FOREIGN INVESTORS, STOCK PRICE INFORMATIVENESS, AND MULTINATIONAL CORPORATIONS

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ABSTRACT

Syungjin Han: Foreign Investors, Stock Price Informativeness, and Multinational Corporations
(Under the direction of Christian T. Lundblad)

This study investigates the impact of foreign investors on stock price informativeness across 44 stock markets worldwide. I find that the positive relation between foreign institutional ownership and stock return volatility is moderated in firms with a larger proportion of foreign operations. This implies a stabilizing effect of foreign investors on stock prices of multinational corporations (MNCs). In addition, I find that current stock prices reflect more information about future earnings generated from foreign operations of firms with higher foreign institutional ownership. These results suggest that foreign investors have an informational advantage about foreign businesses of MNCs due to geographic proximity and such information is incorporated into local stock prices by their trading. Furthermore, I find that the type of information that foreign investors gather and interpret is about the demand for a firm's products rather than about the technology used by the firm. Overall, this paper proposes a benefit of financial liberalization that foreign investors facilitate the transmission of information about foreign operations of MNCs in local stock markets.

To the Lord Jesus Christ. He has been faithful along the way.

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MNC	Multinational Corporation
FERC	Future Earnings Response Coefficient

FOREIGN INVESTORS, STOCK PRICE INFORMATIVENESS, AND MULITINATIONAL CORPORATIONS

1 Introduction

There has been considerable controversy over the informational role of foreign investors in the international finance literature. According to the literature on equity home bias, foreign investors are less informed relative to domestic investors (Karolyi and Stulz (2003), and Hau (2001)) because they are geographically distant. Their trading behaviors such as positive feedback trading and herding (Choe et al. (1999)) may destabilize stock prices moving away from fundamental values. On the other hand, much empirical evidence shows that foreign investors are sophisticated informed investors (Grinblatt and Keloharju (2000), and Karolyi (2002)). Consequently, their trades facilitate the incorporation of information moving stock prices in the direction to fundamental values (Bae et al. (2012), Gul et al. (2010), and He et al. (2013)).

This paper proposes a specific channel through which foreign shareholding improves stock price informativeness of local stock markets. I posit that foreign investors may know better about foreign operations of multinational corporations (MNCs) due to geographic proximity. Investors who are local to countries where foreign subsidiaries of MNCs operate have lower costs to collect and process information. Stock prices of MNCs in local stock markets become more informative with the presence of foreign investors since information about foreign operations of MNCs is incorporated into stock prices by their trading. For example, U.S. investors may have an informational advantage about the sales prospects for U.S. operations of

Hyundai (a Korean motor company) relative to Korean investors since they know better about its reputation, customer satisfaction and competition with other firms in the U.S. automotive market. Thus, by trading of U.S. investors in the Korea stock exchange, Hyundai's stock prices incorporate such information.

To investigate the impact of foreign investors on stock price informativeness, I examine the relation between foreign institutional ownership and stock return volatility. If foreign investors are less informed, their positive feedback trading and herding can push prices away from fundamental values and increase volatility (LONG et al. (1990)). In contrast, if foreign investors are informed investors, they bet against noise-driven price movements and so dampen them (Freidman (1953)). In the literature on noise trading and market efficiency, informed rational speculators are traders to move prices in the direction to fundamental values by trading against noise traders, even if risk aversion keeps them from taking large positions to eliminate noise trader risk (De Long et al. (1990), and Campbell and Kyle (1993)).

The sample includes 24,089 firms in 44 countries during the period from 2001 to 2012. I run regressions of stock return volatility on foreign institutional ownership, controlling for the firm characteristics known as the determinants of volatility and including country, industry and year fixed effects. I find a positive association between foreign institutional ownership and volatility, whereas I find a negative association between domestic institutional ownership and volatility. These results imply that foreign institutional investors destabilize prices, whereas domestic institutional investors play a stabilizing role in stock markets.

To test the main hypothesis that foreign investors facilitate the incorporation of information about foreign operations of MNCs in local stock prices, I investigate the interaction term between foreign institutional ownership and the extent to which firms generate sales in

foreign countries. I find a negative interaction between foreign institutional ownership and the ratio of foreign sales to total sales. The destabilizing effect of foreign investors is attenuated as firms have a larger proportion of foreign operations. Compared to firms in the lowest foreign sales tertile, the coefficient for foreign institutional ownership is reduced almost half in firms in the highest foreign sales tertile. A 10% increase in foreign institutional ownership is associated with a 5.97% increase in volatility for firms in the lowest foreign sales tertile and a 3.29% increase in volatility for firms in the highest foreign sales tertile. This implies that foreign investors have an informational advantage about foreign operations and have a stabilizing effect on stock prices of MNCs.

