

Tsai, Chia-Chun; Chen, Li-Yu; Huang, Chen-Wei; Zeng, Peng-Yu; Yeh, Su-Ling

Article

Psychological dynamics of unit-linked insurance product decision-making: a cognitive model

Cogent Economics & Finance

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Tsai, Chia-Chun; Chen, Li-Yu; Huang, Chen-Wei; Zeng, Peng-Yu; Yeh, Su-Ling (2024) : Psychological dynamics of unit-linked insurance product decision-making: a cognitive model, Cogent Economics & Finance, ISSN 2332-2039, Taylor & Francis, Abingdon, Vol. 12, Iss. 1, pp. 1-17,
<https://doi.org/10.1080/23322039.2024.2422966>

This Version is available at:

<https://hdl.handle.net/10419/321654>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Psychological dynamics of unit-linked insurance product decision-making: a cognitive model

Chia-Chun Tsai, Li-Yu Chen, Chen-Wei Huang, Peng-Yu Zeng & Su-Ling Yeh

To cite this article: Chia-Chun Tsai, Li-Yu Chen, Chen-Wei Huang, Peng-Yu Zeng & Su-Ling Yeh (2024) Psychological dynamics of unit-linked insurance product decision-making: a cognitive model, Cogent Economics & Finance, 12:1, 2422966, DOI: [10.1080/23322039.2024.2422966](https://doi.org/10.1080/23322039.2024.2422966)

To link to this article: <https://doi.org/10.1080/23322039.2024.2422966>



© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



[View supplementary material](#)



Published online: 05 Nov 2024.



[Submit your article to this journal](#)



Article views: 522



[View related articles](#)



[View Crossmark data](#)

Psychological dynamics of unit-linked insurance product decision-making: a cognitive model

Chia-Chun Tsai*, Li-Yu Chen*, Chen-Wei Huang, Peng-Yu Zeng and Su-Ling Yeh 

Department of Psychology, National Taiwan University, Taipei City, Taiwan

ABSTRACT

Investment and insurance constitute pivotal subjects in financial management, especially in an era characterized by inflation. Unit-Linked Insurance Plans (ULIPs), with a unique combination of investment risks and insurance protection, potentially trigger distinct psychological processes that have been inadequately explored. To bridge this gap, the current research aims to develop a cognitive model for decision-making in purchasing ULIPs. Utilizing structural equation modeling, our research manipulated information related to ULIP products (performance and dividends) while measuring participants' perceptions, cognitive assessments, emotional states, and investment willingness concerning the products (bottom-up pathway), along with their traits such as risk tolerance (top-down pathway). Our results indicated that perceived performance and dividends affect cognitive assessment and positive emotions within the bottom-up pathway, thereby enhancing the willingness to invest in ULIPs. Conversely, risk tolerance negatively affects perceptions, evaluations, and emotions associated with ULIPs in the top-down pathway. Understanding the perception of product characteristics and individuals' risk tolerance plays a crucial role in shaping financial decisions. These findings have significant implications for the ULIP decision-making processes.

IMPACT STATEMENT

In an era of financial complexity, this research develops a cognitive model that illuminates the psychological mechanisms underlying Unit-Linked Insurance Plan (ULIP) investment decisions. Findings reveal that perceived performance and dividends positively influence cognitive assessments and emotions, enhancing investment willingness, while individual risk tolerance negatively modulates product perceptions, evaluations, and emotions. This nuanced framework provides insurance companies with empirically grounded strategies for understanding investor behavior, ultimately advancing the personalization of financial product development and marketing approaches.

ARTICLE HISTORY

Received 10 April 2024
Revised 11 October 2024
Accepted 24 October 2024

KEYWORDS

Product performance;
dividends; risk tolerance;
emotion; insurance

SUBJECTS

Psychological Science;
Economic Psychology;
Consumer Psychology

Introduction

In response to addressing individuals' investment needs amid inflationary pressures, research has predominately focused on financial products (Biddle & Gray, 2023), particularly stocks and mutual funds. However, a conspicuous lack of attention is given to newly introduced financial instruments (Nofsinger, 2017). A noteworthy example is the Unit-Linked Insurance Plan (ULIP), a financial product combining both insurance and investment components into a single integrated plan. This unique blending may evoke distinct psychological processes associated with both investment and insurance, a dimension not thoroughly explored in current research.

CONTACT Su-Ling Yeh  suling@ntu.edu.tw  Department of Psychology, National Taiwan University, No. 1, Section 4, Roosevelt Rd, Da'an District, Taipei City, 10617, Taiwan.

*These two authors contributed equally to this work.

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/23322039.2024.2422966>.

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

The global popularity of ULIPs has substantially increased since its debut in the Netherlands in 1956. In Taiwan, ULIP was first introduced in 2001 and has consistently experienced a rise in its first-year premium since 2008 (see Annual Report of Life Insurance Association of R.O.C. in 2008). This indicates a growing acceptance of ULIPs in the financial landscape in Taiwan. In the post-pandemic era, consumers are more aware and demand for life insurance protection. Within all kinds of life insurance, variable universal life insurance (one form of ULIPs) premiums skyrocketed by 65% in the U.S. in the fourth quarter of 2021 (Festa, 2022), demonstrating a growing need for ULIPs in the financial landscape.

Understanding customers' perceptions and preferences regarding the product characteristics of ULIPs is vital for insurance companies. As a hybrid product designed to meet preferences for both life insurance and flexible investments, ULIPs' relationship with investors' risk tolerance can differ from traditional financial products. This distinction highlights the importance of delving into the investment decision process specific to ULIPs.

In light of this, our current research set out to develop a Cognitive Investment Decision-Making Model (CIDMM) tailored to ULIPs. This model integrated both bottom-up considerations (product information) and top-down factors (the individual trait of risk tolerance). This dual-pathway approach enabled a holistic exploration of the intricate dynamics influencing investors' choices in ULIPs.

Objective vs. perceived product information

The bottom-up approach commences with an examination of various aspects of a financial product, with a focus on past performance and dividends. Despite the widely acknowledged principle that past performance does not guarantee future results (Diacon & Hasseldine, 2007), investors heavily rely on the historical performance of products like mutual funds (Kaur, 2018; Ramasamy & Yeung, 2003). Dividends are another key factor that attracts investors; for example, mutual funds that increase dividends tend to draw more investors, despite associated costs (Harris et al., 2015).

It is noteworthy that product satisfaction is more closely linked to the perception of the product than its actual performance (Burton et al., 2003). This underscores the distinction between objective value, derived from factual information about a product, and perceived value, which is influenced by subjective factors such as consumer expectations (Snoj et al., 2004). Perceived performance is affected not only by actual performance itself but also by comparison standards (Oliver, 1980). Expectation plays a pivotal role as a reference point for consumers, against which they evaluate actual performance. Intriguingly, a higher comparison or expectation standard has been suggested to be associated with lower perceived performance (Tse & Wilton, 1988).

