0.812				
Frequently pray	0.959				
Believe in the existence of God	0.888				
Offer religious services	0.885				
Subjective norms (SBN)		6.068	1.146	0.826	0.635
Concern for family health	0.760				
Worried about family security	0.790				
Consider household comfort	0.840				
Financial freedom in household	0.794				
Culture (CUL)		3.154	1.386	0.621	0.461
Male-dominated society	0.705				
High power distance	0.650				

Notes: The descriptions of the items are shortened to fit the space. St. Dev. stands for standard deviation. Based on Fornell and Larcker (1981), we accept slightly lower (< than 0.5) AVE for culture since the composite reliability is greater than 0.6. Items/measures excluded due to lower initial loading or lower reliability score: Financial Risk-taking (FRT) – 2 items; risk-taking intention (INT) – 1 item; risk attitude (ATT) – 1 item; perceived behavioral control (PBC) – 0 item; religiosity (REL) – 0 item; subjective norms (SBN) – 1 item; and culture (CUL) – 4 items. Reliability and validity scores when all six cultural factors were considered together dropped significantly. For instance, the composite reliability was below 0.3. Using principal component analysis, the only factors that achieved relevant reliability and validity scores included *masculinity* and *power distance*. Other items were dispersed into three additional factors with extremely low factor loadings. For instance, *individualism,* a factor expected to be very important within UK society (Hofstede & Minkov, 2010), showed a loading of 0.258. The reliability score when including *individualism* fell below 0.5. Similar observations were found for long-term orientation (loading 0.507) and uncertainty avoidance (loading 0.024). *Indulgence*, while member of the *masculinity-power distance* principal component, had a loading of 0.005 and was therefore discarded.

While most variables safely pass the minimum threshold levels of 0.7 for composite reliability and 0.5 for AVE, CUL does not achieve these thresholds. According to Fornell and Larcker (1981), an AVE >0.4 is still acceptable if the CR value is > 0.6, as the AVE is a more conservative estimate of the model's validity. The square root of the AVEs was also higher than their respective cross-correlations (Fornell & Larcker, 1981). Other studies investigating constructs affecting human (financial) behavior have used the same criteria when considering construct reliability (Croes & Bartels, 2021; Lam, 2012; Traymbak et al., 2022). Based on this evidence, we consider the CUL construct to be reliable.

4.3. Model validity statistics

The model analysis showed a suitable fit (Table 4). CMIN/DF is far below the required thresholds. Model fit indices are either close to or better than the benchmarks. RMSEA score (0.029) is also far below the threshold.

The distribution of CMIN values over the bootstrap test is shown in Appendix 1 (supplementary information). The average CMIN value reached 213.068 (standard error: 1.515) and showed significance at the 5 % level (p = 0.046). Overall distribution of CMIN showed a normal distribution. The Bollen-Stine test (p = 0.395) indicated our model is appropriate, even though the sample size is limited.

4.4. Direct and indirect determinants of FRT

Table 5 shows low correlation coefficients among variable pairs (Appendix 2, supplementary information). Culture (CUL) was the only variable having a weak negative connection (−0.099) to subjective norms (SBN).

Table 6 shows the regression path, standardized β estimates and standard error of these estimates. FRT is the primary dependent variable, and risk-taking intention (INT) is tested as a mediating variable. The models reported R^2 values of 0.666 (for FRT as the dependent variable) and 0.751 (for INT as the dependent variable).

Variables that significantly influence risk-taking intention (INT) indicate an indirect impact on FRT as risk-taking intention significantly mediates this relationship. Therefore, risk attitude (ATT), culture (CUL) and subjective norms (SBN) significantly indirectly influence FRT via INT. Among these three, culture ($\beta = -0.382, p < 0.05$) and SBN ($\beta = -0.154, p < 0.05$) have a negative influence on risk intention, while risk attitude ($\beta = 1.101, p < 0.01$) has a positive influence.

The second section of Table 6 evaluates FRT as the dependent variable against INT (the mediating variable). The relationship is significant and positive ($\beta = 0.380, p < 0.05$), which means that motivation to take risk positively influences FRT. The third section shows the direct determinants of FRT against five independent variables. Perceived behavioral control (PBC) directly positively and subjective norms (SBN) directly negatively influence FRT.

Subjective norms (SBN) exhibit a direct as well as indirect negative impact on FRT, amplifying the importance of combined social, familial, and financial pressure on FRT. A negative relationship between SBN and FRT indicates that concerns for family safety and comfort will lead to less FRT. The findings are against the theoretical expectation suggested by Ajzen (1991). TPB suggests that higher SBN in the way of peer and social pressure to commit certain behavior will lead to this behavior. However, in his original TPB model, Ajzen, 1991: 189) already reported SBN can show "no discernible pattern" towards predicting intentions. The reason is traced back to

Table 4
Model validity statistics.

Measures	Statistics
CMIN	221.855
CMIN/DF	1.180
GFI	0.915
AGFI	0.900
NFI	0.929
RFI	0.913
IFI	0.988
TLI	0.986
CFI	0.988
RMSEA	0.029

Notes: Sample size, $n = 215$. CMIN p-value = 0.046.

Table 5
Correlation between individual variable pairs.

	ATT	PBC	SBN	REL	CUL
ATT	1	0.476	0.024	0.286	0.399
PBC		1	0.113	0.119	0.268
SBN			1	0.034	−0.099
REL				1	0.311
CUL					1

Table 6
Main results: regression path for the determinants of FRT.

Path			St. Beta	S.E.	*p*-value	Effect size
Indirect effect						
Intention	←	Attitude	1.101***	0.195	0.000	0.800
Intention	←	Culture	−0.382**	0.212	0.018	0.440
Intention	←	PBC	−0.029	0.075	0.710	0.040
Intention	←	Religiosity	0.001	0.064	0.997	0.000
Intention	←	SBN	−0.154**	0.084	0.022	0.080
Mediation effect						
FRT	←	Intention	0.380**	0.174	0.043	0.059
Direct effect						
FRT	←	Attitude	0.254	0.295	0.378	0.000
FRT	←	PBC	0.146**	0.06	0.034	0.029
FRT	←	Religiosity	0.002	0.053	0.998	0.000
FRT	←	SBN	−0.144**	0.079	0.035	0.059
FRT	←	Culture	0.181	0.205	0.280	0.029

