The Behavioral Dimensions of Trading: Proximal and Distal Influences on Performance

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Decision-making theory suggests that stock-market trading decisions are in part based on the traders’ personal psychology. However, some cognitive traits of traders have been overlooked, perhaps because they appear too distal to the actual trading decision process. We investigated these traits in a simulated trading setting. In particular, we sought to identify biases that result from personality traits. To accomplish this goal we created a simulated market in which participants, endowed with cash and stock, traded with each other and were motivated to act in their self-interests by a large cash prize for the top trader. Despite the incentive we uncover personality traits that shape traders’ strategies, but at times undermine their behavior and performance.

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SESSION OVERVIEW

Behavioral finance theory suggests that individual investments decisions will, to a certain extent, be affected by characteristics of one’s personal psychology and what are said to be irrational biases (Thaler 1987). Furthermore, research on actual investment decisions shows that psychological variables do matter and actually cause individuals to make non-optimal decisions (e.g., Goldstein et al. 2008; Lee et al. 2008; Morrin et al. 2002). In that regard, investment behavior might be subject to influences and biases reflecting various cognitive traits (e.g., belief in luck), personal characteristics (e.g., gender), motivational stages (e.g. promotion or prevention focus), process responses (e.g., change in frame from gains or losses) and context characteristics (e.g., option assortment size).

Nonetheless, despite the importance of understanding the determinants of investors’ decisions, and the growing interest in them in consumer research relatively little research has examined the effect of the decision maker’s personal psychology, self-expressive needs and heuristic approaches on actual investment/trading decisions. The four papers in this special session are a step forward in such an investigation since they explore the theoretical intersection between product, investor characteristics, and behavioral tendencies in the determination of trading/investment decisions.

In the first paper, Daniel Goldstein shows that in domains involving losses, prevention-oriented individuals behave differently than predicted by the regulatory focus theory framework and, surprisingly, take greater risks. In the second paper, Stephen Gould, Ana Valenzuela, Luke Kachersky and Richard Holowczak analyze biases in traders’ strategies, behaviors, and performance that result from distal personality traits. In the third paper, Priya Raghurib and Meir Statman identify 8 self-expressive benefits of financial investing and key personality constructs that distinguish between different financial products so as to provide a multi-dimensional mapping of financial instruments. Finally, in the fourth paper, Maureen Morrin and Susan Broniarczyk explore how increasing investment fund assortment size causes individuals to choose more funds for their portfolios, which is cognitively depleting, and this process results in further use of heuristic approaches to allocating one’s dollars across the chosen funds.

Gita Johar briefly summarized the overlapping points across the four papers. Taken together, these papers highlight the important influence of both product characteristics and individual differences in determining consumers’ investment-related evaluations and choice. With well-developed frameworks and data, all four papers provide a roadmap for how the intersection between product and investor characteristics determines trading/investment decisions. To finalize the session, the audience participated in a discussion of areas of future research on the topic of behavioral finance and the role that different psychological variables play in consumers’ investment decisions.

EXTENDED ABSTRACTS

“When Prevention-Oriented Investors Take Greater Risks: Breaking a Confound”
Daniel Goldstein, London Business School, UK
Rongrong Zhou, Hong Kong University of Science and Technology, Hong Kong, China
Michel Tuan Pham, Columbia University, USA

For those who were overinvested in stocks (relative to their taste for risk), the unfortunate consequence of incorrectly-gauged investor risk preferences is all too clear in the current market downturn. Can marketers better predict consumers’ propensity for taking financial risks? Since demographic variables including age and sex are broad, and of limited predictive value (Goldstein, Johnson & Sharpe, 2008; Bajtelsmit & Bernasek, 2001), the goal of offering more individualized predictions and advice has led marketers at investment firms to devise personality scales for recommending products to investors. Unfortunately, none of these scales have been validated in a peer-reviewed article to our knowledge, and the only published journal article on the topic finds that responses from different vendors’ scales have only a modest intercorrelation, even when administered in direct succession (Yook & Everett, 2003).