Human cognition involves bottom-up information processing that begins with perception, the initial stage of sensing and interpreting external stimuli, followed by higher-order processes, including cognition and emotion (Fodor, 1983; Neisser, 2014; Zajonc, 1980). In the context of financial decisions, past study has highlighted the substantial impact of consumer perceptions of product information on the overall evaluation of products (Sweeney & Soutar, 2001; Zeithaml, 1988). This insight motivated our empirical examination of how consumer perceptions play a pivotal role in the bottom-up pathway of the ULIPs evaluation. It also prompted our investigation into the potential influence of product perceptions on shaping cognitive assessment, emotion, and subsequent investment willingness, forming a hypothesis that we aimed to substantiate in the bottom-up pathway.

Cognitive assessment and emotion

In studies of judgment and decision-making, the prevalent approach involves modeling individuals who make decisions by evaluating the choices' consequences (Loewenstein et al., 2001). For instance, the *Expected Utility Theory* (Von Neumann & Morgenstern, 1944) posits that decision-makers compare the utility of each option and select the one with the highest expected utility. Importantly, perceived values, rather than objective values, are considered inputs for computing expected utilities in the mind. Consumers assess the value of financial products through perceived performance (Diacon & Hasseldine, 2007) and perceived cash dividends (Khan et al., 2018). Moreover, Hillenbrand et al. (2020) demonstrated that positive evaluation of product characteristics led to investment behaviors. Therefore, we anticipate

that higher perceived performance and cash dividends will result in increased cognitive assessment, subsequently inducing a higher willingness for product investment.

In contrast, the *Risk as Feelings Theory* (Loewenstein et al., 2001) emphasizes the influence of emotions in decision-making. Encountering products with favorable characteristics intuitively induces positive emotions due to the profit potential, and vice versa. Contemplating which product to invest in, among all available options, might evoke negative emotions, especially when characteristics are challenging to discern (Luce et al., 1997). Decision-makers' current emotions may impact their judgments independently of cognitive assessment of the product (Loewenstein et al., 2001). Nonetheless, how positive and negative emotions distinctively influence financial decision-making remains unclear.

Previous studies have demonstrated varied results on the effects of emotion on risk-taking decisions. The *Mood Maintenance Hypothesis* suggests that people tend to maintain positive emotions and avoid negative emotions (Isen et al., 1988). The theory postulates that people induced with positive emotions are less willing to take on a gamble, as the potential for losing money might undermine their happiness (Lin et al., 2006). In contrast, Kuhnen and Knutson (2011) found that people induced with positive emotions were more likely to take on a bet due to the disregard of new information that contradicted their prior decisions or actions. Most studies discovered that negative emotions decreased the willingness to take risks or invest because negative emotions signify a dangerous environment, making people more cautious (e.g., Lindquist & Barrett, 2008; Yuen & Lee, 2003). However, negative emotions could heighten the motivation to pursue opportunities for altering one's present circumstances (Forgas, 2013; Lin et al., 2006), potentially increasing the willingness to invest. The inconsistent research results stem from the implementation of different experimental environments and financial products. Therefore, in the current study, the hypothetical effects of positive and negative emotions on investment willingness were left open-ended.

Risk tolerance trait

In contrast to the bottom-up pathway, which starts from the stimuli (the product), the top-down pathway is based on individuals' inner state or trait. In the context of investment, involving the risk of losing money and the opportunity to earn a profit, one's risk tolerance trait plays a critical role in financial decisions. Risk tolerance is defined as 'the maximum amount of uncertainty that someone is willing to accept when making financial decisions' (Grable, 2000). It is considered the primary driving force behind investing behavior (Ramu, 2021).

Individuals' levels of risk tolerance significantly affect their investment preferences and behaviors. Those with high-risk tolerance are more inclined to invest in short-term goals, such as impulsive consumption, while individuals with low-risk tolerance prefer pursuing long-term goals like saving for retirement (Xiao, 2008). Previous studies primarily focus on the impact of risk tolerance on high-risk products (Ameriks et al., 2020). Investors with higher risk tolerance perceive lower risk in high-risk products (such as stocks or real securities), enabling them to invest more money in such products (Nguyen et al., 2019; Pak & Mahmood, 2015) and show less interest in low-risk products (Corter & Chen, 2006).

This preference for high-risk products among high-risk-tolerant individuals can be explained by their return expectations. Those with higher risk tolerance generally have higher profit expectations in the financial market (Gibson et al., 2013; Snelbecker et al., 1990). Due to these expectations, they are likely to perceive low-risk products with lower performance (Tse & Wilton, 1988). This would then lead to less satisfaction with returns from low-risk products (Grable & Joo, 2004). Therefore, investors with higher risk tolerance might display less interest in lower-risk products like ULIPs and perceive them as unable to meet their return expectations. In our hypothetical model, we anticipate that higher risk tolerance will lead to lower perceived values and assessment, which, in turn, decrease investment willingness.

Furthermore, risk tolerance is linked to emotional stability. Research indicates that emotionally stable individuals are more risk-tolerant and likely to invest in riskier assets (Kuhnen et al., 2013; Mayfield et al., 2008; Nicholson et al., 2005; Oehler et al., 2018; Rustichini et al., 2016). Therefore, individuals with higher risk tolerance might exhibit less emotional response, both positive and negative, toward low-risk products like ULIPs.

In addition, previous studies have indicated positive correlations between risk tolerance and extraversion, while negative correlations were observed with neuroticism, conscientiousness, and agreeableness (Brooks & Williams, 2021; Pinjisakikool, 2018). Given the strong association between personality and risk tolerance, it emerges as a relevant confounding factor that requires control. Therefore, we controlled personality when examining the effect of risk tolerance.

Overview of the current research

This study aimed to unravel the investors' decision-making process in ULIP by exploring the hypothetical CIDMM (Figure 1), which encompasses both bottom-up and top-down pathways. Definitions of each variable in the model are given in Table 1. To dissect the bottom-up investment process, we manipulated information related to the performance and dividends of ULIPs and used questionnaires to assess how participants perceived the performance and dividends and how changes in their perceptions of performance and dividends affected cognitive assessment and emotions, subsequently impacting investment willingness. Concerning the influence of the top-down pathway on the investment process, we aimed to understand how investors with different risk tolerance levels perceived ULIP performance and dividends. Furthermore, we investigated the impact of risk tolerance on emotions and cognitive assessment, thereby confirming the importance of the top-down pathway in the investment process.