Furthermore, I look into what type of information foreign investors gather and interpret. I examine whether the information is about the demand for a firm's products or about its technology. Investors may have better access to local market and industry information. It provides them with an informational advantage about the firm's reputation, customer satisfaction, and competition with other firms in the local product markets. On the other hand, investors may have better ability to gain information about the technology used by the firm since they can talk to their managers, employees and suppliers of the local firms. To distinguish these explanations, I examine whether the stabilizing effect of foreign investors increases as a firm has a larger proportion of foreign sales or of foreign assets. I find that not foreign assets but foreign sales are the statistically significant determinants of the foreign institutional ownership-volatility relation. This implies that foreign investors have an advantage in processing information about the sales prospects for MNCs, but not about the operating efficiency of MNCs' foreign subsidiaries. The informational advantage of foreign investors about foreign operations of MNCs stems from

geographic proximity not to the location of their foreign subsidiaries but to the location of their product markets.

To provide more direct evidence, I investigate whether current stock prices contain more information about future earnings generated from foreign operations of MNCs as foreign institutional ownership increases. I modify the future earnings response coefficient (FERC) model, which I borrow from the accounting literature (Collins et al. (1994), and Orpurt and Zang (2009)). I decompose earnings into earnings generated from foreign and domestic operations so that I can examine stock price informativeness by location of operations. I find that current stock returns are more strongly positively associated with future earnings from foreign operations with higher foreign institutional ownership. The positive relation between foreign institutional ownership and the FERC is robust after controlling for the firm characteristics known to affect the FERC. The result suggests that foreign investors facilitate the incorporation of information about future earnings from foreign operations of MNCs.

This paper contributes to the literature which documents that distance is an important factor to the quality of information. An informational advantage of local investors is one of the factors to explain the home bias (Karolyi and Stulz (2003)). Even in the U.S. market, Coval and Moskowitz (1999) and Coval and Moskowitz (2001) show that U.S. mutual funds exhibit strong preference for stocks of the firms whose corporate headquarters are geographically more proximate and have better performance with such local stocks. While those studies are focused on the performance and holdings of investors, this paper looks into an impact on stock prices. It suggests that the geographic location of investors has a significant effect on price efficiency.

Next, this paper contributes to the literature on the informational benefit of financial liberalization. Bae et al. (2012) documents that foreign investors have an advantage in processing

global market information and the speed of incorporation of global market information into stock prices increases with the greater accessibility of foreign investors in emerging markets. Other studies related to this paper are Gul et al. (2010) and He et al. (2013). They find that stock prices have become more informative with the presence of foreign investors using firm-specific return variation as a stock price informativeness measure. This study complements the literature by proposing a specific mechanism through which foreign investors improve price informativeness of local stock markets. It suggests that the geographic proximity of foreign investors to foreign operations of firms facilitates the improvement of the price efficiency of MNCs' stocks. This effect is significant under prominent corporate investment globalization.

Last, this paper contributes to the accounting literature on the future earnings response coefficient (FERC) model. A long strand of research follows after Collins et al. (1994) first proposed the FERC, which gauges the sensitivity of current stock returns to changes in expected future earnings as a measure of stock price informativeness. This paper is the first paper to decompose earnings by their origin and study stock price informativeness of firms by location of their operations.

This paper has a potential implication on the real effect of financial liberalization since stock price informativeness determines the efficiency of capital allocation (Levine (1997)). Corporate managers can learn the prospects for their own firm's projects in foreign countries from stock prices which incorporate information foreign investors have but manager may not have (Chen, Goldstein, and Jiang (2007)). Considering the prominence of foreign investment of MNCs and information costs due to geographic separation, foreign investors could be an important source of information to corporate managers when they make investment decisions.

The remainder of the paper is organized as follows. Section 2 develops the central hypothesis. Section 3 describes the data. Section 4 discusses the empirical results of the main regression analysis. Section 5 discusses additional analysis with an alternative stock price informativeness measure. Section 6 concludes.