Notes: R^2 = 0.660 (FRT); R^2 = 0.751 (Intention). Intention to FRT shows a mediating relationship. St. Beta stands for standardized beta coefficients. S.E. is the standard error of the estimates. Statistical significance is indicated as * p < 0.1; **p < 0.05; ***p < 0. 01. Effect size is calculated based on Cohen's f^2. Effect size <0.15 = Weak; 0.15 to 0.35 = Moderate, and more than 0.35 = Strong. SBN = subjective norms; PBC = perceived behavioral control.

the conflict between "personal considerations" and "perceived social pressure." Similar abnormality in SBN is also reported by La Barbera and Ajzen (2020). They found that stronger *perceived behavioral control (PBC)* can weaken the influence of SBN on intention. Manning (2009) also highlighted the differences between injunctive (should be done by others) and descriptive (actually done by others) subjective norms for a less robust and sometimes unexpected connection between SBN and intention. Within the theme of our study, previous work found that risk-taking is affected by the post-COVID period and its financial implications, leading households to be concerned about increasing cost of living (Du & Shepotylo, 2022; Fox & Bartholomae, 2020), which reduces their motivation to FRT. Our results agree with this and indicate that behavior expected by others/society (i.e. consumption/investment) is negated by the feeling of needing to control their finances during times of crises.

Table 6 also shows the effect size. While *p*-value identifies the statistical significance, the effect size based on Cohen's f^2 offers an estimate of the practical significance of the variables. The effect size coefficient is higher than 0.35 in only two cases (attitude on intention and culture on intention), indicating strong practical significance of both variables. Religiosity did not show any effect on the dependent and mediating variables. SBN and PBC in the direct model and the mediating variable show weaker effects. We did not include R^2 change for calculating effect size as it is biased toward large sample sizes.

4.5. Sensitivity tests using multi-group analysis

Table 7 summarizes tests conducted to determine whether the results are sensitive to selected control variables. Before testing, the control variables were standardized. Only financial affiliation had a significant impact on FRT (Table 8). Being affiliated with a financial group had a negative impact for PBC on FRT, while it was positive for the non-affiliated households. This result is expected as the affiliated household is expected to be more knowledgeable and connected to the financial world than the non-affiliated household, which eventually helps the former make informed decisions about financial risks. During prolonged economic crises, families with better connections, networking and information will reduce their FRT to concentrate on necessities.

Religiosity and religious orientation have no significant influence on the FRT. This is strikingly different from Apergis (2023), who reported Catholics, Atheists, and Buddhists prefer risky investment and that these groups are associated to higher speculative volatility. While the objective of the current study is perceived FRT, Apergis (2023) emphasized risk-taking in a portfolio setting. We further argue that the UK is a secular democracy, leading to an expectation that religious practices do not influence risk-taking decisions.

Evidence on culture and perceived risk-taking is rare both in global as well as UK contexts. This study found only two (out of six) cultural dimensions are reliable FRT predictors: masculinity and power distance. Wang et al. (2017) found a negative relationship of masculinity, power distance, and individualism with loss aversion, meaning that people from these cultural attributes prefer averting

Table 7
Sensitivity analysis.

Indicators	Groups	CMIN	DF	*p*-value	Comments
Religious orientation	Religious and non-religious	19.277	21	0.567	Religious orientation does not significantly moderate the relationship.
Net savings	Less than 5 % and 5 % and more	23.766	26	0.589	Rate of savings does not significantly moderate the relationship.
Income source	Personal business and others	35.066	26	0.110	Income source does not significantly moderate the relationship.
Financial affiliated	Affiliated and non-affiliated	34.517**	21	0.032	Financial affiliation significantly moderates the relationship.
Sex	Male and Female	55.585	48	0.211	Sex differences do not significantly moderate the relationship.

Notes: Statistical significance is indicated as * p < 0.1; **p < 0.05; ***p < 0. 01.

Table 8
Regression path: determinants of FRT based on financial affiliation.

Path			Non-affiliated		Affiliated	
			St. Beta	S.E.	St. Beta	S.E.
Indirect effect						
INT	←	ATT	1.116***	0.194	0.967	0.721
INT	←	PBC	−0.046	0.086	0.09	0.115
INT	←	REL	−0.027	0.074	0.085	0.114
INT	←	SBN	−0.056	0.102	−0.502**	0.174
INT	←	CUL	−0.361**	0.204	−0.432	0.942
Mediation effect						
FRT	←	INT	0.476**	0.186	−0.14	0.718
Direct effect						
FRT	←	PBC	0.262***	0.068	−0.459**	0.13
FRT	←	ATT	0.081	0.299	1.296	1.465
FRT	←	REL	0.072	0.058	−0.272	0.134
FRT	←	SBN	−0.17***	0.082	−0.387	0.369
FRT	←	CUL	0.224	0.195	−0.356	1.262

Notes: $R^2 = 0.839$ (FRT) and $R^2 = 0.747$ (INT). INT = risk intention, a mediating variable. Attitude, subjective norms, and perceived behavioral control are three direct determinants of INT. Statistical significance is indicated as * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

losses. Similarly, the current study finds that culture negatively influences FRT. This indicates that households with a perception of high masculinity and high-power distance take lower financial risk.

4.6. Addressing endogeneity

Issues with endogeneity were addressed in two ways. First, the exogeneity of the variables were covered by existing literature and theoretical framework. Second, the model statistics, path coefficients, and loadings from confirmatory factor analyses exhibit adequate discriminant and convergent validity, and high reliability. Particularly, the path coefficients present only two possible endogenous variables: "intention" as the mediating variable directly affected by the exogenous variables, and "FRT" as the outcome variable directly affected by other exogenous and mediating variables. No other variables had significant bidirectional or unidirectional causality.

5. Discussion

5.1. Attitude and intentions are key drivers of risk-taking

FRT is positively influenced by risk attitude, risk-taking intention, and perceived behavioral control. According to TPB (Ajzen, 1991), positive attitude and the capability to commit to certain behavior will push individuals towards that behavior. Positive intention and attitude are key drivers in FRT (Bottasso et al., 2022; León-Jariego et al., 2020). Similar to previous studies (Alhenawi & Yazdanparast, 2022; Yue et al., 2020), during the post-COVID period, overall FRT (mean = 1.878), attitude (2.681) and risk intention (2.292) in the sample are low. Motivation to take risks is also supported by an individual's ability to understand and manage risk. Perceived behavioral control, which encompasses one's ability to control factors that lead to behavior, shows a slightly stronger average (3.849). Self-control, self-efficacy, and a wider knowledge of the risk at hand help build confidence, leading to generally higher levels of risk-taking (Cupák et al., 2021; Sekścińska et al., 2021). The relationship of self-efficacy with increased risk-taking also aligns with findings on the positive effect of the COVID pandemic on finances for households that were financially health pre-pandemic (Bruce et al., 2022).