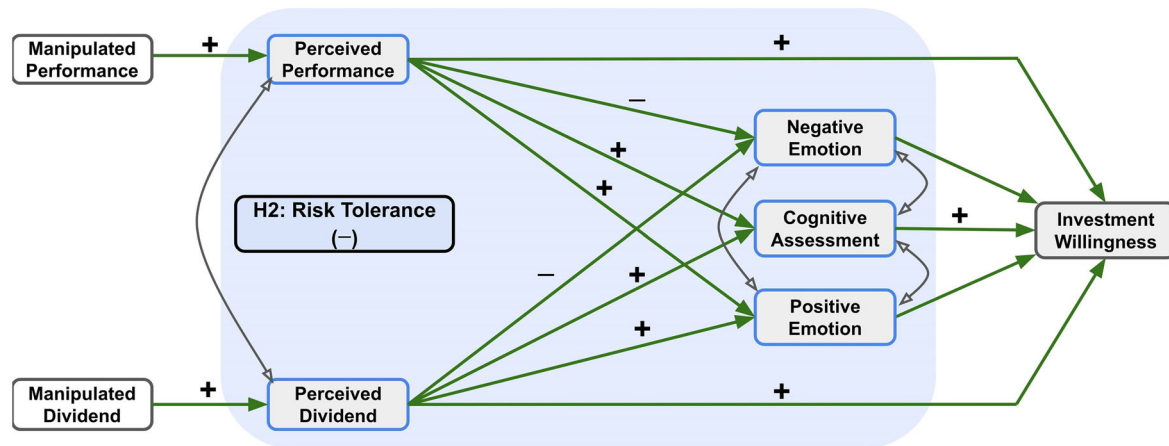


Figure 1. Hypothetical CIDMM. The green arrows represent the hypothetical bottom-up pathway (H1), initiating from Manipulated Performance and Manipulated Dividends and progressing through Perceived Performance, Perceived Dividend, Cognitive Assessment, and Emotions, ultimately influencing Investment Willingness. The “+” symbols indicate positive effects, and the “-” symbols denote negative effects. Due to inconsistent findings on the impact of emotions in prior studies, the hypothetical effects of positive and negative emotions are left neutral. Factors covered by the blue background depict the hypothetical negative effects of the Risk Tolerance trait on Perceived Performance, Perceived Dividend, Cognitive Assessment, and Emotions (H2). The gray two-way arrows indicate factors that covariate with each other.

Table 1. Definitions of variables in the hypothetical CIDMM.

Variable	Definition
Manipulated performance	Performance related product information (high or low) that is presented
Manipulated dividend	Dividend related product information (high or low) that is presented
Perceived performance	Primary subjective interpretation toward the product's performance
Perceived dividend	Primary subjective interpretation toward the product's dividend rate
Cognitive assessment	Overall evaluation of the product's expected utility
Positive emotion	Delightful feelings toward the product
Negative emotion	Unpleasant feelings toward the product
Investment willingness	The likelihood or readiness of a consumer to invest in the product
Risk tolerance	The maximum amount of uncertainty that someone is willing to accept when making financial decisions

Hypotheses

H1. Bottom-up pathway of ULIPs investment

To comprehend the bottom-up mechanism steering individuals' decisions to invest in ULIPs, we examined how information about ULIPs influenced perceptions, cognitive assessment, emotions, and investment willingness. Specifically, we tested whether the performance and dividend rate of ULIPs had a positive effect on an individual's perceived performance and dividend rates, respectively. Moreover, we investigated whether perceived performance and dividend rates positively influenced cognitive assessment and emotions, subsequently fostering investment willingness. Given the inconsistent findings on the effect of emotions on investment willingness in previous studies, we maintained the hypothetical effect as neither positive nor negative.

H2. Top-down pathway of ULIPs investment

The top-down mechanism illustrates how a higher-level individual tendency, risk tolerance, affects the ULIPs' investment process. We tested whether risk tolerance had a negative impact on individuals' perceptions of ULIPs' performance and dividend rates, cognitive assessment, and emotions. In other words, individuals with lower risk tolerance were expected to perceive higher performance and dividend rates and exhibit higher cognitive assessment and more emotions than those with higher risk tolerance.

Method

To examine the hypothetical model, we sought to examine how manipulations of performance and dividends affect the individuals' perceptions. Specifically, we explored the impact of different dividend rates and product performance on participants' perceptions, emotions, and investment willingness. In addition, we investigated the role of risk tolerance in influencing these variables while controlling for personality traits as a potential confounding factor.

Ethics approval

Our research was approved by the Research Ethics Committee at National Taiwan University (NTU-REC-202011HS011). Informed consent was obtained on the first page of the online questionnaire before the participants started the experiment. Participants could express their agreement with the consent form by checking the "agree" option.

Participants

Participants in this study consisted of individuals with previous ULIP purchasing experience from an insurance company. All participants signed the consent form by checking the "agree" option before starting the online questionnaire. A total of 736 questionnaire responses were collected, with 8 participants providing duplicate responses. After excluding the second set of responses from these participants, the dataset comprised data from 728 participants, including 266 males and 462 females. The average age of participants was 44.1 years ($SD = 11.5$ years old). Those who completed the questionnaires had the opportunity to receive a 150 NTD coffee coupon as a reward, with 50 spots available.

Experimental design

The present study adopted a 2 (product dividend rate: low or high) $\times$ 2 (product performance: low or high) between-subjects design. Participants were randomly assigned to one of the four conditions. In each condition, participants were presented with a leaflet of a unit-link product in which both the dividend rate and performance were manipulated (Figure 2).



Figure 2. Partially translated leaflets of the unit-linked product. All information in the leaflets was originally presented in Chinese in the questionnaires and is translated here, except for the simulated ULIP names in the upper part of the leaflet. The simulated names remain untranslated as they were constant across all conditions and not a primary manipulation. Performance levels are depicted as high in the upper images and low in the lower images. Dividend rates are high in the left images and low in the right images.

Materials and measures

Four distinct leaflets (Figure 2) were designed to examine the effect of product information—the ULIP performance and dividend rates—on investment willingness. There were two levels of dividends, according to the experts' advice, the annual dividend rate was set at 5% for the high-level dividends and 3.8% for the low-level dividends. The performance of the fund was presented as the internal rate of return (IRR) at several time points. The percentages of the IRR referred to the performance of funds linked to the ULIPs of a large-scale insurance company in Taiwan and were confirmed by the experts. Participants viewed one of the four leaflets and responded to questions in the questionnaire (see Appendix A).

Perceived performance

Participants' perceived performance was measured with one item, "The performance of this unit-linked insurance is good." Participants responded to the question on a 6-point Likert scale (1 as strongly disagree; 6 as strongly agree).

Perceived dividend

Participants' perceived dividend rate was measured with one item, "The dividend of this unit-linked insurance is good." Participants responded to the question on a 6-point Likert scale (1 as strongly disagree; 6 as strongly agree).

Cognitive assessment

Five items for the cognitive assessment were modified from Perceptual Risk Factor measurements (Chang, 2013) and the Personal Involvement Inventory scale (Zaichkowsky, 1994). Example questions included "Buying this unit-linked insurance is meaningful for me" and "This unit-linked insurance is relevant to me." All items were rated on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The internal consistency of the measure, as assessed by Cronbach's alpha, was found to be .938.

Emotion

Participants were asked to indicate how they felt about the unit-linked insurance. Based on the results of factor analysis in a pilot study, we selected six items from the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988). Examples of positive emotion items included "excited," while examples of negative emotion items included "nervous". All responses were recorded on 5-point Likert scale, ranging from 1 (Not at all) to 5 (Extremely), following Watson et al. (1988). The internal consistency, as indicated by Cronbach's alpha, was .934 for positive emotion and .838 for negative emotion.

Risk tolerance

To assess participants' risk tolerance, six items were employed from the Risk Tolerance Measure developed by Grable and Joo (2004). An example item included the statement "In terms of investing, safety is more important than returns." Responses for all items were recorded on a 6-point Likert scale, with 1 indicating strongly disagree and 6 indicating strongly agree. The internal consistency, as measured by Cronbach's alpha, was found to be .768.

Investment willingness

Three items were revised from Zeithaml (1988) and Dodds et al. (1991) to measure participants' investment willingness of the unit-link product, including sample questions such as "I am willing to buy this unit-linked insurance." and "I will choose this unit-linked insurance as my first choice when I need unit-linked insurance in the future." Responses for all items were recorded on a 6-point Likert scale, with 1 indicating strongly disagree and 6 indicating strongly agree. The internal consistency, as measured by Cronbach's alpha, was found to be .884.

