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Institutional herding and risk–return relationship☆

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ABSTRACT

This study investigates the impact of institutional herding on the relationship between risk and return. The important findings are as follows. First, the results show that if the multiple regression analysis of risk–return relationship does not consider institutional herding, the relationship is weak. Second, the behavior of institutional investors can link to an explanation for the risk–return relationship, especially foreign institutional investors. Third, the empirical evidence supports the effect of quintile ranking of institutional herding on the risk–return relationship, suggesting that the stronger the institutional herding, the greater the explanatory power for the risk–return relationship. Finally, qualitative comparative analysis supports the multiple regression analysis findings.

1. Introduction

Behavior finance and risk–return tradeoff relationship are two main research streams in finance. This study links the actual behavior of institutional investors to the risk–return relationship. Over past twenty years, institutional investors' fraction of market capitalization largely increases in financial markets. The growing institutional presence induces a common perception of institutional herding. Institutional herding means that institutional investors follow each other to buy or sell the same securities, affecting the change in risk (Avramov, Chordia, & Goyal, 2006; Bennett, Sias, & Starks, 2003; Huang, Lin, & Yang, 2015; Liao, Huang, & Wu, 2011; Nofsinger & Sias, 1999; Sias, 2004). Examining institutional herding may clarify the relationship between risk and return. The main contribution of this study is to analyze whether institutional herding behavior affects the risk–return relationship.

The theoretical asset pricing models, such as the Capital Asset Pricing Model (CAPM), argue that the expected return on financial assets should have a positive correlation with the systematic risk, which is risk–return tradeoff relationship. The existing literature, however, finds inconclusive evidence of the relationship between asset return and risk, especially in stock market. For example, Baillie and DeGennaro (1990), examine the risk–return relationship by using daily and monthly data and find that this relationship is weak. Theodossiou and Lee (1995) and Choudhry (1996) also have the similar findings.

In contrast, other related literature shows a positive risk–return relationship (Bollerslev & Zhou; Campbell & Hentschel, 1992; Darrat, Gilley, Li, & Wu, 2011; French, Schwert, & Stambaugh, 1987; Ghysels, Santa-Clara, & Valkanov, 2005; Pindyck). Among those researchers, Pindyck (1984) attributes much of the increase in risk premiums in the 1970s to the increase in stock volatility. In addition, Bollerslev and Zhou (2006) show that the relationship between return and implied volatility is unambiguously positive, whereas the relationship between return and realized volatility is unclear. Therefore, a new perspective is necessary to understand the risk–return relationship.

In addition to filling this gap, the study also examines the impact of extreme events on the risk–return relationship. A recent example is the 1997 Asian financial crisis. Duan and Zhang (2001) find that the Asian crisis induces a substantial decrease in the return and increase in the volatility in the Hong Kong financial market (Connolly, Stivers, & Sun, 2005; Poon & Granger, 2005). Furthermore, Hwang and Salmon (2004) show that the Asian financial crisis has a significant impact on the investment behavior (Bowe & Domuta, 2004; Kaminsky & Schmukler, 1999). Much recent research on the financial crisis in 2008 suggests that the crisis results in substantially large influence on the global financial market (Ashby, Peters, & Devlin, 2014; Evans & Borders, 2014; Hausman & Johnston, 2014). To measure the impact of this crisis on the linkage between institutional herding and the risk–return relationship, the study separates a sub-period of 2007–2008.

Finally, the study also uses qualitative comparative analysis (QCA) to check the robustness of the empirical result of the linkage between institutional herding and risk–return relationship. The important findings are as follows. First, the results show that if the multiple regression analysis of risk–return relationship does not consider institutional herding,

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the relationship is weak. Second, the behavior of institutional investors can link to an explanation for the risk–return relationship, especially foreign institutional investors. Third, the empirical evidence supports the effect of quintile ranking of institutional herding on the risk–return relationship, suggesting that the stronger the institutional herding, the greater explanatory power for the risk–return relationship. Finally, qualitative comparative analysis supports the multiple regression analysis findings.

The remainder of the study is as follows. Section 2 introduces the literature review and research hypotheses. Section 3 describes the data and research method. Section 4 summarizes the empirical results. Section 5 gives the concluding remarks.

2. Literature review and research hypotheses

2.1. The risk–return relationship

Intertemporal risk–return relationship is a fundamental concept in finance. Merton (1973) elegant Intertemporal Capital Asset Pricing Model (ICAPM) predicts a positive relation. However, the empirical evidence on the intertemporal risk–return relation is inconclusive.

