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Do foreign institutional traders have private information for the market index? The aspect of market microstructure

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ABSTRACT

We investigate whether foreign institutional investors possess private information in index futures trading based upon six-year market index futures transaction data on the Taiwan Futures Exchange (TAIFEX). According to the French and Roll (1986) ‘decomposition of price formation’, our empirical results rule out the possibility that volatility dynamics are driven by public information and mispricing, since the findings indicate that private information proxied by information-related intraday patterns of volatility and bid-ask spread would be the major cause of price variations. A test of the information hypothesis of Schlag and Stoll (2005) provides further support for the existence of private information in foreign institutional trading. Finally, when calculating the cumulative return for foreign institutional traders from detailed account-by-account trading data, the conclusions drawn from our empirical analysis remain unchanged.

1. Introduction

Foreign institutional investors, particularly those trading in individual stocks, invariably possess firm-specific information which is not available to the general public; as such, they are invariably regarded within the extant related literature as better informed and more sophisticated traders than individual investors.¹ For example, using daily data on the 16 largest Finnish stocks, [Grinblatt and Keloharju \(2000\)](#) found that over a two-year period, more stocks that performed well over the next 120 trading days were bought by foreign investors and domestic financial enterprises than individual domestic investors. [Seasholes \(2000\)](#) also found evidence in Taiwan of foreign institutional investors buying (selling) individual stocks just before positive (negative) earnings announcements, while domestic investors were found to trade in the opposite direction. Similarly, <http://dx.doi.org/10.1016/j.iref.2014.05.001> [Lin and Lin \(2014\)](#) investigated information-related herding tendency of foreign institutional investors in Taiwan’s stock market. They found that foreign institutional trades can explain stock returns the subsequent trading day, implying information advantage of institutional investors over individual investors.

However, when it comes to an index market, there may be a reduced likelihood of informed traders possessing market-wide information, as compared to firm-specific information. [Pan and Potesman \(2006\)](#) could find no evidence of informed trading in three broad index options markets, essentially because investors tend to use index options primarily for hedging purposes, as opposed to speculation.² Furthermore, the market index usually reflects market-wide information, such as macroeconomic news, which we

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¹ See, for example, [Seasholes \(2000\)](#), [Grinblatt and Keloharju \(2000\)](#), [Barber et al. \(2009\)](#) and [Albuquerque, Bauer and Schneider \(2009\)](#).

² The broad market indices are the S&P 100 (OEX), the S&P 500 (SPX) and the NASDAQ-100 (NDX) indices.

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commonly viewed as public information. In cases where each trader within the same market has access to the same public information set, it seems far less certain that foreign institutional investors would be in possession of private information at the market level. Given the inherent ambiguity of any claim that foreign institutional investors must surely have access to private information relating to the index futures market, we set out in this study with the overall aim of providing new evidence on the informational role of trading by this particular group of investors.³

We adopt a comprehensive dataset of stock market index futures from the stock index futures traded on the Taiwan Futures Exchange (TAIFEX) over the years 2003 to 2008.⁴ Participation in the TAIFEX by foreign institutional investors increased from 4 per cent to 24 per cent during our sample period, the most significant increase in trading growth rate among all types of traders.⁵ Such a rapid increase in participation by foreign institutional investors provides us with a valuable opportunity to investigate the influence of foreign institutional trading on market variations in the TAIFEX and also enables us to tackle the interesting question of whether foreign institutional investors possess private information on an index market.

Our study refers to [Ito, Lyons, and Melvin \(1998\)](#) for the most accurate definition of the term ‘private information’. [Ito et al. \(1998\)](#) stated that ‘private information’ must satisfy two criteria: (i) it must not be ‘common knowledge’; and (ii) it must be ‘price relevant’. In other words, if certain institutional investors who are quicker to act on public information affecting the entire market trade in an index futures market, then we refer to the type of trades as privately informed traders throughout this paper. The theoretical setting of [Ito et al. \(1998\)](#) is as follows:

Considering a two-period trading model in which trading occurs initially at price P_0 and then again at P_1 , with a terminal payoff, F , then being realized at $t = 2$. Under this framework, the information on the terminal payoff, F , can be regarded as ‘fundamental’ private information. In contrast to this fundamental private information, the information which is unrelated to the payoff, F , but of relevance to the interim prices, P_0 and P_1 , can be regarded as ‘semi-fundamental’ private information.