Personality

Considering the potential effects of personality on risk tolerance and investment willingness, personality was included as a covariate. The Ten Item Personality Inventory (TIPI, Gosling et al., 2003) was adopted to measure the Big Five personality dimensions. Sample items included "extraverted, enthusiastic" for extraversion and "anxious, easily unsettled" for neuroticism. Responses for all items were recorded on a 6-point Likert scale, with 1 indicating strongly disagree and 6 indicating strongly agree. The correlation coefficients between the two items in each dimension indicated the internal consistency for each Big Five personality dimension. Details are provided in [Appendix B](#).

Demographic variables

Considering the potential effects of demographic variables on the model, demographic variables, such as age, gender, education level, household income, and profession, were included as covariates. Age was asked with a short-answer question, while others were asked with multiple-choice questions. Details are provided in [Appendix A](#).

Procedure

The experiment was conducted on Qualtrics, an online survey platform. After completing the informed consent, participants filled out the questionnaires on demographic information and measures of risk-tolerance tendencies. They were then asked to read the leaflet of one unit-linked product, which contained information on the product performance and dividend rates. They reported their perception and cognitive assessment of the product, the emotions they felt then, and their willingness to invest. Lastly, qualitative questions were asked to investigate the participants' thoughts about the product presented in the leaflet.

Analysis

Participant data were anonymized prior to analysis to maintain confidentiality. The present study investigated the hypothesized model using structural equation modeling (SEM). SEM was conducted using SPSS 26 and Amos 23. The model was estimated with maximum likelihood (ML) estimation.

Results

The model fit indexes of the CIDMM are satisfactory (Hu & Bentler, 1999; Kline, 2005; MacCallum & Hong, 1997), indicating a good fit to the data: $\chi^2(24) = 27.595$, $p = .277$, GFI = .995, AGFI = .977, RMSEA = .014. Descriptive statistics and a correlation matrix of the variables can be found in Appendix C.

First, we examined the bottom-up mechanism that underlies customers' decision to invest in ULIPs—specifically, how the information about ULIPs affected customer's perception, cognitive assessment, emotion, and investment willingness. The model with standardized parameter estimates is shown in Figure 3. For additional details on standardized parameter estimates, please refer to Appendix D.

Results showed that the manipulated performance positively affected the perceived performance, which then enhanced one's positive emotion and cognitive assessment of the product. The manipulated dividend rate also positively affected the perceived dividend rate, which enhanced one's positive emotions and cognitive assessment of the product. Both cognitive assessment and positive emotion increased participants' willingness to invest. On the other hand, negative emotions were not affected by

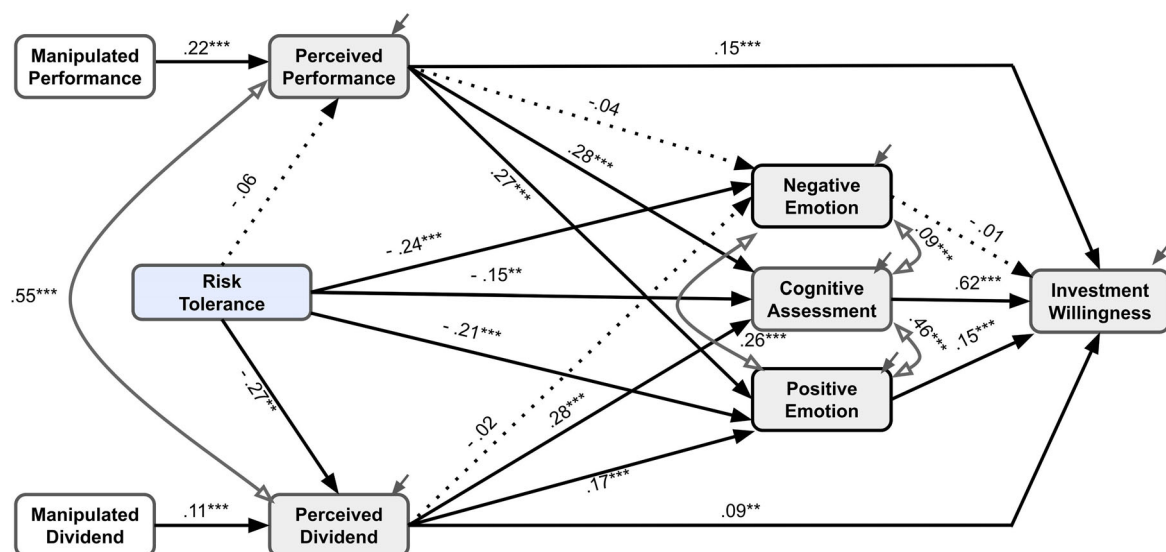


Figure 3. Path analysis results of the CIDMM. The one-way arrow with a solid triangle represents the effect from one factor to another, while the two-way arrow with outlined triangles indicates factors that covariate with each other. The arrows with solid lines designate a significant effect, while the ones with dotted lines imply a null effect. The small gray arrows on the right corner of the factors serve as the residuals of the factors. * $p < .05$. ** $p < .01$. *** $p < .001$.

participants' perceived performance or perceived dividend rate and did not affect their willingness to invest.

We conducted a serial mediation analysis to examine the mechanism of the manipulated product performance on customers' investment willingness. Two paths demonstrated significant indirect effects from manipulated performance to investment willingness. Specifically, manipulated performance enhanced perceived performance, subsequently heightening both cognitive assessment and positive emotion, ultimately resulting in increased investment willingness. Both indirect effects through cognitive assessment and positive emotion were significant (estimate = .037, SE = .009, $p < .001$, 95% CI = [.022, .058] for cognitive assessment; estimate = .009, SE = .003, $p = .001$, 95% CI = [.003, .016] for positive emotion).

We then conducted another serial mediation analysis to examine the mechanism of the manipulated product dividend rate on customers' investment willingness. Results revealed that the manipulated dividend rate enhanced the perceived dividend rate of the product. This, in turn, increased the customer's cognitive assessment and positive emotion, ultimately enhancing investment willingness. Both indirect effects through cognitive assessment and positive emotion were significant (estimate = .019, SE = .007, $p < .001$, 95% CI = [.008, .035] for cognitive assessment; estimate = .003, SE = .001, $p = .001$, 95% CI = [.001, .006] for positive emotion).

Second, we explored the top-down mechanism of the ULIPs investment process. Specifically, we tested whether risk tolerance negatively affects customer's perception of ULIPs' performance and dividend rate, cognitive assessment, and emotions. Results showed that people with higher risk tolerance perceived the product as providing fewer dividends and had a lower cognitive assessment of the product, while the influence of risk tolerance on perceived performance was negligible. Moreover, risk tolerance had a negative effect on one's emotions; the higher the risk tolerance was, the fewer positive and negative emotions one experienced.