2 Prior Literature and Hypothesis Development

The equity home bias literature suggests that informational disadvantage of investors about foreign stocks is one of the indirect barriers to international investment. It proposes geographic distance as a factor to explain why investors know less about foreign stocks than about domestic stocks (Karolyi and Stulz (2003)). Many studies find that the distance between the location of investors and firms matters with respect to asymmetric distribution of information among agents. Hau (2001) uses geographic trader locations as proxies for information asymmetry in the German stock market and finds that traders outside Germany show lower proprietary trading profits. Of U.S. evidence, Coval and Moskowitz (1999) and Coval and Moskowitz (2001) show that the holdings of a U.S. stock by U.S. mutual funds are negatively correlated with the distance between the location of the funds and the corporate headquarters of the firms and funds have better performance with the stocks located more closely to where the funds are located.

On the other hand, there is some conflicting evidence with the argument that foreign investors are less informed than domestic investors. Grinblatt and Keloharju (2000) show that the portfolios of foreign investors outperform the portfolios of households in Finland. Karolyi (2002) documents that foreign investors in Japan equities outperformed Japanese individuals and institutions during the Asian financial crisis period. Both papers argue that foreign investors do

better because most of foreign investors are institutions and, therefore, they have the expertise, experience, and resources to conduct the firm research.

Reconciling two conflicting views about foreign investors, I conjecture that foreign investors have an advantage in gathering and interpreting information about the prospects for foreign operations of firms due to their geographic proximity. While foreign investors are located geographically distant from the location of domestic operations, they are close to the location of foreign operations. Foreign investors would trade and capitalize on such information which would be incorporated into stock prices of the firms in local stock markets. Following the argument, I construct the main hypothesis that foreign investors have an advantage in processing information about foreign operations of MNCs and their informed trading enhances stock price informativeness of the MNCs.

3 Data

In this section, I describe the sample selection procedure, the measurement of the main variables and the summary statistics of variables for the sample firms.

3.1 Sample Selection

To construct the sample, I use three main sources of the data in the analysis. The first databases are Compustat Global and Compustat North America, from which I collect stock market data such as total return prices,[1] market capitalization and most of accounting data. The second database is Datastream/Worldscope, where I obtain local market index returns and

[1] I adjust stock prices to account for stock splits and dividend payments. The total return prices are calculated using the following formula: $TRC_{i,d} = \frac{PRCCD_{i,d} \times TRFD_{i,d}}{AJEXDI_{i,d}}$, where $TRC_{i,d}$ = total return price, $PRCCD_{i,d}$ = daily closing price, $TRFD_{i,d}$ = daily total return factor, and $AJEXDI_{i,d}$ = daily adjustment factor cumulative by ex-date.

segment accounting data such as foreign sales, foreign assets and foreign income. I restrict the sample to firms which report foreign sales. The third database is FactSet/LionShares, where I draw institutional holdings data. The final sample contains 23 developed markets and 21 emerging markets and consists of 24,089 unique firms with 136,980 firm-year observations over the sample period from 2001 to 2012.

3.2 Stock Return Volatility

Shiller (1981) claims that stock prices are too volatile to be justified by news about future dividends in the simple present value model. De Long et al. (1990) and Campbell and Kyle (1993) attribute such excessive volatility to noise trading. In their models, sophisticated informed investors take arbitrage positions against noise traders. It prevents prices from moving away from fundamental values. However, since arbitragers are likely to be risk averse, their willingness to bet against noise traders is limited. As a result, noise trading can destabilize stock prices. Their models predict that if sophisticated informed investors increase relative to noise traders in stock markets, stock prices would be stabilized by their informed arbitrage trading.

On the other hand, when positive feedback traders form a herd their trading can have a destabilizing impact on stock prices (Choe et al. (1999)). Positive feedback traders can push prices higher (lower) by buying (selling) following price increases (decreases). If their trading is not based on information about fundamentals, it moves prices away from fundamental values. Rational speculators have the limits of arbitrage dedicated to exploiting positive feedback traders' misperceptions (De Long et al. (1990)) and can even take advantage of their behaviors contributing to the destabilizing effect (LONG et al. (1990)).

For each year, I estimate a firm-level measure of stock return volatility during the period from 2001 to 2012. Specifically, I calculate the standard deviation of a firm's weekly stock

returns[2] in a given year and annualize it with multiplying by $\sqrt{52}$. The firm-year observations are included in the sample if they have return data for at least 40 weeks. There is a large variation of volatility across countries. Table 1 shows that, on average, countries with the highest volatility are Canada (98%), Australia (60%), and Unites States (58%) and. Countries with the lowest volatility are Chile (26%), New Zealand (29%), and Colombia (30%). This calls for including country fixed effects in the regression analysis.

