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A Study of Uncertainty & Expectations in Asset Markets

Pingnan Li[1,a,*]

[1]*Durham University, Durham DH1 3LE, UK*
a. hjnz65@durham.ac.uk
**corresponding author*

Abstract: This paper comprehensively examines the impact of expectations and uncertainty on asset market dynamics, with a particular focus on the role of conformity, momentum effects, and strategic uncertainty in shaping market participants' behavior and influencing asset prices and trading volumes. Drawing upon the existing literature, the paper critically reviews the role of these factors in contributing to market inefficiencies, volatility, and potential instability. Acknowledging the limitations of laboratory settings and the challenges in controlling for cognitive factors, such as players' perceptions of their opponents' rationality, the study aims to provide a deeper understanding of the dynamics of mispricing in asset market experiments. Furthermore, the paper discusses the importance of considering psychological factors, such as reversal and momentum effects, when analyzing financial market dynamics and investor decision-making. By proposing a new experiment that addresses the questions raised in the literature, this paper seeks to advance our knowledge of the critical factors influencing investor decision-making in the face of uncertainty, the factors that contribute to mispricing in asset markets, and the importance of public knowledge in shaping market outcomes. The insights gleaned from this research contribute significantly to our understanding of uncertainty and expectations in asset markets and have important implications for market participants, policymakers, and researchers seeking to foster greater stability and efficiency in financial markets.

Keywords: asset market dynamics, momentum effects, investor decision-making

1. Introduction

This paper addresses the limitations of laboratory settings in capturing the complexities of decision-making situations and the impact of expectations and uncertainty in asset market dynamics. It seeks to explore the factors that contribute to market inefficiencies and potential instability by examining the role of conformity, momentum effects, and strategic uncertainty in shaping market participants' behavior. Drawing upon the existing literature, the study delves into the cognitive factors, such as players' perceptions of their opponents' rationality, which are difficult to control for in experimental settings. The main objective is to contribute to a deeper understanding of the dynamics of mispricing in asset market experiments and advance our knowledge of these critical factors in decision-making situations.

The theoretical framework of this paper highlights the importance of participants' expectations of others' behavior, which indirectly depends on others' rationality. Through this lens, the study aims to provide insights into the role of expectations and uncertainty in asset market dynamics. The study of

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asset market dynamics has long been an area of interest for researchers and practitioners alike. Early research in this field proposed that uncertainty about others' behavior contributes to mispricing in asset markets. Lei et al. provided empirical evidence to support this claim, suggesting that uncertainty and expectations play a crucial role in market outcomes [1].

More recent studies have further explored these phenomena suggesting that confusion about intrinsic value and dividend distributions can also contribute to mispricing. These findings underscore the importance of understanding the various factors that influence decision-making processes in financial markets, particularly in the face of uncertainty and limited information. Building upon these previous findings, Cheung et al. (hereinafter CHP) and Akiyama et al. (hereinafter AHI) explored the relevance of strategic uncertainty in asset market dynamics [2, 3]. Strategic uncertainty arises from the lack of information about other participants' behavior, intentions, and beliefs, leading to a wide range of outcomes depending on the degree of consensus or divergence among market participants. Both studies highlighted the importance of understanding the psychological and strategic components of decision-making processes in financial markets, particularly when faced with complex and ambiguous information.

While the existing literature has provided valuable insights into the role of uncertainty and expectations in asset markets, there is still much to learn about the underlying mechanisms and cognitive biases that drive market participants' behavior. This paper seeks to further examine these dynamics and contribute to the ongoing discussion on the factors that influence investor behavior and market outcomes. By critically reviewing the studies by CHP and AHI, and proposing a new experiment that addresses the questions raised in these studies, this paper aims to enhance our understanding of the complexities of investor decision-making in the face of uncertainty and the factors that contribute to mispricing in asset markets.

2. Questions Addressed

In the realm of financial markets, understanding the factors that influence asset prices and trading volumes is critical for both researchers and policymakers. The studies conducted by CHP and AHI address the role of uncertainty and conformity in shaping market participants' behavior and expectations. In order to further elaborate on the questions addressed in these studies, it is essential to delve deeper into the underlying principles and mechanisms at play. CHP investigated the hypothesis that individuals tend to conform to the behavior of others when forming their expectations, which in turn influences asset prices and trading volumes. This conformity effect can be explained through the lens of social influence and herd behavior. In financial markets, individuals often face complex and ambiguous information, making it challenging to form accurate expectations about future asset prices. In such situations, market participants may resort to following the actions of others as a heuristic or shortcut to decision-making, leading to conformity. The momentum effect identified by CHP can be attributed to the tendency of market participants to extrapolate past price trends into the future. This cognitive bias, known as the representativeness heuristic, prompts individuals to assume that similar patterns will persist over time. The combination of conformity and momentum effects can create a self-reinforcing feedback loop, driving asset prices away from their fundamental values and contributing to market inefficiencies.