Then, we further examined the indirect effect of risk tolerance on investment willingness. Results showed that customers' risk tolerance reduced investment willingness by reducing their perceived dividend rate of the product. Specifically, higher risk tolerance decreased the perceived dividend rate, which in turn decreased cognitive assessment and positive emotion, resulting in decreased investment willingness. Both indirect effects through cognitive assessment and positive emotion were significant (estimate = $-.045$, SE = .013, $p < .001$, 95% CI = [$-.076$, $-.024$] for cognitive assessment; estimate = $-.006$, SE = .003, $p = .001$, 95% CI = [$-.014$, $-.002$] for positive emotion). In addition, higher risk tolerance showed no indirect effect on investment willingness through perceived performance. For additional details on the serial mediation analysis, please refer to [Appendix E](#).

General discussion

The primary objective of our research was to develop the CIDMM to illuminate the intricacies of investment behavior associated with Unit Linked Insurance Plans (ULIPs). Our exploration encompassed both the bottom-up and top-down pathways to establish a comprehensive understanding of the ULIP investment process, with a focus on perceived performance, dividends, emotional dynamics, and risk tolerance. By integrating both bottom-up and top-down pathways to explain the complex dynamics of investment decision-making in ULIPs, our research advances the theoretical understanding of how product characteristics and individual traits collectively influence investment behavior.

Bottom-up pathway: perceived performance and dividends

Our findings underscored the reliability of the bottom-up pathway as a significant determinant of the ULIPs investment decision-making process, emphasizing the impact of perceived performance and dividends on the decision-making process. By manipulating ULIP performance and dividends, we observed a positive impact on perceived performance and dividends. Higher perceived performance and dividends, in turn, heightened cognitive assessment and positive emotions. The cascading effect of improved cognitive assessment and positive emotions was an increased willingness to invest in ULIPs. Serial mediation analysis further confirmed that enhancements in ULIP performance or dividends

positively affected perceived performance and dividends, which led to an augmentation in cognitive assessment and positive emotions, and ultimately fostered a stronger inclination toward investment.

Our findings highlighted individuals' emphasis on performance and dividends, aligning with previous studies (Harris et al., 2015; Kaur, 2018; Ramasamy & Yeung, 2003) on investment products when making investment decisions. Specifically, *perceived* performance and dividends of ULIPs were found to significantly influence investment decisions, aligning with assertion of Burton et al. (2003) that perceived performance of the product strongly correlates with satisfaction. As indicated by Chien (2008) and Khan et al. (2018), perceived product information contributed to product evaluation, subsequently predicting investment willingness (Hillenbrand et al., 2020).

Emotional dynamics in decision-making

Furthermore, our research explored the role of emotions in ULIP investment decisions, differentiating positive and negative emotional influences. As noted by Loewenstein et al. (2001), a decision maker's current emotions could significantly influence their judgments. Our study showed that positive emotions increase participants' willingness to invest. This finding aligns with Kuhnen and Knutson (2011) findings of positive emotions' positively affecting action-taking. The *Affect Infusion Model* (AIM, Forgas, 1995) provided a theoretical framework, suggesting that positive affect enhances attention toward positive information, leading to better learning and interpretation of such information, more favorable interpretations of ambiguous information, and improved recall of positive aspects later on. Participants in positive emotional states focused, learned, interpreted, or remembered the positive features of ULIPs, leading to a heightened willingness to invest.

Interestingly, our results showed that negative emotions had no significant influence on investment willingness. These results were different from past findings of both the negative (Lindquist & Barrett, 2008; Yuen & Lee, 2003) and positive (Forgas, 2013; Isen et al., 1988; Lin et al., 2006) effects of negative emotion on investment willingness. Our results could be a combination of both negative and positive effects, in which participants experiencing negative effects not only paid attention to the negative aspects of ULIPs but also saw investment decisions as a possible opportunity to change their current negative situations. The positive and negative effects may cancel out each other, leading to the null effect.

Top-down pathway: the role of risk tolerance

Beyond the bottom-up pathway, our research investigated the top-down pathway, revealing the negative influence of risk tolerance on perceptions, evaluations, and emotions in ULIP investments. Specifically, the finding suggested that individuals with lower risk tolerance were predisposed to perceive higher ULIP dividends, alongside exhibiting a more favorable cognitive assessment and emotional response.

The effects of risk tolerance on perception and cognitive assessment could be explained from the perspective of participants' expectations of the product. Previous research indicated that individuals with higher risk tolerance had higher expectations of making profits in the financial market (Gibson et al., 2013; Snelbecker et al., 1990). Higher expectation was suggested to be linked to lower perceived performance and lower satisfaction with the investment results (Grable & Joo, 2004; Tse & Wilton, 1988) because of the gap between expectation and actual performance (Burton et al., 2003). Additionally, individuals with higher risk tolerance tended to invest in higher-risk products and were less interested in low-risk options (Corter & Chen, 2006). ULIPs are relatively low-risk investment products with lower performance and dividends, compared to other common investment products such as stocks and funds. As a result, the ULIPs might not meet the expectations of people with higher risk tolerance, resulting in lower perceived dividends, as well as lower cognitive assessment.

Risk tolerance showed a negative effect on perceived dividends, while no significant effect was observed on perceived performance. This finding may be attributed to the explicit nature of stimuli associated with performance and dividends. Notably, the difference in IRR between high and low performance (e.g. 89.38 vs. 1.71% in the first year) was more prominent than the disparity between high

and low dividends (5 vs. 3.8%). Participants could easily discern performance as either good or bad based solely on performance information. In contrast, gauging the disparity in dividends solely from the provided stimuli might prove more challenging. The assessment of dividends is thus susceptible to various factors, including risk tolerance. In other words, perceived performance tends to be more stable compared to perceived dividends, the latter of which may fluctuate based on individual traits such as risk tolerance.

Additionally, the negative effect of risk tolerance on both positive and negative emotions aligned with previous research in which emotionally stable individuals were more risk-tolerant and purchased more risky assets (Kuhnen et al., 2013; Mayfield et al., 2008; Nicholson et al., 2005; Oehler et al., 2018; Rustichini et al., 2016). Participants with higher risk tolerance might be more unflustered when facing risky choices.

Implications

A contribution of our research lies in the development of a comprehensive model designed for ULIPs. Historically, there has been a notable gap in the research landscape regarding the intricacies of the ULIP investment process. ULIPs, being hybrid financial instruments combining insurance and investment components, present a unique set of challenges and opportunities for both consumers and industry stakeholders. Through our empirical investigation, we constructed a holistic framework that captures the interplay of perceptions, cognitive assessment, emotions, and risk tolerance.

Our results revealed a stable relationship among perceptions, cognitive assessment, emotions, and investment willingness in products combining insurance and investment characteristics. Beyond the scope of ULIPs, our model extends insights that serve as a reference for decision-making process models more broadly. Specifically, the importance of perceived information in the decision-making process emerges as a key takeaway. Our research highlights that consumer perceptions significantly influence their cognitive assessment and emotional responses, subsequently impacting their willingness to invest. Decision-making process models, seeking to comprehend and predict consumer behavior, can draw from our study to emphasize the critical role of perceived information in shaping choices. Whether in the realm of financial products or beyond, understanding the centrality of perceived information enriches decision-making process models, allowing for more targeted and effective strategies.