3.3 Institutional Ownership

I use institutional ownership during the period 2000 to 2011 because I study the effect of institutional ownership (one-year lagged) on the future level of stock return volatility from 2001 to 2012. The institutional holdings data are drawn from the FactSect/LionShares database, a leading information source for global institutional ownership. The database covers institutions defined as professional money managers with discretionary control over assets such as mutual funds, pension funds, bank trusts, and insurance companies (see Ferreira and Matos (2008) for more details).

IO_FOR is defined as the sum of the holdings of all institutions domiciled in a different country from the origin country of the firm, expressed as a percentage of the firm's market capitalization at the end of the calendar years. *IO_DOM* is the sum of the holdings of all institutions domiciled in the same country as the origin country of the firm as a percentage of the firm's market capitalization at the end of the calendar years. To deal with the different reporting frequency of institutions, the latest holdings update at each year end is used to calculate

[2] I calculate weekly stock returns using total return prices accounting for stock splits and dividend payments by the following formula: $r_{i,w} = \frac{TRC_{i,w} - TRC_{i,w-1}}{TRC_{i,w-1}}$, where $TRC_{i,w}$ = Wednesday closing price in week *w* and $TRC_{i,w-1}$ = Wednesday closing price in week *w-1*

institutional ownership annually. Following Ferreira and Matos (2008), I set institutional ownership variables to zero if a stock is not held by any institution in FactSet/LionShares.

Table 1 shows that, on average, countries with the highest foreign institutional ownership are Canada (15%), Turkey (15%) and Ireland (14%), while countries with the lowest foreign institutional ownership are Colombia (1%), Malaysia (1%), and China (2%). In the U.S., domestic institutional ownership (40%) dominates foreign institutional ownership (3%). But in most countries, foreign institutional ownership exceeds domestic institutional ownership except in Canada, Denmark, Norway, Poland, Sweden, and United Kingdom.

3.4 Foreign Operations

I use foreign sales scaled by total sales and foreign assets scaled by total assets to measure the extent of a firm's foreign operations. Foreign sales, foreign assets, total sales, and total assets are obtained from Datastream/Worldscope database. Foreign sales are defined as sales generated from goods produced and sold abroad and foreign assets represent assets of foreign operations. The limitation of the data is that foreign sales and foreign assets are not reported by country-level segment. Because of that constraint, I could not match sales and assets with institutional ownership by country-level. But I expect that inclusion of investors from different countries when calculating institutional ownership biases against finding support for my hypothesis.

Figure 1 plots the averages of foreign sales and foreign assets by geographic region. Foreign sales are the highest in Europe (57%) and the lowest in South America (28%). Likewise, foreign assets are the highest in Europe (34%) and the lowest in South America (9%). It seems that firms in Europe have much higher foreign operations since the low investment restriction

resulted from the effort of EU to achieve a single market fosters corporate investment within the local region.

On average, firms in developed markets have higher foreign operations (44% foreign sales, and 29% foreign assets) than firms in emerging markets (22% foreign sales, and 12% foreign assets) as you see Table 1. Figure 2 shows that in both developed and emerging markets, foreign sales have increased gradually while foreign assets have not changed much over the sample period from 2001 to 2012. Corporate operations have globalized around the world with respect to sales over the sample period.

3.5 Firm Characteristics

In principle, firm characteristics should be included in the analysis as control variables to correct the omitted variable bias problem if they affect foreign institutional ownership and also stock return volatility. I include a comprehensive list of firm characteristics based on the related prior study (Rubin and Smith (2009)). I obtain the data from Datastream, Compustat Global, Compustat North America to measure the firm characteristics.

Small firms are more focused, specializing in limited operations than large firms which are more diversified and, therefore, small firms tend to react more to idiosyncratic shocks (Rubin and Smith (2009)). To control for the size of the firms, I use the log of market value of the equity (*SIZE*).

Pastor and Pierto (2003) documented that *MB* increases with uncertainty about profitability and, therefore, high growth firms have more volatile returns. I measure *MB* by the market value of equity divided by the book value of equity. For the similar reason, young firms of which the future profitability is more uncertain show higher volatility. I define *AGE* as the number of years since the firms appear on Datastream. In addition, non-dividend paying firms

have more information asymmetry with more uncertain prospects and consequently have more volatile returns than dividend paying firms. I include a dummy variable, *DIV*, which indicates whether a firm pays dividends during the year.