In connection with perceived behavioral control (PBC), there is a significant influence of culture and gender empowerment on risk-taking. Our results, in line with Kramer (2016), imply that limited financial knowledge of household members and its connection to (the lack of) financial independence of women in a household carry significant policy implications for the financial wellbeing of households and economic growth of the country. Higher PBC is connected to maintaining proper household financial planning. The instrumental view of FRT supports that FRT is a planned decision with an objective to maximize utility that includes financial and social incentives (Bender et al., 2022; Rogers et al., 2013). Higher financial knowledge levels contribute to finding the best financial plan and to judge whether risk-taking will increase the utility or not (Lusardi, 2019).

Households are conscious about their financial future when families include members affiliated with financial institutions. Having members of financial institutions as family members also advances the family's knowledge of financial issues. These institutions can be a bank, or other market-based institutions. Our results show that there is a significant difference in FRT due to this financial affiliation (Table 8). Unlike previous studies (Bottasso et al., 2022; Cavezzali et al., 2015; Tharayil, 2024), we did not find official financial education or work experience within the financial industry affecting FRT. This may be due to many participants not receiving official education (e.g. secondary or higher education in a finance-related program) or having work experience in the financial industry (Table 2). Our population's generally low FRT score aligns with this, as studies have shown that increasing financial education level positively affects financial risk tolerance and diversification (Le Fur & Outreville, 2022; Tharayil, 2024). Our study did not investigate financial literacy, either through self-assessment or objective assessment (Lusardi, 2019; Potrich et al., 2018). Although related (Lusardi, 2019), the effect of financial literacy on FRT differs from those of financial education (Cavezzali et al., 2015). Regarding experience in working in the financial sector, Bottasso et al. (2022) found experts more likely to take risks than non-experts. However, their study focused on binary lottery-based decisions, rather than household financial decisions.

5.2. Family safety first

Subjective norms (SBN) are the most significant determinants that have a direct as well as indirect impact on household FRT. SBN negatively influences risk-taking intention (INT) and FRT, meaning that families concerned about household safety, comfort, and financial freedom invest less in risky ventures. Possible reasons behind this are that family orientation and concern for the family's urgent needs are part of the collective household's wealth creation (Kim et al., 2017). Lower FRT tendency is a result of that farsightedness, with previous studies showing that wellbeing of the extended family affects financial portfolio allocation (Toney & Bogan, 2023). Additionally, a higher percentage of our respondents identified themselves as women. Weber et al. (2002) reported that women are more risk averse than men not due to their attitude toward risk, but due to the perceived benefit (or loss) associated with a risky decision. Concern for the welfare of the household could therefore inhibit women from making risky decisions. Yet in our study, sex did not affect FRT significantly ($p = 0.2111$). This could be because FRT is more strongly driven by (psychological) gender, rather than (biological) sex (Meier-Pesti & Penz, 2008). Other studies showed sex only affects FRT in high risk-taking cohorts (Säve-Söderbergh, 2012). Effects of sex on risk-taking may also be decreasing due to an increasing level of financial literacy in females, especially in Western societies (Park et al., 2021). Finally, based on the cushion hypothesis, there are social and state safety nets that help individuals take more risk perceiving a bail-out if they fail (Weber & Milliman, 1997). The UK is, culturally, an individualistic society, in which, we argue, household safety and comfort is the primary deterrent from excessive FRT. UK households have faced the worse cost of living crisis in decades due to the COVID-19 pandemic and post-pandemic rise in prices, and the Russia-Ukraine war (Webster & Neal, 2022). The UK government has introduced several initiatives to support millions of UK households during this economic crisis.[1] We acknowledge that family orientation and concern for family safety in an individualistic society might be the outcome of the hardships UK households are facing.

Having dependents did not affect our model significantly. This is possibly due to the cohort consisting mostly of younger participants, who may have not yet started a family. Some studies have shown that having children can affect risk tolerance (Chaulk et al., 2003), with risk aversion increasing when individuals start contemplating having children (Görlitz & Tamm, 2020). Yet others have not shown an effect of having children on observed financial risk-taking (Jianakoplos & Bernasek, 2006; Yusof, 2015), or show risk tolerance increases with increased age of the children (Görlitz & Tamm, 2020). This indicates a complex relationship between FRT and caring for dependents, which could be the subject of future studies.

5.3. Culture-induced risk-intention

Previous studies have shown that cultural dimensions can influence intention towards specific behavior in TPB models (Morren & Grinstein, 2021). In this study, both measures of culture (CUL) state that 1) higher male dominance and 2) power distance between classes will reduce intention towards FRT. These carry significant implications for household FRT in the UK and other culturally individualistic countries, particularly during times of economic crisis.

From a household power-diversity perspective, Bernasek and Shwiff (2001) reported that, against tradition, men avert risky decisions in household settings when the decisions are shared by partners. Therefore, if the household lacks power diversity (e.g., powerful male over female), they will avert risk. Other studies have shown lack of power diversity reorients decision-making towards family wellbeing (Booysen & Guvuriro, 2021; Ke, 2021)

Unlike previous studies (Breuer et al., 2014; Xie et al., 2018; Zhou et al., 2025), individualism did not affect FRT significantly. This difference may be explained through the delicate balance between willingness to take risks and aversion to losses (Xie et al., 2018). Higher individualism can increase FRT due to overconfidence, but this can be balanced through anxiety about (heavy) financial losses. Particularly during financial crisis periods, households with higher levels of individualism may be directed more towards averting financial loss, even though they may still be confident about their ability to control risk (Wang et al., 2017).

5.4. Religion is not a significant determinant of FRT

Religiosity (REL) did not have a significant impact, either directly or indirectly, on FRT. This directly contrasts the study by León and Pfeifer (2017), indicating that household religiosity affects risk-taking. Other studies also found religion affecting FRT (Chunping et al., 2016; Kumar et al., 2011). Studies investigating (problematic) gambling, as one form of FRT, have shown that participation in religious activities can reduce the likelihood of gambling, as religions often portray FRT and gambling as sinful (Beyerlein & Sallaz, 2017; Rosmarin et al., 2023).