Black (1976) first presents the leverage hypothesis, which predicts a negative relationship between current returns and future volatility. This hypothesis states that the percentage of the firm's equity value would decrease as the value of a firm declines. Because the whole risk of the firm is borne by its equity, the risk of equity return should subsequently increase. Christie (1982) and Schwert (1989) examine the correlation between S&P 500 daily return and volatility and find that the negative risk–return relationship is difficult to explain based on the leverage estimates (Hibbert, Daigler, & Dupoyet, 2008; Low, 2004). Therefore, the evidence of leverage hypothesis is inconclusive.

Poterba and Summers (1984) propose the volatility feedback hypothesis, which depends on the presence of time-varying risk premium in the risk–return relationship. Their model shows that stock returns present a negative skew. This characteristic could dampen the positive change in expected return while amplifying the negative change in expected return. Other studies, such as those by Glosten et al. and Engle and Ng, use various GARCH-type models and find supportive evidence for the volatility feedback hypothesis. Campbell and Hentschel (1992) and Hibbert et al. (2008), however, find evidence which is inconsistent with that of Glosten, Jagannathan, and Runkle (1993) and Engle and Ng (1993). Therefore, the evidence of volatility feedback hypothesis is also inconclusive.

2.2. The behavioral explanation

Low (2004) proposes a behavioral explanation that characterizes the correlation of return and risk based on investors' risk perception. He examines the relationship between the S&P 100 returns and the percentage change in the implied volatility and finds that this relation is asymmetric and nonlinear, which is a downward-sloping S-curve. In addition, Hibbert et al. (2008) report that the behavioral hypothesis can explain the short-term risk–return relationship. This study adopts the behavioral notion of Shefrin (2005, 2008) that the negative risk–return relationship is a form of representativeness, affect, and extrapolation bias. Shefrin (2005, 2008) suggests that, conditional on the survey results, investors consider the high return and low risk as a representative of good investment, and thus connect negative return with risk.

2.3. Institutional herding

Prior studies indicate that institutional herding has a considerable impact on stock return and risk (Avramov et al.; Bennett et al.; Iihara, Kato, & Tokunaga, 2001; Nofsinger & Sias; Sias, 2004; Wermers, 1999, 2000). For example, Nofsinger and Sias (1999) show a positive correlation between changes in institutional ownership, which is the proxy of institutional herding, and return during the sample period. The results also suggest that institutional herding affects stock prices more than herding by individual investors. Bennett et al. (2003) find that the changes in institutional ownership have a relationship with the returns measured during the same period. Specifically, they separate the institutional owners into five classes and find that different types of institutional investors show heterogeneous preferences. Avramov et al. (2006) demonstrate that following a negative return, herding investors dominate the selling, thus inducing an increase in risk.

In general, these findings provide stylized evidence of the long-term relationship between changes in institutional ownership and risk. This study extends these empirical results and links institutional herding to the risk–return relationship. Therefore, based on the existing literature, the measure of institutional herding is the changes in institutional ownership. Positive changes imply herding to buy and negative changes imply herding to sell.

H1. Institutional herding plays an important role in the risk–return relationship.

Evidence shows that if institutional herding is an important factor in explaining the risk–return relationship, the behavior of institutional investors do have a significant impact on this relationship.

In addition, this study further examines the impact of the magnitude of institutional herding on the risk–return relationship. If institutional investors do play a role in the risk–return relationship, the magnitude of institutional herding may also affect the significance of the risk–return relationship.

H2. The greater magnitude of institutional herding, the more significant of the risk–return relationship.

To test the hypothesis, the study groups all sample firms into three quintile ranks with respect to the negative and positive institutional herding, respectively. Then, the testing process is the same in both hypotheses.

3. Data and method

This study collects 25 individual stocks with options traded on the Taiwan Stock Exchange from January 1, 2005 to Dec. 31, 2013, a period of 2236 trading days. This study analyzes the data of individual stock and equity options from the Taiwan Economic Journal (TEJ) database, which provides the daily stock prices and the individual stock ownership of three types of institutional investors: foreign investors, mutual fund institutional investors, and dealer investors. In addition, the study also collects risk-free rates, option prices, strike prices, maturity dates, cash dividend, and option's identity.

This study also investigates the impact of the global financial crisis on linkage between institutional herding and risk–return relationship through a sub-period analysis of all the 2008 empirical tests. Following Fahlenbrach and Stulz (2011); Beltratti and Stulz (2012), and Erkens, Hung, and Matos (2012), this study defines the period from January 1, 2005 to June 30, 2007, as the period before the financial crisis (BFC), with 614 total transactions; the period from July 1, 2007 to December 31, 2008, as the period of financial crisis (FC), with 377 total transactions; and the period from January 1, 2009 to Dec. 31, 2013, as the period after the crisis period (AFC), with 1245 transactions.

3.1. Risk measure: implied volatility

This study uses the Fischer Black and Scholes (1973) formula to estimate the implied volatilities for European-style equity options; other alternative approaches are also available to use, such as neural