The use of debt amplifies variability of profitability due to the leverage effect and, as a result, is likely to increase stock return volatility. To control for the leverage effect, I use the long-term debt divided by the market value of equity. Wei and Zhang (2006) argue that the upward trend of stock return volatility is accounted for by the downward trend of the return-on-equity and the upward trend of volatility of the return-on-equity. To control for the accounting profitability effect, I include *ROE*, which is defined as net income before extraordinary items divided by the book value of equity, and its volatility. I estimate the standard deviation of annual *ROE* measures using the previous 6 years to measure volatility of profitability (*VOLP*). I include the firm-year observations that have at least 4 years of *ROE* in the sample.

I winsorize variables such as *VOL*, *SIZE*, *MB*, *LEV*, *ROE* and *VOLP* at the upper and lower 1%.

4 Foreign Institutional Ownership and Stock Return Volatility

In this section, I examine whether foreign investors promote the incorporation of information about foreign operations of MNCs in local stock markets using panel regressions with stock return volatility as the dependent variable. I test the hypothesis by investigating the impact of the extent to which firms engage in foreign operations on the foreign institutional ownership-volatility relation. Furthermore, I study whether the information that foreign investors have is about the sales prospects for foreign operations in product markets or about their operating efficiency by comparing the effects of the extent of sales generated from foreign

operations and assets being invested in foreign countries on the foreign institutional ownership-volatility relation.

4.1 Panel Regression Tests

The main prediction of this study is that since foreign investors know better about the prospects for foreign operations of firms, the stock prices become more informative with the presence of foreign investors as firms engage more in foreign operations. To test this prediction, I examine the effect of the extent of foreign operations on the relation between foreign institutional ownership and stock return volatility. I use foreign sales scaled by total sales to measure the extent to which firms have foreign operations. I expect that there is a negative impact of foreign sales on the foreign institutional ownership-volatility relation since if foreign investors are informed about foreign operation of MNCs, they will take arbitrage positions against noise traders, which reduces the volatility of MNCs.

In the tests, all the independent variables except the log of one plus age, foreign sales and the tertile membership of foreign sales are lagged by one year to examine the effects of current explanatory variables on future stock return volatility. That is, stock return volatility is for period *t,* and each independent variable is for period *t-1*. I include several firm-level control variables which are known as determinants of volatility in the literature (detailed discussion of firm characteristics appears on Section 3.5). I estimate ordinary least squares (OLS) regressions using firm-year panel during the 2001-2012 period. I include year dummies to account for positive time trend in volatility (Campbell et al. (2001)). In addition, I include country and industry fixed effects to control for unobserved country and industry-level time invariant characteristics that simultaneously determine foreign institutional ownership and volatility. I cluster standard errors

to account for serial correlation at the firm level (i.e., I assume that observations are independent across firms, but not within firm).

Column (1) of Table 4 shows that a 10% increase in foreign institutional ownership is associated with a subsequent increase in volatility by 4.55% and a 10% increase in domestic institutional ownership is associated with a subsequent decrease in volatility by 1.26%. Foreign institutional investors have a destabilizing role, while domestic institutional investors have a stabilizing role in stock markets. This result is consistent with the view that foreign investors are less-informed than domestic investors because of geographic separation. All the regression results in Table 4 show that small, high-growth, highly leveraged firms, firms with low accounting profitability, high volatility of profitability, non-dividend paying, and young firms exhibit high stock return volatility.

To test the main hypothesis, I investigate the interaction term between foreign institutional ownership and the extent of foreign operations of firms. I use foreign sales scaled by total sales and the tertile membership of foreign sales to measure the extent to which firms have operations in foreign countries. I find a negative interaction between foreign institutional ownership and foreign sales. The destabilizing effect of foreign investors is moderated as firms have a larger proportion of sales generated from foreign countries. The coefficient for foreign institutional ownership is reduced almost half in firms in the highest foreign sales tertile relative to firms in the lowest foreign sales tertile. A 10% increase in foreign institutional ownership is associated with a 5.97% increase in volatility for firms in the lowest foreign sales tertile and a 3.29% increase in volatility for firms in the highest foreign sales tertile. These results imply that foreign investors are well-informed about the prospects for foreign operations of firms and have a stabilizing effect in stocks of MNCs by their arbitrage trading.