On the other hand, AHI explored the impact of strategic uncertainty on asset prices and trading volume. Strategic uncertainty arises from the lack of information about other participants' behavior, intentions, and beliefs. Market participants may engage in strategic behavior based on their beliefs about how others will act, which could lead to a wide range of outcomes depending on the degree of consensus or divergence among those beliefs. When faced with strategic uncertainty, individuals often adopt decision-making strategies based on game theory, such as adopting a Nash equilibrium strategy or a mixed strategy. In these cases, market participants consider the potential actions of others

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and adjust their behavior accordingly, seeking to maximize their expected utility. However, as AHI observed, strategic uncertainty can result in lower trading volumes and higher volatility due to the divergence of beliefs and the cautious behavior of market participants.

In summary, the studies conducted by CHP and AHI address two critical aspects of uncertainty in financial markets: conformity and strategic uncertainty. Both of these factors can significantly impact asset prices and trading volumes, highlighting the importance of understanding the underlying principles and mechanisms governing market participants' behavior. By further examining these phenomena and the cognitive biases that drive them, researchers can gain valuable insights into the factors that contribute to market inefficiencies, volatility, and potential instability. These insights can, in turn, inform the development of policies and strategies aimed at fostering greater stability and efficiency in financial markets.

3. Critical Evaluation

CHP explored the effects of training and public knowledge on mitigating confusion among market participants. In their experiment, they provided training on the concept of diminishing fundamental value to all participants, but the training was not publicly disclosed. This led to an intermediate level of mispricing at 32.2%, indicating that training alone has a limited influence on market efficiency. However, when the training became public knowledge, mispricing significantly decreased from 45.7% to 20.4% compared to a baseline with no training. The study discovered that public knowledge has a distinct and statistically significant effect on reducing mispricing beyond training alone by minimizing within-treatment heterogeneity. These findings reveal the importance of public knowledge, which has been underemphasized in recent literature on confusion.

AHI sought to diminish strategic uncertainty by introducing computer traders that follow an equilibrium strategy. They conducted experiments in two market settings: one with 1 human and 5 computer traders (1H5C) and another with 6 human traders (6H). Only the participants in the 1H5C treatment were informed about the computer traders' behavior, eliminating strategic uncertainty for the single human trader. The experiment employed a call market rule to facilitate the inclusion of computer traders, who submitted orders based on the fundamental value of the asset in each period. Traders placed buy and sell orders with a maximum and minimum price they were willing to pay or accept, with transactions occurring at the market-clearing price among traders with matching orders.

AHI compared the price forecasts of human traders in the 1H5C and 6H treatments to evaluate the impact of strategic uncertainty on deviations from fundamental value. In the 1H5C treatment, deviations resulted from bounded rationality, while in the 6H treatment, deviations stemmed from both strategic uncertainty and bounded rationality. The study found that strategic uncertainty and confusion each accounted for 50% of the median initial forecast deviation. The influence of strategic uncertainty was more pronounced among participants with higher cognitive ability, as measured by their CRT scores. Those with perfect scores demonstrated a 70% contribution of strategic uncertainty to the median initial forecast deviation, whereas lower scorers did not exhibit a significant effect.

The results from both AHI and CHP provide convincing evidence that strategic uncertainty and individual bounded rationality are potent explanatory factors for initial forecast deviations, despite differences in experimental designs and data examined. These studies underscore the vital role of uncertainty and expectations in asset market dynamics, emphasizing that strategic uncertainty can substantially affect trading volumes and price movements. Moreover, individuals may depend on the behavior of others when forming their own expectations, particularly in high-uncertainty situations.

While the theoretical frameworks proposed by both studies offer valuable tools for understanding these phenomena, it is important to recognize that the laboratory settings and small sample sizes may restrict the applicability of these findings to real-world investors. Nevertheless, the insights gleaned from these studies contribute significantly to our understanding of uncertainty and expectations in

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asset markets, laying the groundwork for future research in this field. As a segue into the discussion of investor behavior in asset markets, these insights set the stage for a deeper exploration of the factors that influence decision-making in the face of uncertainty.