[1] We refer to the UK government's initiatives for supporting households at https://helpforhouseholds.campaign.gov.uk/.

While these results are grossly opposite to our findings, there are several reasons that complicate the relation between FRT and religion and religiosity. Studies reporting a strong impact of religiosity on FRT (Ahmad et al., 2023; Aldehayan & Tamvada, 2023; Cebula & Rossi, 2021) were based in countries having a dominant religion. The UK is considered a religiously diverse country (McClean, 2019), reducing the role of religion on FRT in the UK household due to its depth of religious diversity. Similarly, a religion may set out recommendations on financial investments (e.g. Islamic banking) that followers of these religions wish to follow but cannot engage with due to the lack of availability of these investment tools in the country they have immigrated to (Kaakeh et al., 2018). Within some minorities covered in our questionnaire, this lack of availability may induce the perception of being a high risk-taker, while attempting to live a strongly religious life.

Another complexity relates to FRT being evaluated with respect to individual or institutional aspects of religion (Williams et al., 2017). From an institutional perspective, group identity and norms can affect the likelihood of FRT in individuals, but many religions are unclear about what constitutes FRT. Some religions condemn FRT but will allow buying lottery tickets when the profit goes towards community support (Caple & Roddy, 2023; Hassanat & Al tarawneh, 2015). These initiatives can blur the lines between excessive FRT and investing in the community. Furthermore, religions will generally not provide recommendations on specific forms of FRT (e.g. staying in a luxury hotel, buying a larger-than-necessary house), which could lead to significant financial issues within households (e.g. inability to pay off mortgage) because individuals follow global trends in purchasing products (Arli et al., 2020; Nwankwo et al., 2014). From an individual aspect, studies showed religiosity can lead to increased FRT through the illusion of control framework, with individuals believing divine interventions will provide good outcomes (Browne et al., 2019; Williams et al., 2022). Similarly, religious individuals struggling with a loss of faith occasionally engage more strongly with activities they otherwise consider sinful (Grant Weinandy and Grubbs, 2021).

6. Conclusion

6.1. Summary of the findings

We have used a structured survey questionnaire to collect data from 215 respondents with significant household responsibilities. Using Structural Equation Modelling, the study offers a model that comprises the direct and indirect determinants of FRT in UK households. The results find that risk intention is a strong mediator, while risk attitude and culture show positive and negative indirect relationships with FRT, respectively. PBC directly positively influences FRT. Subjective norms exhibit both direct and indirect negative impacts on FRT. Series of sensitivity analyses reveal that these determinants are not significantly different among groups based on 1) religious orientation, 2) net savings, and 3) income sources. While controlling financial affiliation, we found that financially affiliated and non-affiliated households are differently affected by the determinants of FRT.

The study presents four major findings. *First*, households consider safety, security, financial freedom, and investment in health before considering risky financial decisions. Hence, household FRT will decrease during an economic crisis or high cost of living. *Second*, within this cohort, risk intention and risk attitudes are culturally induced. Despite sharing an individualistic culture, UK households are influenced by family values, family orientation and collective well-being within families. *Third*, we found no influence of religiosity or religious orientation on FRT. *Finally*, we argue that household FRT is largely intentional and planned, as the decision to take a risk is supported by PBC, attitude towards risk, and affiliation with the financial social networks.

6.2. Implications for the household consumers of financial services

Risk awareness and knowledge are key to success. Households should start learning about the basics behind financial decisions that affect their lives, including bank credit lines, interest rates, and mortgage management. This will help households feel more in control (higher PBC) about their finances, which will support appropriate household financial planning. Building a social network will help collect essential information to avoid unnecessary risk and capitalize on the experience of fellow members. These networks will also support understanding of the financial environment within other households, challenging subjective norms about financial decision set within the family that may be inappropriate to maintain or improve family wellbeing. Where necessary, households should seek help from financial advisors to obtain objective opinions about subjectively (i.e. within the household) identified financial pressures, such that investments can be balanced with fear (or overconfidence) about family safety and comfort. Household members should attempt to achieve financial independence from loans and grants through jobs and training that provide them with the necessary confidence to take financial decisions.

6.3. Implications for the banks and markets as a whole

Banks should acknowledge the cultural shift in household risk-taking. Despite being in an individualistic society, UK households are concerned about the safety, security, and collective well-being of the household. The gender diversity and power distance between household partners should be taken into consideration while making and marketing financial products, or when providing financial advice to households. For the latter, measures of risk attitude based on RVS questionnaires could be implemented to extend current knowledge beyond the individual client towards knowledge of the household in which this client resides, and how this affects (challenges) the individual's viewpoints and opportunities on financial products. Investment in family welfare and financial awareness should receive support from banks and financial institutions and should attract fiscal benefits. Banks should also introduce new products that ensure the safety and long-term wellbeing of households. There are opportunities to build sustainable relationships based on new financial products in health, education, and household risk management. Banks can invest in building *knowledge platforms* to train households in basic financial management, wellbeing, and literacy. As perceived behavioral control is a critical determinant in shaping an individual's intention to engage in a particular behavior, by offering accessible and informative resources, banks can empower customers to make more informed decisions in relation to financial decision-making and the use of digital banking services. Individuals with higher levels of financial knowledge generally exhibit greater confidence and competence in managing their finances, including effectively navigating digital platforms. This increased knowledge can enhance their perceived control over their financial behaviors. By delivering clear and concise information, banks can facilitate customers in making more informed financial decisions.

6.4. Limitations and future research

The study did not directly investigate the effects of household power dynamics on individual risk-taking (e.g. through an interview assessing household dynamics). Power dynamics can affect the realm in which different partners make decisions, even when partners indicate mutual agreement about financial decisions is preferred (Dema-Moreno, 2009).

While our sample's distribution of religious affiliation reflects distribution within UK society to a good extent (McClean, 2019), further studies could investigate household FRT in minority populations to determine the extent to which the minority groups follow FRT behavior and strategies of the society they reside in (as, for example, Kaakeh et al., 2018). Future studies should also investigate the extent to which the findings of this study are reflective in populations without a higher education background, as these populations may have received less opportunities to build their financial knowledge or may be affected differently by tradition and other socio-cultural values. Further evaluations on the effect of improving financial education on household FRT should also be considered (Lusardi, 2019).