4.2 Type of Information

I investigate what type of information foreign investors have an advantage to gather and interpret. The information could be about the demand for a firm's products or about its technology. Investors may have better access to local market and industry information. It provides them with an informational advantage about the firm's reputation, customer satisfaction, and competition with other firms in the local product markets. On the other hand, investors may have better ability to gain information about the technology used by a firm since they can talk to its managers, employees and suppliers of the local firm. For example, U.S. investors have lower costs to gather information about the U.S. automotive market and, therefore, have better ability to obtain and interpret information about the U.S. customer demand for Hyundai (a Korean motor company) vehicles. Alternatively, U.S. investors are geographically proximate to the headquarter and manufacturing facilities of Hyundai's U.S. operations and so have better access to local managers, employees and suppliers to obtain information about the technology of its U.S. subsidiary.

To distinguish these explanations, I examine whether the stabilizing effect of foreign investors increases as a firm has a larger proportion of foreign sales or foreign assets. If the information that foreign investors have is about the demand for a firm's products, their stabilizing effect is likely to be higher as the extent of sales generated from foreign countries increases. On the other hand, if the information is about the technology of the firm, the effect is likely to be higher as the firm has a larger percentage of assets being invested in foreign countries.

Column (3) of Table 5 shows that the coefficient of the interaction term between foreign institutional ownership and foreign sales is negative and statistically significant at the 1%,

whereas the interaction term between foreign institutional ownership and foreign assets is positive and statistically insignificant. This result is consistent with the hypothesis that foreign investors have an informational advantage about the sales prospects for MNCs rather than about their operating efficiency. This implies that the informational advantage of foreign investors stems from geographic proximity to the location of their product markets not to the location of their foreign subsidiaries.

5 Additional Analysis

In this section, I provide more direct tests whether foreign investors facilitate the incorporation of information about foreign operations of MNCs in local stock markets using an alternative stock price informativeness measure. I examine the impact of foreign institutional ownership on the extent of information reflected in stock prices about future earnings generated from foreign operations by modifying the future earnings coefficient (FERC) model.

5.1 Alternative Stock Price Informativeness Measure

Borrowing from the accounting literature, I use the future earnings response coefficient (FERC) as an alternative stock price informativeness measure. The FERC is the regression coefficient of current stock returns on future earnings and indicates how much information stock prices contain about future earnings. I adapt the FERC model developed by Collins et al. (1994) and modified by Lundholm and Myers (2002) to study the extent of information reflected in stock prices about future earnings from foreign operations and future earnings from domestic operations separately.

The current stock return can be characterized as the sum of three components: unexpected current earnings, the cumulative change in expectations about future earnings and noise as follows:

$$R_t = \beta_0 + \beta_1 UX_t + \sum_{i=1}^{\infty} \beta_{2i} \Delta E_t\,(X_{t+i}) + \varepsilon_t, \quad (1)$$

where R_t is the annual stock return in year *t*, UX_t is the unexpected earnings in year *t* defined as the annual earnings X_t less the prior period's expectation ($E_{t-1}(X_t)$), and $\Delta E_t(X_{t+i})$ is the change in expectations between time *t-1* and *t* about future earnings in year $t+i$ ($E_{t-1}(X_{t+i})$ - $E_t(X_{t+i})$).

Following Lundholm and Myers (2002), I proxy for UX_t using the level of X_{t-1} and X_t. The earnings process is modeled in general specification allowing for random walk, white noise process, and AR (1) process. Regarding $\Delta E_t(X_{t+i})$, I proxy for $E_t(X_{t+i})$ using realized future earnings and the prior expectation for future earnings ($E_{t-1}(X_{t+i})$) is captured by X_{t-1}. However, realized future earnings have expected and unexpected components. To control for the unexpected component of future earnings which is measurement error, future returns (R_{t+i}) are included. The time span of future earnings is limited to three years since investors revise their expectations over a relatively short horizon and adding more time periods increases little explanatory power of the model (Collins et al. (1994)). Then I have the following regression which is a condensed version of Lundholm and Myers (2002):

$$R_t = b_0 + b_1 X_{t-1} + b_2 X_t + b_3 X3_t + b_4 R3_t + \varepsilon_t, \quad (2)$$

where R_t is the buy-and-hold return for year *t* over the 12-month period ending three months after the year *t* fiscal year-end, X_{t-1} is income available to common shareholders before extraordinary items in year *t-1* scaled by market value of equity three months after the year *t-1* fiscal year-end (i.e. at the beginning of current return measurement), X_t is income available to common shareholders before extraordinary items in year *t* scaled by market value of equity three

months after the year *t-1* fiscal year-end, $X3_t$ is the sum of income available to common shareholders before extraordinary items for three years following year *t* scaled by market value of equity three months after the year *t-1* fiscal year-end, and $R3_t$ is the buy-and-hold return for the three-year period following year *t* starting three months after the year *t* fiscal year-end.

