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## **Framing Effects and Information Processing of Individual Investors**

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The framing of financial products can strongly influence information processing and thus risk-taking behavior of individual investors. For example, investment portfolios can be presented in aggregated or segregated framing, meaning that they can display either the overall distribution or the single investments of the investment portfolio itself. Two experimental studies demonstrate that correlation and variance of investment portfolios as well as the type of information processing have great influence on the preferred framing. If the variance of the portfolio is extremely high, the aggregated presentation mode is no longer significantly preferred. Framing effects are also mainly observed for individuals who decide intuitively rather than analytically.

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# Framing Effects and Information Processing of Individual Investors

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## EXTENDED ABSTRACT

The framing of financial products can strongly influence the information processing and thus the risk-taking behavior of the individual investor. For example, financial products such as investment portfolios can be presented in aggregated or segregated framing, meaning that either the overall distribution or the single investments of the investment portfolio itself are displayed. Therefore, contractors of bundled financial products as well as investment companies are confronted with the question of how the information processing and the decision behavior of the individual investors are influenced by the framing of the products. Is an investment portfolio always evaluated more attractive by individual investors when only the portfolio's overall distribution rather than its single investments are represented?

According to this example, the influence of framing on the information processing and the risk-taking behavior of individual investors are analyzed. Up to now, framing effects and the information processing of individual investors are not examined in the context of investment portfolios. A few experimental studies concerning the framing of lottery portfolios have shown that the acceptance of a sequence of lotteries is (significantly) higher if the overall distribution is displayed rather than the set of lotteries itself. According to the standard utility theory, such behavior is irrational. However, this risk-taking behavior can well be explained by Prospect Theory. It is assumed that framing induces a certain type of information processing in terms of mental accounting; this explains why in aggregated framing decision makers process and evaluate in one mental account and in segregated framing they process and evaluate in different mental accounts.

However, investment portfolios differ from simple lottery portfolios to some extent. Investment portfolios consist of different investments that are correlated and ambiguous. These characteristics are included in the two experimental studies concerning the framing of investment portfolios. In both experiments which have been carried out, different security papers were chosen as typical investments; these were then bundled into portfolios. Besides the variation of the framing of the portfolios in an aggregated and segregated presentation mode, the risk situation was also varied. The participants were presented either with the investments under risk or with those under ambiguity. Ambiguity was induced by four experts' probability estimations on three possible environmental states (e.g., positive and negative trends on the financial market as well as sideward movements). The presentation of estimations by experts was deemed realistic in this context as investors often request several professional estimations or gather information on the predicted performances of risky investments from different sources.

Thus, the experiments were carried out based on a 2 (framing) x 2 (risk situation) design. The experiments were designed as between-subject as to framing and risk situation and as within-subject as to variation of portfolios. The participants' preferences were measured by their willingness to pay.

As loss aversion and mental accounting are mainly used to explain framing effects, the experiments shall demonstrate to what extent Prospect Theory is suitable for the analysis of framing effects. For the portfolios used in the experiments, subjective preference values can be determined by means of Prospect Theory depending on the framing. As compared to segregated framing, which assumes the processing and the evaluation in separate mental

accounts, aggregated framing implicates the processing of the performance of the portfolio in one mental account. Looking at the subjective preference values of the portfolios in the experiments, different preference values depending on the framing and higher preference values for aggregated framing appear. This demonstrates that according to Prospect Theory, the participants should prefer aggregated framing.

As framing effects appear less often when individual investors are not influenced by framing but rather think analytically when they have to take decisions, it may be suitable to test the individual's information processing directly in order to explain the effects of framing. This results in the hypothesis that the type of information processing is a factor influencing the effect of framing, and framing effects are observed mainly in intuitive and less in analytical decision makers.

The experimental studies demonstrate that the correlation and the variance of investment portfolios as well as the information processing of the investor have great influence on the preferred framing. Framing effects can be particularly observed for positively-correlated portfolios under ambiguity. Nevertheless, a 'threshold value of risk' was also observed. If the variance of the portfolio is extremely high, the aggregated presentation mode is no longer significantly preferred. Therefore, Prospect Theory cannot be used to explain the effect of framing for every portfolio for the bundled investments tested in a definitive manner. The information processing in these decision situations and the effect of framing appear to be more complex than Prospect Theory is able to display.

Framing effects are also mainly observed for individuals who decide intuitively rather than analytically. Furthermore, it was shown that women tend to decide more intuitively and are therefore more sensitive to the framing of investment portfolios. Thus, the framing of portfolios, such as investment funds, influences the individual investors' preferences. These framing effects should not only be taken into consideration when consulting individual investors and when communicating financial products, but also where the making of new products in investment companies is concerned.

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