Second, based on Hofstede's dimensions (Hofstede & Minkov, 2010), ***individualism*** is expected to be a high-ranked cultural factor for the UK. While insignificant factor loadings found in this study could raise concern, we believe that individualism is 'less significant' because of the focus of the study on *collective* decisions for the family. While promoting collective wellbeing, the role of individuals serves the purpose of "societal individualization", as termed by Björnberg and Kollind (2018). A sense of belongingness and responsibility, which is also dubbed as "sentimental individualism," when making decisions for a household bypasses individual goals and promotes a social movement (Fevre et al., 2020). The need for and impact of individualism become secondary under this construct, which could be further explored in future studies.

Finally (and related to the above), this study did not investigate effects of urbanicity (urban vs. rural residency) on household FRT. While improving digital infrastructure and FinTech availability supports rural households in engaging with various financial investment opportunities (Hu & Liu, 2025; Liu et al., 2025), the effects of urbanicity on FRT appear to be mixed (Liu et al., 2025; Yusof, 2015). For our UK sample, studies have shown difficulties in defining characteristics that distinguish urban from rural areas (Pateman, 2011), which have been further diluted by city residents migrating towards rural areas during the COVID pandemic (Rowe et al., 2023). Nevertheless, the effects of improved digital infrastructure and FinTech on rural area financial literacy and decision-making are worthy of further investigations.

; ; ; ; ; ; ; ; ; ; ; ; ; ; .

Credit author statement

Amee Kim – Conceptualization, Investigation, Writing - Review & Editing, Supervision.
Frederique J. Vanheusden – Investigation, Formal Analysis, Writing - Original Draft.
Mamunur Rashid – Methodology, Writing - Original Draft.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pce.2025.104073.

References

Ahmad, S., Lensink, R., & Mueller, A. (2023). Religion, social desirability bias and financial inclusion: Evidence from a list experiment on islamic (micro-)finance. *Journal of Behavioral and Experimental Finance*, *38*.
Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211.
Aldehayan, A., & Tamvada, J.P. (2023). Religiosity and risk-taking: Evidence from Islam. *Journal of Management, Spirituality & Religion*, *20*, 473–498.
Alhenawi, Y., & Yazdanparast, A. (2022). Households' intentions under financial vulnerability conditions: Is it likely for the COVID-19 pandemic to leave a permanent scar? *International Journal of Bank Marketing*, *40*, 425–457.
Apergis, N. (2023). Religion groups and portfolio choice decisions: Evidence from UK households. *Finance Research Letters*, *54*, 103751.
Arli, D., Gil, L. de A., & van Esch, P. (2020). The effect of religiosity on luxury goods: The case of Chilean youths. *International Journal of Consumer Studies*, *44*, 181–190.
Ashqar, R.I., & Lobão, J. (2023). Does religion influence the household finance? Evidence from Europe. *Studies in Economics and Finance*, *41*, 286–311.
Bazley, W.J., Bonaparte, Y., & Korniotis, G.M. (2021). Financial self-awareness: Who knows what they don't know? *Finance Research Letters*, *38*.