Moreover, insurance companies offering ULIPs can benefit from the insights from our research to guide policy decisions based on changes in fund performance or dividend policies. Specifically, our research highlights the interconnected dynamics of consumer perceptions, cognitive assessment, emotions, and investment willingness. By understanding how these factors influence ULIP investment decisions, insurance companies can make informed decisions regarding policy adjustments. For instance, in periods of improved fund performance, companies may consider optimizing marketing strategies to capitalize on heightened positive perceptions and emotions among potential investors. Similarly, during periods of dividend policy changes, companies can tailor communication strategies to address potential concerns or capitalize on positive shifts in consumer sentiment.

Additionally, our results showed that participants with lower risk tolerance had a more positive impact on their perception and cognitive assessment of ULIPs than those with higher risk tolerance. These findings suggest that insurance companies and financial advisors should tailor their marketing strategies to emphasize product characteristics such as performance and dividends when targeting individuals with lower risk tolerance. For individuals with higher risk tolerance, communications should focus on the potential for growth, flexibility, and higher returns, which align with their investment preferences. This top-down impact pathway on investment decision-making highlights the importance of considering product-specific characteristics when assessing the influence of risk tolerance. Companies selling ULIPs or other investment products should carefully evaluate how risk tolerance and other personality traits on investment willingness, recognizing the potential variability of these traits across different products and scenarios.

The CIDMM developed in this study can potentially extend beyond ULIPs and be applied to other hybrid financial products, such as annuities or structured products. Its versatility allows researchers to explore the impact of perceptions and individual traits across various financial domains. Furthermore,

the model could be adapted to examine consumer behavior in the context of emerging financial technologies, such as robo-advisors or cryptocurrency investments, where emotions and risk tolerance play critical roles in shaping decisions.

Limitations and future directions

While our research offers valuable insights, we acknowledge certain limitations. We assessed consumers' willingness to purchase ULIPs through self-reported measures rather than evaluating actual investment decisions or behaviors in real-world settings. Consequently, the translation of reported intentions into actual behaviors remains uncertain. Future research could enhance this understanding by employing behavioral measures, such as tracking the actual investment amounts in such products.

Furthermore, expanding the scope of future research to include various insurance and investment products, such as funds and stocks, for comparative analysis would enrich our understanding of the influence of risk tolerance on investment decisions. By comparing conservative products with those presenting higher-risk investment options, researchers can investigate whether risk tolerance consistently predicts investment inclination or if its impact varies based on product characteristics. For example, assessing whether risk tolerance negatively predicts investment willingness in more conservative products while positively predicting it in higher-risk options could unveil valuable insights into the nuanced relationship between risk tolerance and investment decisions across different insurance offerings. This comparative approach would contribute to a more comprehensive model reflecting the diversity of investor preferences within the insurance market.

While our research delved into the role of emotions in ULIP investment decisions, the current study relied on measurements of emotions rather than experimental manipulations. Future studies could experimentally manipulate emotional states to establish causal relationships between emotions and ULIP investment willingness. For instance, inducing positive or negative emotions in participants before presenting information about ULIPs could offer a more nuanced understanding of how emotions causally influence investment decisions. Researchers could also experiment with techniques to emphasize the positive aspects of ULIPs, aiming to evoke feelings associated with optimism and a bright financial future. Conversely, an alternative approach could focus on highlighting the unpredictability of life and the need for financial preparedness, intending to instill a sense of prudence and a proactive mindset among participants. These approaches can enable researchers to uncover the causal relationship between emotions and investment willingness and offer a more detailed insight into how emotional dynamics shape decision-making in the context of ULIPs.

While our current study does not directly address the impact of regulatory disclosures on investment performance and product characteristics, it is essential to acknowledge the significant role these disclosures play in the financial industry. Regulatory frameworks, such as the Packaged Retail and Insurance-based Investment Products (PRIIPs) regulation in the European Union, mandate comprehensive disclosures aimed at enhancing transparency and protecting investors and insured parties. These requirements ensure that investors have access to critical information regarding investment performance, risks, and product features, thereby facilitating more informed decision-making. However, the introduction of extensive disclosures may have nuanced effects on investor behavior and trust. On one hand, greater transparency can empower investors by providing them with the necessary data to make well-informed choices, potentially increasing their confidence in financial products. On the other hand, the complexity and volume of disclosed information might overwhelm some investors, leading to increased skepticism or mistrust towards the products being offered. This paradox underscores the need for a balanced approach in regulatory disclosures that enhances clarity without causing information overload. Future research should delve into the intricate dynamics between regulatory disclosures and investor perceptions, trust, and decision-making processes, particularly in the context of ULIPs.

In addition, in assessing the willingness to purchase investment-linked insurance policies, this study did not consider the taxation issue. Research by Cheng (2010) found that in Taiwan, when the overseas investment income from ULIP exceeds 1 million New Taiwan Dollars, overseas income tax must be levied. The taxation of investment products can potentially influence an individual's purchasing intentions

(Hong et al., 2015). Therefore, future research could include the variable of tax differences across various investment products and integrate this into the CIDMM associated with ULIP.

Robustness

Our research introduces the CIDMM for ULIPs. Beyond the Big Five personality traits, we systematically controlled for various potential covariates such as age, gender, education, household income, and profession (See [Appendix F](#) for standardized parameter estimates and [Appendix C](#) for correlations between demographic variables). Previous studies have established relationships between these demographic variables and investment decisions. For example, older investors often demonstrate greater investment knowledge but may exhibit poorer investment skills if they are less educated and have lower incomes (Korniotis & Kumar, 2011). Additionally, older, low-income, and less educated investors tend to prefer dividends (Dong et al., 2005). Our findings reveal that these demographic variables influence certain dependent variables within our model. Specifically, older age is associated with increased cognitive assessment and positive emotions, higher education levels are linked to increased perceived dividends and decreased cognitive assessment, higher household income is associated with greater investment willingness, and private company employees have higher cognitive assessment compared to military, civil servants, and housewives. The consistency of our results across these controlled variables underscores the reliability of our findings. Consequently, our model can be applied to individuals with diverse characteristics and social backgrounds, providing a solid foundation for further research and practical applications in the field of ULIPs.

It is worth mentioning that, during this study's recruitment period, significant events such as Taiwanese political incidents or the Covid-19 pandemic could have impacted individuals' moods, which might affect their purchasing intentions of ULIPs. For instance, Edmans et al. (2007) noted that losses by a country's soccer team can trigger collective negative moods, leading to a significant decline in the stock market. To validate whether the emotional results of this study are influenced by specific events, future research could replicate this study at various points in time to determine if the findings are stable across different time periods.

Conclusion

The ULIP decision-making process, as illustrated in CIDMM, was influenced by the perception of the product information, rather than its objective value. This aspect should be considered in sales engagements. Additionally, positive emotions could predict investment willingness, indicating that customers with positive emotions might be more likely to purchase ULIP. In contrast, negative emotion played a minor role in the model, which might be a mixed result that needs further research. Furthermore, individuals with higher levels of risk tolerance perceived and evaluated the product lower, indicating that companies should avoid targeting higher risk tolerance individuals as potential future customers when setting marketing plans for ULIP. The findings in this research underscore the multifaceted influences of both bottom-up and top-down pathways and offer implications for insurance companies by contributing to the broader understanding of consumer decision-making in the realm of investment products. This research lays the groundwork for future studies to delve deeper into the psychological processes that govern financial decision-making. Further exploration of these processes in different financial contexts and the incorporation of real-world behavioral data will enrich our understanding of consumer behavior and help develop more effective financial products tailored to diverse investor profiles.