A promising finding of recent years was that of Zhou and Pham (2004), who investigated financial risk taking as it connects with Regulatory Focus Theory (RFT; Higgins, 1987). Zhou and Pham showed that investments products mentally coded as promotion-oriented trigger more financial risk taking compared to investments products mentally coded as prevention-oriented (Study 2). They also showed that priming of promotion or prevention through an unrelated task framed in approach or avoidance-oriented manner steers investment toward more conservative options under prevention: mutual funds rather than individual stocks, and retirement accounts rather than trading accounts. A number of other researchers in Marketing and Psychology have found a connection between RFT and risk taking outside financial services, typically finding that promotion orientation is correlated with risk taking and prevention orientation is related to risk avoidance (Liberman, Idson, Camacho, & Higgins 1999; Crowe & Higgins, 1997; Chernev, 2004; Förster, Higgins, & Bianco, 2003; Friedman & Förster, 2001; Lee & Aaker, 2004).

In the present work, we suggest that the classical relationship between financial risk taking and regulatory focus may only tell half the story, due to a confound. Typically, taking more risk is associated with potentially greater gains and greater losses. In such situations, promotion-oriented individuals take greater risks. However, when risks are framed as losses instead of gains, greater risk taking may be necessary to avoid a certain loss. We predict that, relative to promotion-oriented individuals, prevention-oriented individuals will be more concerned with avoid loss altogether and thus more likely to take greater risks in the domain of losses.

We demonstrate this counterintuitive effect using simple gambles (Zhou, 2002). In addition, to gain deeper insight into cognitive processes, we employ the Distribution Builder methodology (Goldstein, Johnson & Sharpe, 2008). The Distribution Builder allows individuals to graphically manipulate cost-constrained prob-
ability distributions of investment wealth from which they will later draw. Its advantages over simple gamble choices are many, including the ability to: detect reference dependence in addition to risk aversion, measure reaction time, test RFT-specific hypotheses about maximum and minimum outcomes, and employ click-tracking to understand which outcome levels are attended to most. Results from the Distribution Builder studies show that in the domain of gains, promotion-oriented individuals assume more downside risk in order to obtain upside gains (relative to prevention-oriented individuals). However, in the domain of losses, the relationship reverses and it is the prevention-oriented people who take greater risks in order to escape certain losses of moderate magnitude.

This research aims to clarify the relationship between promotion/prevention orientation and financial risk taking, which has important practical applications for marketers who wish to provide responsible advice (and suitable products) to their customers.

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Behavioral finance theory suggests that stock market trading performance outcomes (e.g., making or losing money) might be subject to influences and biases reflecting various cognitive traits (e.g., belief in luck), personal characteristics (e.g., gender), process responses (e.g., change in focus on gains or losses) and behaviors (e.g., trading more or less frequently). Although the influence of some of these variables has already been studied, some of traders’ cognitive traits have been overlooked perhaps because they appear more distal to the trading process, and there are still other, more proximal variables yet to be studied. To this end we implemented a trading simulation in which participants were endowed with shares of a hypothetical stock and cash, and traded with each other for a period of 10 minutes. Importantly, in addition to measuring distal and proximal character traits, we measured participants’ cognitive and affective states before and after the trading session.

One hundred fourteen participants recruited from a large Northeastern university participated in exchange for a cash payment and the opportunity to win a larger cash prize for the top trading performer. Trading simulations were run in groups of about 25. Participants were seated at computer terminals and given an interactive demonstration of the Rotman Interactive Trader (RIT) software. The software allows participants to interact in real-time with a central limit order book by placing market orders and limit orders to buy and sell shares of a hypothetical stock. Participants were told that they would be trading a hypothetical security with shares bought. Values over 1 indicate that, on average, a trader sold his shares for a higher price than he bought them. Trading behavior and personality traits explained variation in this performance metric. Primary control (p=.019) and belief in luck (p=.056) were significant in explaining the VWAP ratio, while the number of “sell” transactions exerted a negative influence (p=.044). Finally, traders’ change in value from their starting $1 million endowment was dependent on the VWAP Ratio (p=.014). Additionally, for those who made money, desirability of control (p=.004) and primary control (p=.055) were positively related with money made while belief in luck (p=.038) and regulatory focus (p=.017) were negatively related. For those who lost money, only desirability of control was significant (p=.021) and negatively related to money made.

Overall, the results indicate that personality variables can play an important role in determining trading behavior and performance along with proximal trading variables. The next study will test these traits in the same simulation by priming them in terms of opposing characterizations of traders as being lucky versus being able to control the results of their trading.