Bender, S., Choi, J.J., Dyson, D., & Robertson, A.Z. (2022). Millionaires speak: What drives their personal investment decisions? *Journal of Financial Economics*, *146*, 305–330.
Bernasek, A., & Shwiff, S. (2001). Gender, risk, and retirement. *Journal of Economic Issues*, *35*, 345–356.
Beyerlein, K., & Sallaz, J.J. (2017). Faith's wager: How religion deters gambling. *Social Science Research*, *62*, 204–218.
Björnberg, U., & Kollind, A.-K. (2018). Individualism and families. Routledge.
Booysen, F., & Guvuriro, S. (2021). Gender differences in intra-household financial decision-making: An application of coarsened exact matching. *Journal of Risk and Financial Management*, *14*, 469.
Bottasso, A., Duchêne, S., Guerci, E., Hanaki, N., & Noussair, C.N. (2022). Higher order risk attitudes of financial experts. *Journal of Behavioral and Experimental Finance*, *34*, 100658.
Brahma, S., Gavriilidis, K., Kallinterakis, V., Verousis, T., & Zhang, M. (2023). LGBTQ and finance. *International Review of Financial Analysis*.
Breuer, W., Riesener, M., & Salzmann, A.J. (2014). Risk aversion *vs.* individualism: What drives risk taking in household finance? *The European Journal of Finance*, *20*, 446–462.
Browne, M., Hing, N., Rockloff, M., Russell, A.M.T., Greer, N., Nicoll, F., & Smith, G. (2019). A multivariate evaluation of 25 proximal and distal risk-factors for gambling-related harm. *Journal of Clinical Medicine*, *8*, 509.
Bruce, C., Gearing, M.E., DeMatteis, J., Levin, K., Mulcahy, T., Newsome, J., & Wivagg, J. (2022). Financial vulnerability and the impact of COVID-19 on American households. *PLoS One*, *17*, e0262301.
Bucher-Koenen, T., Alessie, R.J., Lusardi, A., & van Rooij, M. (2021). Fearless women: Financial literacy and stock market participation. MA, USA: Cambridge.
Burke, M.A., & Ozdagli, A. (2023). Household inflation expectations and consumer spending: Evidence from panel data. *The Review of Economics and Statistics*, *105*, 948–961.
Canepa, A., & Ibnrubbian, A. (2014). Does faith move stock markets? Evidence from Saudi Arabia. *The Quarterly Review of Economics and Finance*, *54*, 538–550.
Caple, J., & Roddy, S. (2023). The stakes of religious fundraising: Economic transition and religious resurgence in Irish catholicism and Tibetan Buddhism. *Journal of Cultural Economics*, *16*, 698–715.
Cardak, B.A., Martin, V.L., & McAllister, R. (2019). The effects of the global Financial crisis on the stock holding decisions of Australian households. *The North American Journal of Economics and Finance*, *50*.
Cavezzali, E., Gardenal, G., & Rigoni, U. (2015). Risk taking behaviour and diversification strategies: Do financial literacy and financial education play a role? Journal of financial management. *Markets and Institutions*, *3*, 121–156.
Cebula, R.J., & Rossi, F. (2021). Religiosity and corporate risk-taking: Evidence from Italy. *Journal of Economics and Finance*, *45*, 751–763.
Chaulk, B., Johnson, P.J., & Bulcroft, R. (2003). Effects of marriage and children on financial risk tolerance: A synthesis of family development and prospect theory. *Journal of Family and Economic Issues*, *24*, 257–279.
Chunping, Z., Li, P., & Lingwei, S. (2016). Do religious beliefs affect borrowing behavior? Evidence from Chinese households. *Review of Economics of the Household*, *14*, 989–1005.
Cialdini, R.B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, *12*, 105–109.
Croes, E., & Bartels, J. (2021). Young adults' motivations for following social influencers and their relationship to identification and buying behavior. *Computers in Human Behavior*, *124*, 106910.
Cupák, A., Fessler, P., & Schneebaum, A. (2021). Gender differences in risky asset behavior: The importance of self-confidence and financial literacy. *Finance Research Letters*, *42*.
Danes, S.M., Garbow, J., & Jokela, B.H. (2016). Financial management and culture: The American Indian case. *Journal of Financial Counseling and Planning*, *27*, 61–79.
Das, P., Coulson, N.E., & Ziobrowski, A. (2019). Caste, faith, gender: Determinants of homeownership in urban India. *The Journal of Real Estate Finance and Economics*, *59*, 27–55.
Dema-Moreno, S. (2009). Behind the negotiations: Financial decision-making processes in Spanish dual-income couples. *Feminist Economics*, *15*, 27–56.
Dennin, A., Furman, K., Pretz, J.E., & Roy, M.M. (2022). The relationship of types of intuition to thinking styles, beliefs, and cognitions. *Journal of Behavioral Decision Making*, *35*, e228.
Du, J., & Shepotylo, O. (2022). UK trade in the time of COVID-19: A review. *The World Economy*, *45*.
Eberhardt, W., Bruine de Bruin, W., & Strough, J.N. (2019). Age differences in financial decision making: The benefits of more experience and less negative emotions. *Journal of Behavioral Decision Making*, *32*, 79–93.
Egan, V., & Bull, S. (2020). Social support does not moderate the relationship between personality and risk-taking/antisocial behaviour. *Personality and Individual Differences*, *163*, 110053.
Farrell, L., Fry, T.R.L., & Risse, L. (2016). The significance of financial self-efficacy in explaining women's personal finance behaviour. *Journal of Economic Psychology*, *54*, 85–99.
Fevre, R., Guimarães, I., & Zhao, W. (2020). Parents, individualism and education: three paradigms and four countries. *The Review of Education*, *8*, 693–726.
Figner, B., & Weber, E.U. (2011). Who takes risks when and why?: Determinants of risk taking. *Current Directions in Psychological Science*, *20*, 211–216.
Fincher, C.L., & Thornhill, R. (2012). Parasite-stress promotes in-group assortative sociality: The cases of strong family ties and heightened religiosity. *Behavioral and Brain Sciences*, *35*, 61–79.
Flack, M., & Morris, M. (2017). Gambling-related beliefs and gambling behaviour: Explaining gambling problems with the theory of planned behaviour. *International Journal of Mental Health and Addiction*, *15*, 130–142.
Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*, 39–50.
Fox, J., & Bartholomae, S. (2020). Household finances, financial planning, and COVID-19. *Financial Planning Review*, *3*, e1103.
Friedl, A., Pondorfer, A., & Schmidt, U. (2020). Gender differences in social risk taking. *Journal of Economic Psychology*, *77*, 102182.
Gomes, F., Haliassos, M., & Ramadorai, T. (2021). Household finance. *Journal of Economic Literature*, *59*, 919–1000.
Görlitz, K., & Tamm, M. (2020). Parenthood, risk attitudes and risky behavior. *Journal of Economic Psychology*, *79*, 102189.
Grant Weinandy, J.T., & Grubbs, J.B. (2021). Gambling with god: the effect of gambling on religious and spiritual struggles. *Mental Health, Religion & Culture*, *24*, 437–449.
Guiso, L., & Zaccaria, L. (2023). From patriarchy to partnership: Gender equality and household finance. *Journal of Financial Economics*, *147*, 573–595.
Gupta, S., Yagnaraman, D., & Jagati, A. (2022). An endless bargain: A participatory approach to understanding intra-household finance. *Journal of Emerging Market Finance*, *21*, 291–316.
Hair, J., J. F., Hult, G.T., Ringle, C.M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modeling (PLS-SEM). Thousand Oaks, CA, USA: Sage.
Haran Rosen, M., Pinto, O., Kondratjeva, O., Roll, S., Huseynli, A., & Grinstein-Weiss, M. (2021). Household savings decisions in Israel's child savings program: The role of demographic, financial, and intrinsic factors. *Journal of Family and Economic Issues*, *42*, 368–386.
Hassanat, A.B., & Al tarawneh, G.A. (2015). Gambling-free lottery, a new Islamic lending ticket. *Journal of Islamic Accounting and Business Research*, *6*, 42–54.
Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization*, *10*.
Hofstede, G., & Minkov, M. (2010). Long- versus short-term orientation: New perspectives. *Asia Pacific Business Review*, *16*.
Hsee, C.K., & Weber, E.U. (1999). Cross-national differences in risk preference and lay predictions. *Journal of Behavioral Decision Making*, *12*, 165–179.
Hu, Y. (2021). Divergent gender revolutions: Cohort changes in household financial management across income gradients. *Gender & Society*, *35*, 746–777.
Hu, L., & Bentler, P.M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, *3*, 424–453.
Hu, S., & Liu, D. (2025). Digital economy, financial literacy, and financial risk-taking in rural households. *International Review of Economics & Finance*, *98*, 103922.
Huber, S., & Huber, O.W. (2012). The centrality of religiosity scale (CRS). *Religions*, *3*, 710–724.

Jianakoplos, N.A., & Bernasek, A. (2006). Financial risk taking by age and birth cohort. *Southern Economic Journal*, *72*, 981–1001.

Johnston, D.W., Kassenboehmer, S.C., & Shields, M.A. (2016). Financial decision-making in the household: Exploring the importance of survey respondent, health, cognitive ability and personality. *Journal of Economic Behavior & Organization*, *132*, 42–61.

Josef, A.K., Richter, D., Samanez-Larkin, G.R., Wagner, G.G., Hertwig, R., & Mata, R. (2016). Stability and change in risk-taking propensity across the adult life span. *Journal of Personality and Social Psychology*, *111*.

Kaakeh, A., Hassan, M.K., & van Hemmen Almazor, S.F. (2018). Attitude of Muslim minority in Spain towards Islamic finance. *International Journal of Islamic and Middle Eastern Finance and Management*, *11*, 213–230.

Kaiser, H.F. (1974). An index of factorial simplicity. *Psychometrika*, *39*, 31–36.

Ke, D. (2021). Who wears the pants? Gender identity norms and intrahousehold financial decision-making. *The Journal of Finance*, *76*, 1389–1425.