Acknowledgments

We thank Xin-Hua Wu, Chi-Jiun Wu, and Hsuan-Yu Liu for their assistance in preparing stimuli and questionnaires in the early stage of the research.

Authors' contributions

Chia-Chun Tsai: literature review, conception, methodology, data management and analysis, writing draft and discussion, revising and editing the intellectual content. Li-Yu Chen: literature review, data management and analysis, writing draft and discussion, revising and editing the intellectual content. Chen-Wei Huang: literature review, data management and analysis, writing draft and discussion, revising and editing the intellectual content. Peng-Yu Zeng: literature review, data management and analysis, writing draft and discussion, revising and editing the intellectual content. Su-Ling Yeh: conception, methodology, revising and editing the intellectual content.

Disclosure statement

No potential conflict of interest was reported by the authors.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT in order to improve readability and language of the work. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Funding

This research was supported in part by Taiwan's National Science and Technology Council (MOST 110-2622-8-002-018, NSTC 111-2622-8-002-028, MOST 110-2410-H-002-130-MY3, NSTC 112-2223-E-002-019; MOST 111-2223-E-002-008; NSTC 113-2740-H-002-001-MY3; NSTC 113-2410-H-002-252-MY3), the Ministry of Education (113L9A00403), Cathay Life Insurance, and National Taiwan University.

About the authors

Su-Ling Yeh is a chair professor at the Department of Psychology, National Taiwan University, where she was awarded a Lifetime Distinguished Professorship. She is a recipient of the Academic Award of the Ministry of Education and the Distinguished Research Award of the National Science and Technology Council of Taiwan. She is an APS (American Psychological Science) fellow, a 2019-20 fellow at the Center for Advanced Study in the Behavioral Sciences, Stanford University, and a 2023-24 fellow at the National Humanities Center. Her research interests include cognitive neuroscience, perception, attention, consciousness, multisensory integration, aging, and applied psychological research on display technology, eye-tracking devices, AI/robots, and fintech.

Chia-Chun Tsai received a Master's degree from the Department of Psychology, National Taiwan University. Her research areas include cognitive psychology, attention, and investment decision-making.

Li-Yu Chen received a Master's degree from the Department of Psychology, National Taiwan University. Her research areas include social psychology, and investment decision-making.

Chen-Wei Huang received a Master's degree from the Department of Psychology, National Taiwan University. His research areas include cognitive psychology, perception, and investment decision-making.

Peng-Yu Zeng is a Ph.D. candidate in the Department of Psychology, National Taiwan University. His primary research interests include positive psychology, well-being, and investment decision-making.

ORCID

Su-Ling Yeh  <http://orcid.org/0000-0003-4597-8697>

Data availability

The data that support the findings of this study are openly available in OSF at https://osf.io/xcqtu/?view_only=6d08c75d002041e3be729cd5e5add0f1.

References

- Ameriks, J., Kézdi, G., Lee, M., & Shapiro, M. D. (2020). Heterogeneity in expectations, risk tolerance, and household stock shares: The attenuation puzzle. *Journal of Business & Economic Statistics: A Publication of the American Statistical Association*, 38(3), 633–646. <https://doi.org/10.1080/07350015.2018.1549560>
- Biddle, N., & Gray, M. (2023). Hangovers and hard landings: financial wellbeing and the impact of the COVID-19 and inflationary crises, August 2023.
- Brooks, C., & Williams, L. (2021). The impact of personality traits on attitude to financial risk. *Research in International Business and Finance*, 58, 101501. <https://doi.org/10.1016/j.ribaf.2021.101501>
- Burton, S., Sheather, S., & Roberts, J. (2003). Reality or perception? The effect of actual and perceived performance on satisfaction and behavioral intention. *Journal of Service Research*, 5(4), 292–302. <https://doi.org/10.1177/1094670503005004002>
- Chang, Y. C. (2013). The study of money attitude, perceived risk and consumer purchase intention on investment linked insurance products. Master, Tamkang University, R.O.C.
- Cheng, K. W. (2010). A study of the issue of investment-linked insurance related taxes. Airti library. Master, Chang Jung Christian University, R.O.C. <https://doi.org/10.6833/CJCU.2010.00138>
- Chien, P. J. (2008). A study for key factors of selection criteria of consumer purchasing investment-oriented insurance products: AHP application, [Master's thesis, Tunghai University], National Digital Library of Theses and Dissertations in Taiwan. <https://hdl.handle.net/11296/me986e>
- Corter, J. E., & Chen, Y.-J. (2006). Do investment risk tolerance attitudes predict portfolio risk? *Journal of Business and Psychology*, 20(3), 369–381. <https://doi.org/10.1007/s10869-005-9010-5>
- Diacon, S., & Hasseldine, J. (2007). Framing effects and risk perception: The effect of prior performance presentation format on investment fund choice. *Journal of Economic Psychology*, 28(1), 31–52. <https://doi.org/10.1016/j.joep.2006.01.003>
- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28(3), 307–319. <https://doi.org/10.2307/3172866>
- Dong, M., Robinson, C., & Veld, C. (2005). Why individual investors want dividends. *Journal of Corporate Finance*, 12(1), 121–158. <https://doi.org/10.1016/j.jcorpfin.2004.04.006>
- Edmans, A., García, D., & Norli, Ø. (2007). Sports sentiment and stock returns. *The Journal of Finance*, 62(4), 1967–1998. <https://doi.org/10.1111/j.1540-6261.2007.01262.x>
- Festa, E. (2022). 2021 a banner year for life insurance sales; highest growth since 1983 charted. Retrieved from <https://www.investopedia.com/2021-a-banner-year-for-life-insurance-sales-5222729>
- Fodor, J. A. (1983). *The modularity of mind*. MIT Press.
- Forgas, J. (2013). Don't worry, be sad! On the cognitive, motivational, and interpersonal benefits of negative mood. *Current Directions in Psychological Science*, 22(3), 225–232. <https://doi.org/10.1177/0963721412474458>
- Forgas, J. P. (1995). Mood and judgment: the affect infusion model (AIM). *Psychological Bulletin*, 117(1), 39–66. <https://doi.org/10.1037/0033-2909.117.1.39>
- Gibson, R. J., Michayluk, D., & Van de Venter, G. (2013). Financial risk tolerance: An analysis of unexplored factors. *Financial Services Review*, 22, 23–50.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. Jr, (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37(6), 504–528. [https://doi.org/10.1016/S0092-6566\(03\)00046-1](https://doi.org/10.1016/S0092-6566(03)00046-1)
- Graable, J. (2000). Financial risk tolerance and additional factors that affect risk taking in everyday money matters. *Journal of Business and Psychology*, 14(4), 625–630. <https://doi.org/10.1023/A:1022994314982>
- Graable, J., & Joo, S.-H. (2004). Environmental and biopsychosocial factors associated with financial risk tolerance. *Journal of Financial Counseling and Planning*, 15, 73–82.
- Harris, L. E., Hartzmark, S. M., & Solomon, D. H. (2015). Juicing the dividend yield: Mutual funds and the demand for dividends. *Journal of Financial Economics*, 116(3), 433–451. <https://doi.org/10.1016/j.jfineco.2015.04.001>
- Hillenbrand, C., Saraeva, A., Money, K., & Brooks, C. (2020). To invest or not to invest?: The roles of product information, attitudes towards finance and life variables in retail investor propensity to engage with financial products. *British Journal of Management*, 31(4), 688–708. <https://doi.org/10.1111/1467-8551.12348>
- Hong, Y. H., Teh, B. H., Soh, P. C., & San Ong, T. (2015). Consumer purchase intention and cross-border shopping: Implementation of goods and services tax (GST). *International Journal of Business and Management*, 10(8), 198. <https://doi.org/10.5539/ijbm.v10n8p198>
- Hu, Lt., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Isen, A. M., Nygren, T. E., & Ashby, F. G. (1988). Influence of positive affect on the subjective utility of gains and losses: It is just not worth the risk. *Journal of Personality and Social Psychology*, 55(5), 710–717. <https://doi.org/10.1037/0022-3514.55.5.710>
- Kaur, I. (2018). Effect of mutual funds characteristics on their performance and trading strategy: A dynamic panel approach. *Cogent Economics & Finance*, 6(1), 1493019. <https://doi.org/10.1080/23322039.2018.1493019>