“Personalities of Financial Products”
Priya Raghubir, New York University, USA
Meir Statman, Santa Clara University, USA

Financial products, like most products, have utilitarian attributes and expressive attributes. The utilitarian attributes of financial products include their expected returns, risk, liquidity and fees. Self-expressive attributes are those that allow us to convey to ourselves and others our values, tastes and social class. Self-expressive attributes answer the question “What does the product say about me?” For example, one self-expressive attribute of a hedge fund is status. It says “I have arrived.” An insurance policy says “I am responsible.” A socially responsible fund says “I am a good person.” An active mutual fund says “I can be a winner.”

In this paper, we examine the perceptions of the utilitarian and self-expressive attributes of financial products and how these perceptions define the overall personalities of financial products. A personality is defined as a set of traits that distinguish one entity from another. We examine whether financial products have a “personality”–a set of defining characteristics and traits that are able to distinguish one financial product from the other. In doing so, we go beyond the utilitarian attributes of financial products, and examine how these affect usage benefits. Specifically, a benefit hierarchy model translates the functional attributes of a product or service into their usage benefits, ladderizing up to the feelings that these benefits invoke among customers, and triangulating to a set of key higher order self-expressive benefits.

In a benefit hierarchy framework, lower order functional attributes (such as fees charged, rates of return, variance around the returns, guarantee of capital remaining intact, tax advantages, presence of a market and its size, etc.) map onto a set of rational benefits. These rational benefits include utilitarian benefits such as risk, return, and liquidity. However, beyond rational benefits are emotional and self-expressive benefits that capture how a product makes people feel and what it says about them. Our approach is to
map rational benefits through to these higher order self-expressive benefits that are the apex of the benefit hierarchy.

Stage 1: In the initial stage of scale development, we identified 264 words including attributes of a financial product, investor goals, descriptors of a personality, demographic descriptions, self-expressive benefits and emotions, drawing from the literatures of finance, marketing, and psychology.

Face Validity: These 264 descriptors were reduced to a set of 107 that were categorized into a set of 70 adjectives that were personality descriptors of a financial instrument; and 35 feelings and emotions that were emotional and self-expressive benefits.

Construct Validity: Study participants (n=150) rated one of twelve (savings account, checking account, stocks, time deposits, mutual funds, retirement accounts, hedge funds, private equity, stock options, life insurance, real estate and lottery tickets and gambles) instruments using the 70 adjectives (1=Not at all, and 5=Very) and 35 emotions (1=Not at all, and 9=Very). Exploratory factor analysis with a varimax rotation using cutoffs of .60 for factor loadings was used to reduce the data to 11 factors using 37 descriptors, and six factors using the 35 emotions.

Stage 2: Stage 2 investigated six instruments: savings accounts, stocks, retirement accounts, mutual funds, hedge fund and real estate. All participants were asked to “Think that the ___ is a person,” prior to being asked to rate it on the set of 37 adjectives, and 35 emotions, using a nine-point scale. All participants (n=56) rated all six instruments on the adjectives as well as rated the feelings these elicited with the order of the instruments fully counterbalanced.

Results

Personality Constructs: The 37 items tapping personality constructs were subjected to exploratory factor analysis with a varimax rotation for each of the six different financial instruments to assess which items to retain. Items whose factor loading was low overall (i.e., lacks predictive validity); that load onto a marginal factor (e.g., indicating low reliability), load onto different factors for different financial instruments (i.e., is not generalizable), and/or loads less onto a factor than other items (i.e., is not distinctive) were dropped, leading to 27 of the items being retained:

| Good: positive, good, valuable (alpha=.85) |
| Bad: negative, bad worthless (alpha=.86) |
| Aesthetic: Beautiful, aesthetic and pretty (alpha=.90) |
| Intelligent: intelligent, up to date, latest (alpha=.77) |
| Boring: sleepy, shy, lethargic, and old (alpha=.83) |
| Fun: exciting, amusing, energetic, lively, young, entertaining, adventurous, fun, and playful (alpha=.95) |
| Masculine: Masculine, extroverted (alpha=.74) |