Kim, J., Gutter, M.S., & Spangler, T. (2017). Review of family financial decision making: Suggestions for future research and implications for financial education. *Journal of Financial Counseling and Planning*, *28*, 253–267.

Kim, H., Kim, K.T., & Han, S.H. (2021). Religious differences and households' investment decisions. *Journal of Financial Research*, *44*, 753–788.

Kling, L., König-Kersting, C., & Trautmann, S.T. (2023). Investment preferences and risk perception: Financial agents versus clients. *Journal of Banking & Finance*, *154*, 106489.

König, A.N. (2021). Domain-specific risk attitudes and aging—A systematic review. *Journal of Behavioral Decision Making*, *34*, 359–378.

Kramer, M.M. (2016). Financial literacy, confidence and financial advice seeking. *Journal of Economic Behavior & Organization*, *131*.

Kumar, A., Page, J.K., & Spalt, O.G. (2011). Religious beliefs, gambling attitudes, and financial market outcomes. *Journal of Financial Economics*, *102*, 671–708.

La Barbera, F., & Ajzen, I. (2020). Control interactions in the theory of planned behavior: Rethinking the role of subjective norm. *Europe's Journal of Psychology*, *16*, 401–417.

Lam, L.W. (2012). Impact of competitiveness on salespeople's commitment and performance. *Journal of Business Research*, *65*, 1328–1334.

Le Fur, E., & Outreville, J.-F. (2022). Financial literacy, education and risk aversion: a survey of French students. *Managerial Finance*, *48*, 1530–1543.

León, A.K., & Pfeifer, C. (2017). Religious activity, risk-taking preferences and financial behaviour: Empirical evidence from German survey data. *Journal of Behavioral and Experimental Economics*, *69*, 99–107.

León-Jariego, J.C., Parrado-González, A., & Ojea-Rodríguez, F.J. (2020). Behavioral intention to gamble among adolescents: Differences between gamblers and non-gamblers—Prevention recommendations. *Journal of Gambling Studies*, *36*, 555–572.

Li, J. (2022). Financial risk-taking, religiosity and denomination heterogeneity. *Journal of Empirical Finance*, *66*, 74–98.

Lim, H.N., Shin, S.H., Wilmarth, M.J., & Park, N. (2022). Who decides? Financial decision-making among older couples. *Journal of Family and Economic Issues*, *43*, 310–337.

Liu, E.Y. (2010). Are risk-taking persons less religious? Risk preference, religious affiliation, and religious participation in Taiwan. *Journal for the Scientific Study of Religion*, *49*, 172–178.

Liu, T., Yin, Z., & Yan, Y. (2025). Household financial risk-taking: Does digital infrastructure matter? J Fam Econ Issues.

Lusardi, A. (2012). Financial literacy and financial decision-making in older adults. *Generations*, *36*, 25–32.

Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss J Econ Stat*, *155*, 1.

MacCallum, R.C., Browne, M.W., & Sugawara, H.M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*, 130–149.

Manning, M. (2009). The effects of subjective norms on behaviour in the theory of planned behaviour: A meta-analysis. *British Journal of Social Psychology*, *48*, 649–705.

McClean, D. (2019). State and church in the United Kingdom. In G., Robbers (Ed.), *State and church in the european union* (pp. 657–676). Baden-Baden: Nomos Verlagsgesellschaft mbH & Co. KG.

Meier-Pesti, K., & Penz, E. (2008). Sex or gender? Expanding the sex-based view by introducing masculinity and femininity as predictors of financial risk taking. *Journal of Economic Psychology*, *29*, 180–196.

Midões, C., & Seré, M. (2022). Living with reduced income: An analysis of household financial vulnerability under COVID-19. *Social Indicators Research*, *161*, 125–149.

Millroth, P., Juslin, P., Winman, A., Nilsson, H., & Lindskog, M. (2020). Preference or ability: Exploring the relations between risk preference, personality, and cognitive abilities. *Journal of Behavioral Decision Making*, *33*, 477–491.

Mishra, A.K., & Bhardwaj, V. (2022). Financial access and household's borrowing: Policy perspectives of an emerging economy. *Journal of Policy Modeling*, *44*, 981–999.

Morren, M., & Grinstein, A. (2021). The cross-cultural challenges of integrating personal norms into the Theory of planned behavior: A meta-analytic structural equation modeling (MASEM) approach. *Journal of Environmental Psychology*, *75*, 101593.

Morsy, H. (2020). Access to finance – Mind the gender gap. *The Quarterly Review of Economics and Finance*, *78*, 12–21.

Nwankwo, S., Hamelin, N., & Khaled, M. (2014). Consumer values, motivation and purchase intention for luxury goods. *Journal of Retailing and Consumer Services*, *21*, 735–744.

Olivola, C.Y., Kim, Y., Merzel, A., Kareev, Y., Avrahami, J., & Ritov, I. (2020). Cooperation and coordination across cultures and contexts: Individual, sociocultural, and contextual factors jointly influence decision making in the volunteer's dilemma game. *Journal of Behavioral Decision Making*, *33*, 93–118.

Park, C.M., Kraus, A.D., Dai, Y., Fantry, C., Block, T., Kelder, B., … Solberg, V.S.H. (2021). Empowering women in finance through developing girls' financial literacy skills in the United States. *Behavioral Sciences*, *11*, 176.

Pateman, T. (2011). Rural and urban areas: comparing lives using rural/urban classifications. *Regional Trends*, *43*, 11–86.

Potrich, A.C.G., Vieira, K.M., & Kirch, G. (2018). How well do women do when it comes to financial literacy? Proposition of an indicator and analysis of gender differences. *Journal of Behavioral and Experimental Finance*, *17*, 28–41.

Ramazanova, A., Sabitova, A., Orsayeva, R., Bairkenova, G., & Smailova, I. (2022). Financial sector components in a religious context: Judaism, Christianity, and Islam. *Journal of Behavioral and Experimental Finance*, *34*, 100656.

Redish, A.D., Jensen, S., & Johnson, A. (2008). A unified framework for addiction: Vulnerabilities in the decision process. *Behavioral and Brain Sciences*, *31*.

Rink, U., Walle, Y.M., & Klasen, S. (2021). The financial literacy gender gap and the role of culture. *The Quarterly Review of Economics and Finance*, *80*, 117–134.