P_0 and P_1 are assumed to be related to many arguments beyond the expectation of the payoff, F , such as the risk aversion and trading constraints of traders, the supply and demand of the risky asset, along with other features within the trading environment. Given that all of these features affect P_0 and P_1 , but do not alter the expectations of F , superior knowledge of these, therefore, qualifies as semi-fundamental private information within the index futures market.⁶

Our study involves several analytical stages, the first of which is similar in spirit to the analysis carried out by [French and Roll \(1986\)](#) since it provides a preliminary picture of the role of foreign institutional investors in price formation on the TAIFEX. We follow [Ito et al. \(1998\)](#) to test the flow of public information by observing whether there was any increase in the number of daily news reports within our sample period or whether it reveals any specific patterns. We hand-collected all news reports from the *Economic Daily News*, one of the major financial newspapers in Taiwan, to measure public information flows. If the public information flow remained unchanged across our sample period, then the probability of public information as the main cause of price variations would be minimized.

In the second stage, to further distinguish between private information and pricing errors, we follow the same steps used in the [French and Roll \(1986\)](#) approach for the estimation of the contribution of mispricing to price variations. If the mispricing in price variations falls or remains constant, while transactions by foreign institutional traders and price variations continue to increase over the same period, then the empirical results would tend to provide support for the argument that foreign institutional trading contains private information on market index futures. Since the [French and Roll \(1986\)](#) conclusions are widely used in the related empirical literature on price formation in the stock market, we attempt to fill the current gap in the literature by applying their argument to the index futures market, where the findings remain unclear.⁷

In the third stage, we examine intraday foreign institutional transactions in a further attempt to verify the existence of private information. Some of the earlier studies have provided empirical evidence of a U-shaped pattern embodied in intraday volatility. For example, [Easley and O’Hara \(1992\)](#) demonstrated a decline in information asymmetry over the entire trading period, while [Foster and Viswanathan \(1993\)](#) tracked the intraday volatility U-shape to determine whether the existence of private information in trading was responsible for the volatility smile.

[Ito et al. \(1998\)](#) demonstrated that the introduction of lunch-hour trading in the Tokyo FX market revealed more information, ultimately highlighting the presence of a volatility U-shape. They concluded that the results provided support for the predictions of a

³ A wealth of empirical works has contributed to the discussion on the information content of foreign institutional investors by investigating the trading behavior of such investors; the issues have included ‘return predictability’ ([Chang, Hsieh and Wang 2009](#)), ‘price impact’ ([Stoll, 2000](#)), ‘trading profitability’ ([Barber, Lee, Liu and Odean, 2011](#)) and ‘volatility predictability’ ([Chang, Hsieh and Wang, 2010](#)).

⁴ The major stock market index in the Taiwan stock exchange is a non-tradable index; an alternative is the stock index futures market, which is highly-correlated with its equity counterpart. The validity of the use of the stock index futures market is supported by the seminal work of [Chan \(1992\)](#), which examined the intraday lead-lag relationship between the returns of the major cash index and the major futures index markets. Chan provided strong evidence of the futures market leading the cash index and weak evidence of the cash index leading the futures market, which suggested that the stock market index futures projects market-wide information.

⁵ Such participation by foreign investors is based on the average daily percentage of foreign institutional trades in the overall market.

⁶ By this definition, the fundamental private information of foreign institutional investors could be due to that they have better forecasting ability about the global economy and superior information about the U.S. market. Given that the Taiwan market is highly associated with the U.S. market and world market, the information advantage of foreign institutional investors in both markets can translate into the private information they possess on the TAIFEX. One the other hand, the semi-fundamental private information of foreign institutional investors could be related to many aspects. For example, foreign institutional investors can react to public news announcement more quickly by their superior trading skills; they are also less subject to irrational biases and able to manage their investment more efficiently. Furthermore, foreign institutional investors seem to be more sophisticated traders, and sensibly aware of any arbitrage opportunities. All these features are less related to the fundamental condition of the market, but can still make foreign institutional well-informed about the interim prices, and formulate as a part of their information advantage when they trade.

⁷ The [French and Roll \(1986\)](#) approach has been widely adopted in various studies to classify the information source within price changes; examples include [Fama and French \(1988\)](#), [Berry and Howe \(1994\)](#) and [Chordia, Roll and Subrahmanyam \(2008; 2011\)](#).

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