I modify this price-earnings relation to allow for separate measurement of ability of current returns to reflect earnings from foreign operations and domestic operations. I decompose earnings into earnings from foreign operations and domestic operations. I estimate the following regression:

$$R_t = b_0 + b_1 X\_FOR_{t-1} + b_2 X\_DOM_{t-1} + b_3 X\_FOR_t + b_4 X\_DOM_t + b_5 X3\_FOR_t + b_6 X3\_DOM_t + b_7 R3_t + \varepsilon_t, \quad (3)$$

where R_t is the buy-and-hold return for year *t* over the 12-month period ending three months after the year *t* fiscal year-end, X_FOR_{t-1} (X_DOM_{t-1}) is income available to common shareholders before extraordinary items generated from operations in foreign countries (in home country) in year *t-1* scaled by market value of equity three months after the year *t-1* fiscal year-end (i.e. at the beginning of current return measurement), X_FOR_t (X_DOM_t) is income available to common shareholders before extraordinary items generated from operations in foreign countries (in home country) in year *t* scaled by market value of equity three months after the year *t-1* fiscal year-end, X3_FOR_t (X3_DOM_t) is the sum of income available to common shareholders before extraordinary items for three years following year *t* generated from operations in foreign countries (in home country) scaled by market value of equity three months after the year *t-1* fiscal year-end, and $R3_t$ is the buy-and-hold return for the three-year period following year *t* starting three months after the year *t* fiscal year-end.

To measure income available to common shareholders before extraordinary items by its origin, I obtain total operating income, foreign operating income and net interest income data from Datastream database. Domestic operating income is calculated as total operating income less foreign operating income. I allocate net interest income on the basis of the proportion of sales from foreign and domestic operations, respectively. Then I subtract the allotted net interest income from operating income to compute income available to common shareholders before extraordinary items for foreign and domestic operations.

5.2 Empirical Tests and Results

The main hypothesis predicts that since foreign investors know better about foreign operations of firms, more information about future earnings generated from their foreign operations is incorporated into stock prices with higher foreign institutional ownership. To test this cross-sectional prediction, this study evaluates the interaction term between foreign institutional ownership and realized future earnings from foreign operations in the decomposed FERC model.

If investors obtain information relevant to future earnings of firms, the information will be revealed at least partially into the stock prices by their trading activity and the coefficient on realized future earnings will be positive. On the other hand, if no information is revealed in current stock prices through investors, the coefficient on realized future earnings will be closer to zero. This implies that there is a positive interaction effect between foreign institutional ownership and future earnings from foreign operations under the informed investor hypothesis. I test the hypothesis with the following regression:

$$R_t = b_0 + b_1 X\_FOR_{t-1} + b_2 X\_DOM_{t-1} + b_3 X\_FOR_t + b_4 X\_DOM_t + b_5 X3\_FOR_t + b_6 X3\_DOM_t + b_7 R3_t + b_8 IO\_FOR_{t-1}$$

$$+ b_9 IO\_FOR_{t-1} \times X\_FOR_{t-1} + b_{10} IO\_FOR_{t-1} \times X\_DOM_{t-1}$$
$$+ b_{11} IO\_FOR_{t-1} \times X\_FOR_t + b_{12} IO\_FOR_{t-1} \times X\_DOM_t$$
$$+ b_{13} IO\_FOR_{t-1} \times X3\_FOR_t + b_{14} IO\_FOR_{t-1} \times X3\_DOM_t$$
$$+ b_{15} IO\_FOR_{t-1} \times R3_t + \varepsilon_t, \quad (4)$$

where IO_FOR_{t-1} is the number of shares held by foreign institutions divided by total number of shares outstanding at the end of year *t-1*, R_t is the buy-and-hold return for year *t* over the 12-month period ending three months after the year *t* fiscal year-end. X_FOR_{t-1} (X_DOM_{t-1}) is income available to common shareholders before extraordinary items generated from operations in foreign countries (in home country) in year *t-1* scaled by market value of equity three months after the year *t-1* fiscal year-end (i.e. at the beginning of current return measurement), X_FOR_t (X_DOM_t) is income available to common shareholders before extraordinary items generated from operations in foreign countries (in home country) in year *t* scaled by market value of equity three months after the year *t-1* fiscal year-end, X3_FOR_t (X3_DOM_t) is the sum of income available to common shareholders before extraordinary items for three years following year *t* generated from operations in foreign countries (in home country) scaled by market value of equity three months after the year *t-1* fiscal year-end, and $R3_t$ is the buy-and-hold return for the three-year period following year *t* starting three months after the year *t* fiscal year-end.