- Khan, K. I., Ghafoor, M. M., Sheeraz, M., & Mahmood, S. (2018). Pay or not to pay dividends: Company policy and investor expectations. *Lahore Journal of Business*, 7(1), 137–157. <https://doi.org/10.35536/ljb.2018.v7.i1.a6>
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). Guilford Press.
- Korniotis, G. M., & Kumar, A. (2011). Do older investors make better investment decisions? *Review of Economics and Statistics*, 93(1), 244–265. https://doi.org/10.1162/REST_a_00053
- Kuhnen, C. M., & Knutson, B. (2011). The influence of affect on beliefs, preferences, and financial decisions. *Journal of Financial and Quantitative Analysis*, 46(3), 605–626. <https://doi.org/10.1017/S0022109011000123>
- Kuhnen, C. M., Samanez-Larkin, G. R., & Knutson, B. (2013). Serotonergic genotypes, neuroticism, and financial choices. *PLoS One*, 8(1), e54632. <https://doi.org/10.1371/journal.pone.0054632>
- Lin, C.-H., Chuang, S.-C., Kao, D. T., & Kung, C.-Y. (2006). The role of emotions in the endowment effect. *Journal of Economic Psychology*, 27(4), 589–597. <https://doi.org/10.1016/j.joep.2005.10.001>
- Lindquist, K. A., & Barrett, L. F. (2008). Constructing emotion: The experience of fear as a conceptual act. *Psychological Science*, 19(9), 898–903. <https://doi.org/10.1111/j.1467-9280.2008.02174.x>
- Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, 127(2), 267–286. <https://doi.org/10.1037/0033-2909.127.2.267>
- Luce, M. F., Bettman, J. R., & Payne, J. W. (1997). Choice processing in emotionally difficult decisions. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 23(2), 384–405. <https://doi.org/10.1037/0278-7393.23.2.384>
- MacCallum, R. C., & Hong, S. (1997). Power analysis in covariance structure modeling using GFI and AGFI. *Multivariate Behavioral Research*, 32(2), 193–210. https://doi.org/10.1207/s15327906mbr3202_5
- Mayfield, C. O., Perdue, G., & Wooten, K. C. (2008). Investment management and personality type. *Financial Services Review*, 17, 219.
- Neisser, U. (2014). *Cognitive psychology: Classic edition*. Psychology Press.
- Nguyen, L., Gallery, G., & Newton, C. (2019). The joint influence of financial risk perception and risk tolerance on individual investment decision-making. *Accounting & Finance*, 59(S1), 747–771. <https://doi.org/10.1111/acfi.12295>
- Nicholson, N., Soane, E., Fenton-O'Creevy, M., & Willman, P. (2005). Personality and domain-specific risk taking. *Journal of Risk Research*, 8(2), 157–176. <https://doi.org/10.1080/1366987032000123856>
- Nofsinger, J. R. (2017). *The psychology of investing*. Routledge.
- Oehler, A., Wendt, S., Wedlich, F., & Horn, M. (2018). Investors' personality influences investment decisions: Experimental evidence on extraversion and neuroticism. *Journal of Behavioral Finance*, 19(1), 30–48. <https://doi.org/10.1080/15427560.2017.1366495>
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460–469. <https://doi.org/10.1177/002224378001700405>
- Pak, O., & Mahmood, M. (2015). Impact of personality on risk tolerance and investment decisions: A study on potential investors of Kazakhstan. *International Journal of Commerce and Management*, 25(4), 370–384. <https://doi.org/10.1108/IJCoMA-01-2013-0002>
- Pinjisakikool, T. (2018). The influence of personality traits on households' financial risk tolerance and financial behaviour. *Journal of Interdisciplinary Economics*, 30(1), 32–54. <https://doi.org/10.1177/0260107917731034>
- Ramasamy, B., & Yeung, M. C. H. (2003). Evaluating mutual funds in an emerging market: Factors that matter to financial advisors. *International Journal of Bank Marketing*, 21(3), 122–136. <https://doi.org/10.1108/02652320310469502>
- Ramu, M. (2021). Analysing the effect of financial risk perception, risk tolerance on investment behaviour: An empirical analysis. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(3), 5511–5516.
- Rustichini, A., DeYoung, C. G., Anderson, J. E., & Burks, S. V. (2016). Toward the integration of personality theory and decision theory in explaining economic behavior: An experimental investigation. *Journal of Behavioral and Experimental Economics*, 64, 122–137. <https://doi.org/10.1016/j.socrec.2016.04.019>
- Snelbecker, G. E., Roszkowski, M. J., & Cutler, N. E. (1990). Investors' risk tolerance and return aspirations, and financial advisors' interpretations: A conceptual model and exploratory data. *Journal of Behavioral Economics*, 19(4), 377–393. [https://doi.org/10.1016/0090-5720\(90\)90024-2](https://doi.org/10.1016/0090-5720(90)90024-2)
- Snoj, B., Pisknik Korda, A., & Mumel, D. (2004). The relationships among perceived quality, perceived risk and perceived product value. *Journal of Product & Brand Management*, 13(3), 156–167. <https://doi.org/10.1108/10610420410538050>
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203–220. [https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/10.1016/S0022-4359(01)00041-0)
- Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction formation: An extension. *Journal of Marketing Research*, 25(2), 204–212. <https://doi.org/10.2307/3172652>
- Von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior*. Princeton University Press.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- Xiao, J. J. (2008). *Handbook of consumer finance research*. Springer.

- Yuen, K. S. L., & Lee, T. M. C. (2003). Could mood state affect risk-taking decisions? *Journal of Affective Disorders*, 75(1), 11–18. [https://doi.org/10.1016/S0165-0327\(02\)00022-8](https://doi.org/10.1016/S0165-0327(02)00022-8)
- Zaichkowsky, J. L. (1994). The personal involvement inventory: Reduction, revision, and application to advertising. *Journal of Advertising*, 23(4), 59–70. <https://doi.org/10.1080/00913367.1943.10673459>
- Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35(2), 151–175. <https://doi.org/10.1037/0003-066X.35.2.151>
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2–22. <https://doi.org/10.2307/1251446>