Robson, J., & Peetz, J. (2020). Gender differences in financial knowledge, attitudes, and behaviors: Accounting for socioeconomic disparities and psychological traits. *Journal of Consumer Affairs*, *54*, 813–835.

Rogers, J., Viding, E., & Chamorro-Premuzic, T. (2013). Instrumental and disinhibited financial risk taking: Personality and behavioural correlates. *Personality and Individual Differences*, *55*, 645–649.

Rolison, J.J., Hanoch, Y., Wood, S., & Liu, P.J. (2014). Risk-taking differences across the adult life span: A question of age and domain. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *69*, 870–880.

Rolison, J.J., & Shenton, J. (2020). How much risk can you stomach? Individual differences in the tolerance of perceived risk across gender and risk domain. *Journal of Behavioral Decision Making*, *33*, 63–85.

Rosmarin, D.H., Chowdhury, A., Pizzagalli, D.A., & Sacchet, M.D. (2023). *In god we trust: Effects of spirituality and religion on economic decision making*: *Vol 214*. Pers Individ Dif, 112350.

Rowe, F., Calafiore, A., Arribas-Bel, D., Samardzhiev, K., & Fleischmann, M. (2023). Urban exodus? Understanding human mobility in Britain during the COVID-19 pandemic using meta-facebook data. *Population, Space and Place*, *29*.

Säve-Söderbergh, J. (2012). Self-directed pensions: Gender, risk, and portfolio choices. *The Scandinavian Journal of Economics*, *114*, 705–728.

Schoemaker, P.J.H. (1993). Determinants of risk-taking: Behavioral and economic views. *Source: Journal of Risk and Uncertainty*.

Schwartz, S.H. (1968). Words, deeds and the perception of consequences and responsibility in action situations. *Journal of Personality and Social Psychology*, *10*, 232–242.

Sekścińska, K., & Rudzinska-Wojciechowska, J. (2022). Risk taking in gambling task: The role of psychological variables in lottery risk-taking. *Personality and Individual Differences*, *197*, 111790.

Sekścińska, K., Rudzinska-Wojciechowska, J., & Jaworska, D. (2021). Self-control and financial risk taking. *Journal of Economic Psychology*, *85*, 102386.
Shou, Y., & Olney, J. (2021). Attitudes toward risk and uncertainty: The role of subjective knowledge and affect. *Journal of Behavioral Decision Making*, *34*, 393–404.
Tabachnick, B.G., & Fidell, L.S. (2020). Experimental designs using ANOVA. Belmont, CA: Thomson/Brooks/Cole.
Tan, L., Li, S., & Zhang, X. (2021). Risk attitude in the DuLong minority ethnicity of China. *Frontiers in Psychology*, *12*.
Tharayil, A. (2024). Examining the association between financial education and financial risk tolerance. *American Economist*, *69*, 59–79.
Toney, J., & Bogan, V.L. (2023). How extended family mental health issues influence household portfolio allocations. *Review of Economics of the Household*, *22*, 633–708.
Traymbak, S., Sharma, A., & Dutta, M. (2022). Reliability and construct validity assessment of wong and Law emotional Intelligence scale and Satisfaction with Life scale in the Indian hospitality industry. *Annals of Neurosciences*, *29*, 121–128.
van Rooij, M.C.J., Lusardi, A., & Alessie, R.J.M. (2012). Financial literacy, retirement planning and household wealth. *The Economic Journal*, *122*, 449–478.
Veissière, S.P.L., Constant, A., Ramstead, M.J.D., Friston, K.J., & Kirmayer, L.J. (2019). Thinking through other minds: A variational approach to cognition and culture. *Behavioral and Brain Sciences*.
Wagner, J., & Walstad, W.B. (2023). Gender differences in financial decision-making and behaviors in single and joint households. *American Economist*, *68*, 5–23.
Walker, G.J., Courneya, K.S., & Deng, J. (2006). Ethnicity, gender, and the theory of planned behavior: The case of playing the lottery. *Journal of Leisure Research*, *38*, 224–248.
Wang, M., Rieger, M.O., & Hens, T. (2017). The impact of culture on loss aversion. *Journal of Behavioral Decision Making*, *30*, 270–281.
Weber, E.U., Blais, A.R., & Betz, N.E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making*, *15*, 263–290.
Weber, E.U., & Milliman, R.A. (1997). Perceived risk attitudes: Relating risk perception to risky choice. *Management Science*, *43*, 123–144.
Webster, P., & Neal, K. (2022). The "cost of living crisis.". *Journal of Public Health (United Kingdom)*.
West, R.F., Meserve, R.J., & Stanovich, K.E. (2012). Cognitive sophistication does not attenuate the bias blind spot. *Journal of Personality and Social Psychology*, *103*.
Williams, B.M., Browne, M., Rockloff, M., Stuart, G., & Smith, B.P. (2022). Protective action and risky beliefs: The relationship between religion and gambling fallacies. *Journal of Gambling Studies*, *38*, 253–263.
Williams, R.H., Irby, C.A., & Warner, R.S. (2017). "Dare to be different": How religious groups frame and enact appropriate sexuality and gender norms among young adults. *Sociological studies of children and youth* (pp. 1–22). Leeds: Emerald Publishing Ltd.
Xie, Y., Hwang, S., & Pantelous, A.A. (2018). Loss aversion around the world: Empirical evidence from pension funds. *Journal of Banking & Finance*, *88*, 52–62.
Xue, W., Zeng, Z., Liu, Z., & Marks, A.D.G. (2021). The role of cultural worldviews in predicating gambling risk perception and behavior in a Chinese sample. *Brain and Behavior*, *11*, e02015.
Yue, P., Gizem Korkmaz, A., & Zhou, H. (2020). Household financial decision making amidst the COVID-19 pandemic. *Emerging Markets Finance and Trade*, *56*, 2363–2377.
Yusof, S.A. (2015). Household bargaining, financial decision-making and risk tolerance. *International Journal of Business and Society*, *16*, 221–236.
Zang, D., Paudel, K.P., Liu, Y., Liu, D., & He, Y. (2023). Financial decision-making behaviors of Ethnic Tibetan households based on mental accounting. *Financial Innovation*, *9*, 93.
Zhou, Y., Lu, W., Niu, G., & Xi, Z. (2025). Individualism and stock market participation. *The European Journal of Finance*, *31*, 289–317.
Zou, X., Lee, M., Wildschut, T., & Sedikides, C. (2019). Nostalgia increases financial risk taking. *Personality and Social Psychology Bulletin*, *45*, 907–919.