Self-expressive Benefits: A similar set of analyses on the 35 items in the self-expressive benefit inventory revealed (Scales for each factor were reliable (α>70)):

| Honest: Honest, free, and common |
| Adventurous: fearless, reckless, adventurous, risk taker |
| Smart: special, smart, A winner, A sense of achievement, and responsible |
| Good: Intelligent, High Status, A Good person, optimistic |
| Hip: Playful, young, cool, hip |
| Connectedness: A sense of belonging, A part of a club, A member of a community |
| Prestige: Elite, exclusive |
| Power: A sense of control, A sense of dominance, A expert, Unique |
| Bad: Pessimistic, patriotic, and sinful |

Stage 3: To be conducted: Testing Predictive Validity: We will test this instrument with a group of adult experienced investors using a wide range of financial products and eliciting attitudinal and behavioral responses (e.g., attitude, experience, portfolio allocation, intentions). Robustness Checks: The survey will also collect information on the psychological, demographic and behavioral profiles of investors to examine differences in the perception of financial products across sub-groups of individuals and identify moderating variables.

“The Moderating Effect of Fund Assortment Size on the 1/N Heuristic”

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Susan Broniarczyk, University of Texas at Austin, USA
J. Jeffrey Inman, University of Pittsburgh, USA

Does offering more choices in retirement plans result in systematic decision biases? Prior research has shown that investors sometimes exhibit a naive diversification strategy whereby they evenly divide up their dollar contributions among all of the options offered, engaging in what Benartzi and Thaler (2001) term the “1/n heuristic.” Interestingly, more recent research by Huberman and Jiang (2006), suggests that few investors engage in the strict definition of the 1/n heuristic. Notably, the work of Huberman and Jiang (2006) was based on a data set whose mean fund set size was about double that used by Benartzi and Thaler (2001); 13.7 versus 6.8 mean number of funds offered, respectively. Could the discrepancy in results reported by these two research teams be attributed to the different fund assortment sizes from which investors chose?

Our research explores the moderating effect of mutual fund assortment size on use of the 1/n heuristic by decomposing the heuristic into its two underlying behavioral dimensions: 1) choosing the funds from among those offered in which to invest, and 2) deciding how to allocate one’s dollars across the set of chosen funds. Importantly, we argue that the two behavioral tendencies operate differently as a function of fund assortment size due to cognitive depletion. Recent investigations (Huberman and Jiang 2006) indicate that most retirement investors tend to invest in about three to five, or a handful, of funds. Thus a naive interpretation of portfolio diversification would seem to involve the sheer number of funds consumers want to include in their portfolios. If most investors feel they should be investing in a handful of funds to be sufficiently diversified, and only a few are offered for investment in a 401k plan, then many investors are likely to include all of the available options in their portfolios in order to arrive at the desired number of investment options—even if the set of options made available does not perfectly match their preferences. If this is the case, the 1/n heuristic should be less evident as fund assortment size increases. Because Benartzi and Thaler (2001) examined smaller assortment sizes, their findings may reflect, in part, a ceiling effect due to an inadequate fund assortment.

Although we posit that choosing from a larger assortment will reduce the tendency to invest in all available funds, we do expect that the average number of funds chosen will increase (Benartzi and Thaler 2001). Choosing from a larger fund assortment will encourage investors to choose more funds for their portfolios, because they use assortment size as a normative consumption cue regarding the sheer number of funds they should choose (Kahn and Wansink 2004). When consumers do not have well-defined preferences in a choice domain, they construct their preferences using strategies that are contingent on task demands (Bettman et al. 1998). A conse-
quence of this behavior is that investors become cognitively de-
pleted (Pocheptsova, Amir, Dhar and Baumeister 2009), yet are
faced with the daunting task of how to allocate their dollars among
the large number of funds they have chosen for their portfolios.
Simply dividing up one’s dollars approximately evenly among the
chosen alternatives represents one way to simplify this stage of
the decision task. Thus, we expect that this aspect of the $1/n$ heuristic
will be more evident as assortment size expands because of the
tendency of investors to choose more funds when selecting from a
larger assortment, which depletes their cognitive resources.

To date, two studies among adults have been completed, in
which fund assortment size is manipulated (n=260, mail survey;
n=363, online panel). In these studies mediation analyses are based
on the number of funds invested in and thought listings. A third
study, in which both fund assortment and cognitive load are
manipulated, is in progress. As a whole, the results support our
theoretical framework and help to reconcile discrepancies noted in
previous research regarding asset allocation heuristics.

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