論文の内容の要旨

論文題目 Essays on Heterogeneous Investors and Asset Prices
(異質的投資家と資産価格に関する研究)

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We investigate the relationship between heterogeneity of investors and asset prices. The importance of heterogeneity of investors in the functioning of asset markets have been recognized by financial economists. If there was no heterogeneity, there would be no trade. We have several types of heterogeneity of investors: expectations, risk aversion, information and so forth. We focus on trading volume, funding structure, trading behaviors of different investor groups and volatility.

The aim of my research is to understand the instability of financial markets, especially, stock markets. The rise of asset prices based on non-fundamental reasons lead to the collapse of prices. Asset price drops are often accompanied by the damage of portfolio values of investors. This results in distress selling of (possibly unrelated) assets because investors, especially short-term investors, call for liquidity. If investors expect that others run the market, she also try to sell assets and withdraw her money from the market. Collective selling of assets lowers asset prices. The interaction of heterogeneity and collective behavior of investors can generate the instability of financial markets.

In Chapter 2, we empirically investigate the relationship between measures of trading activity, return, and bull-bear market cycles in Japanese stock market. Trading activities are measured by trading volume, trading value and market turnover. At first, using two-state Markov switching model, we identify two regimes of bull market and bear market: We define the state of high mean and low volatility as bull market, and the state of low mean and high volatility as bear market.

Next, we estimate the relation between return and measures of trading activities by using the two-state bivariate Markov switching model. We found that trading activity has positive relation with past return during bull markets while small relation with past return during bear markets. We can interpret the findings as follows: In the former regime, investors react the past return because the stock performance affects their beliefs and the resulting changes in beliefs induce trades. On the other hand, the past return has no influences on investors' beliefs because investors assign little weight on the past return when they revise their beliefs under more uncertain circumstances. This differences of market environment can affect belief revision processes through the accuracy of information or confidence of investors.

The results show that the variance of trading activity at bull state is higher than bear state. It means that trading volume fluctuates wildly at the same time when it is affected by past returns strongly. We interpreted the coincidence as the following: Trading volume is generated by heterogeneity of investors such as disagreement and belief revisions. When investors are confident of the accuracy of their private information, they revise their beliefs based on the information. Thus, the information arrivals can change the degree of disagreement across investors over time. A revision of a belief induces a change in asset holdings, and it causes trading with other market participants who also try to change their positions. If the information arrival induces large disagreement, it generates large trading volume, and vice versa. To the contrary, they revise their beliefs less actively when they are uncertain about their private information. In this case, the resulting changes of disagreement are small and the variation of trading volume is also small. Therefore, the variance of error term is large in the regime in which the coefficient of past returns is large.

An important explanation is overconfidence of investors. During the periods of good performance of asset like bull market, investors become confident of their investment skills. This behavioral assumption generates the positive correlation between trading volume and past return. Of course, there exists sophisticated investors who are not overconfident in the market. We can speculate that the fraction of overconfidence investors can change and its impact on the return volatility also can change, thus the interaction between investors behavior and market environment generates bull-bear market cycles.

Chapter 3 presents price impact of short-term investors who face liquidity shocks. We investigate the model where short and long horizon investors trade stocks. Short-term investor faces the risk of exogenously forced liquidation, and the occurrences of liquidity shocks are correlated across short-term investors. This results in the volatility is experienced in the stocks which are held by mostly short-term investors.

Chapter 4 presents the relationship between stock return dynamics and trading behaviors of different investor types in the first section of Tokyo Stock Exchange. Investor types include brokered trading by corporations, financial firms, individuals and foreigners.

First, we examine the relationship between market returns and trading activities of different investor types. We start investigating whether different trading groups have different trading patterns. We define the investor behaviors as net trading flows and trading fractions in the total trading value at each period. As the existing literature, we found that different trader types have different trading patterns. Domestic investors like individuals tend to be net-sellers when price increases, while foreign investors tend to be net-buyers when price increases. Trading shares are different from net trading flows. When returns

are positive, shares of domestic investors increase. The trading share of foreign investors is negatively correlated with market returns. Thus, we conclude that the trading by foreign investors is intensive when price declines. We also employ the VAR model to examine the dynamic relation between return and trading activities. We found that all trading activities are positively autocorrelated.

In the analysis of volatility, we investigated the contemporaneous relation between volatility and foreigners' trading activity. Empirical results show that the trading share of foreign investors is positively correlated with market volatility while net trading flows are negatively associated with market volatility. Both results suggests that volatility rises during periods of falls in prices.

We also investigate the dynamic relation of volatility with trading activity of foreigners. By regressing returns on trading activity, we generated residuals which are orthogonal to trading activity of foreigners. We examine whether the asymmetric volatility effect exists. The result shows that there is no correlations between volatility and signs of past residuals, that is, the asymmetric volatility effect does not stem from uncorrelated components of return with trading activity.

Our study is motivated by the empirical facts about heterogeneity in different investor behaviors and theoretical predictions about the volatility amplification because of trend-chasing trading patterns. In our results, foreign investors are trend-chasers in the sense that they purchase stock on balance when stock prices increase. However, both current and past net trading flows of foreigners are negatively correlated with market volatility. This is not consistent with the story that trend-chasing behaviors amplify volatility.

According to the results in this study, foreigners trade stocks intensively when stock prices decline and, at the same periods, they tend to sell stocks on balance. Accordingly, there is an asymmetry in the trading behaviors of foreigners: When they sell stocks, they intensively trade stocks relative to other investors. It is possible to explain that they sell stocks rapidly and frequently to avoid losses due to price decline and frequent trading results in high volatility. Existing literature of the volatility-volume relation have documented that trading frequency generates volatility: high-frequency trading is positively correlated with market volatility. The relation between volatility and trade frequency may result from the fluctuation of market liquidity.

Heterogeneous investors are one of the most important topics in financial economics. I believe that the research program of heterogeneous investors can contribute the understanding of futures of financial markets such as trading volume, bubbles and crashes and volatility dynamics.