4. Investor Behavior in Asset Market

Investor behavior in asset markets is a critical aspect of financial market dynamics, and understanding the factors that influence decision-making processes is essential for both researchers and practitioners. Recent empirical studies have highlighted the importance of various behavioral factors, such as reversal and momentum, in shaping investors' decision-making in asset markets [4]. These factors provide valuable insights into the complex interactions between investor psychology and financial market outcomes.

Reversal, a long-term phenomenon, refers to the tendency of poorly performing assets to experience a reversal in performance over time, outperforming their previous records, while well-performing assets might underperform in the long run [5]. This behavior can be attributed to several factors, such as mean reversion, overreaction, and changes in the underlying fundamentals [6]. Mean reversion is the concept that asset prices eventually return to their historical averages after periods of extreme deviation. Overreaction occurs when investors react excessively to new information, causing prices to overshoot their fundamental values before eventually correcting them [6]. Changes in fundamentals may also drive reversals as market participants reassess the true value of an asset over time.

Momentum, a short-term phenomenon, refers to the tendency of assets to continue their recent price trends [7]. This behavior is often driven by factors such as herding, positive feedback trading, and the disposition effect [8]. Herding describes the inclination of investors to follow the decisions of others, either due to the belief that others possess superior information or as a risk management strategy. Positive feedback trading involves buying assets when prices are rising and selling when prices are falling, reinforcing existing trends [9]. The disposition effect is the tendency of investors to sell winning assets too early and holds onto losing assets too long, which can also contribute to momentum [10]. Recent empirical research has examined the role of these behavioral factors in various asset markets, including equities, bonds, and commodities. For instance, studies have investigated the presence of reversal and momentum effects in different countries, industries, and time periods, providing evidence of their pervasiveness and impact on asset prices [11]. Furthermore, research has explored the interaction between these factors, with some studies suggesting that momentum and reversal effects can coexist in financial markets, potentially leading to complex and nonlinear price dynamics [4]. Understanding the roles of reversal and momentum in investor behavior is crucial for financial market participants, such as portfolio managers, risk managers, and regulators. By incorporating these behavioral factors into their models and strategies, market participants can better anticipate market movements and adjust their actions accordingly [12]. Additionally, acknowledging the influence of these factors can help regulators design policies that aim to mitigate the potential negative consequences of investor biases, such as financial instability and market inefficiencies [13].

In conclusion, the studies on investor behavior in asset markets, particularly those focusing on reversal and momentum effects, highlight the importance of considering psychological factors when analyzing financial market dynamics. Building upon the findings of CHP and AHI, recent empirical research has delved deeper into the complexities of investor decision-making in the face of uncertainty, offering valuable insights for both academics and practitioners. As the financial landscape continues to evolve, understanding the factors that drive investor behavior becomes increasingly important for anticipating market movements and developing effective investment strategies.

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5. Conclusion

In conclusion, the studies conducted by CHP and AHI have shed light on the role of conformity, momentum effects, and strategic uncertainty in shaping market participants' behavior in financial markets. These factors significantly impact asset prices and trading volumes, emphasizing the importance of understanding the psychological and strategic components of decision-making processes in financial markets. The insights gained from these studies offer valuable contributions to the literature on investor behavior, particularly in the context of asset market dynamics.

However, one limitation of these studies is their reliance on laboratory settings and small sample sizes, which may not fully capture the complexities and nuances of real-world investor behavior. Future research could address this limitation by employing larger and more diverse samples, as well as exploring the applicability of these findings to real-world financial markets. Additionally, further investigation into the interplay between different behavioral factors and the potential existence of other cognitive biases in investor decision-making could enhance our understanding of the factors that drive market movements and contribute to market inefficiencies. Moreover, as the financial landscape continues to evolve, understanding how technological advancements and increased interconnectedness impact investor behavior will become increasingly important. Future research could explore the implications of these changes on the dynamics of financial markets, as well as their potential effects on the influence of conformity and strategic uncertainty.

In summary, the studies on investor behavior in asset markets, especially those focusing on conformity, momentum effects, and strategic uncertainty, underscore the importance of considering psychological factors when analyzing financial market dynamics. As the financial landscape continues to evolve, understanding the factors that drive investor behavior becomes increasingly important for anticipating market movements, developing effective investment strategies, and informing policy decisions.

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