I perform ordinary least squares regression (OLS) using model (3) and (4) with 16,935 firm-year observations across 44 stock markets over the sample period from 2001 to 2010. I include only firms that have foreign operations. I correct standard errors for heteroskedasticity and firm-level clustering to control for correlation within the same firms. Table 7 shows the results of the empirical tests. Column (1) presents the basic decomposed FERC model and Column (2) shows the model to test the effect of foreign institutional ownership on the FERC.

Column (1) of Table 7 shows that current returns are significantly positively associated with future earnings generated from foreign and domestic operations and significantly negatively associated with future returns. The positive coefficients on both future earnings indicate that information about future earnings from foreign and domestic operations is incorporated in stock prices. The negative coefficient on future returns demonstrates that it removes measurement errors in both of realized future earnings.

Column (2) of Table 7 shows that foreign institutional ownership significantly affects the relation between current returns and future earnings from foreign operations. IO_FOR_{t-1} x $X3\_FOR_t$ is significantly positive, which indicates that current returns are more strongly associated with future earnings from foreign operations as foreign institutional ownership increases. This implies that foreign institutional investors facilitate the incorporation of information in current stock prices about future earnings from foreign operations.

Following Orpurt and Zang (2009), I add various firm-level control variables individually to the regression. To control for differences in information environment, *SIZE* and the number of analysts following a firm (*NANAL*) are used. Large and high analyst-following firms tend to have richer information environment. Since negative future earnings are more difficult to predict than positive future earnings which are normal and persistent, I include an indicator variable *LOSS*, which is set to 1 if $X3\_FOR_t$ is negative otherwise 0. Lastly, I include a proxy for volatility of future earnings (*EARNSTD*) since volatile earnings are more difficult to predict. *EARNSTD* is defined as the standard deviation of future earnings from foreign operations for year *t+1* through *t+3*.

The results appear in Table 8. The coefficients on IO_FOR_{t-1} x $X3\_FOR_t$ remain significant for all specifications. Trading activity of foreign institutional investors reveals

information about future earnings from foreign operations of firms in current stock prices, even after controlling for the determinants of the FERCs which are documented in the accounting literature. Interestingly, the coefficients on IO_FOR_{t-1} x $X3\_DOM_t$ are not significant when controlling for *SIZE* and *NANAL*, which implies that foreign institutional investors do not have an informational advantage on domestic operations of firms controlling for information environment of firms.

6 Conclusion

This paper proposes a specific channel through which foreign shareholding improves stock price informativeness in local stock markets. I find that foreign investors facilitate the incorporation of information about foreign operations of MNCs into local stock prices since they have an informational advantage to gather and interpret such information due to their geographic proximity. The study suggests an informational benefit of financial liberalization contributing to the international finance literature about financial market integration.

I show that the positive relation between foreign institutional ownership and stock return volatility is attenuated as the extent of foreign operations of firms increase. In addition, more information about future earnings generated from foreign operations is incorporated into current stock prices with higher foreign institutional ownership using the decomposed future earnings response coefficient (FERC) model. Furthermore, I find that the type of information that foreign investors have is about the demand for a firm's products rather than about the technology used by the firm. This implies the information advantage stems from geographic proximity to the location of product markets of the firm's foreign operations not to the location of its operating facilities.

Considering ongoing globalization in corporate investment, the communication of information by foreign investors becomes more important to domestic investors and corporate managers. The presence of foreign investors facilitates the incorporation of information that would not be obtained due to information costs induced by geographic separation. For further research, it would be interesting to study whether corporate managers learn information about their own foreign operations communicated by foreign investors and such information affects their real investment decisions in foreign countries.

Figure 1: Foreign Sales and Foreign Assets by Geographic Region
This figure shows foreign sales and foreign assets by geographic region in 2012. Foreign sales are defined as sales generated from operations in foreign countries scaled by total sales. Foreign assets are defined as assets of operations in foreign countries scaled by total assets. The countries that comprise each region are provided in Appendix B.

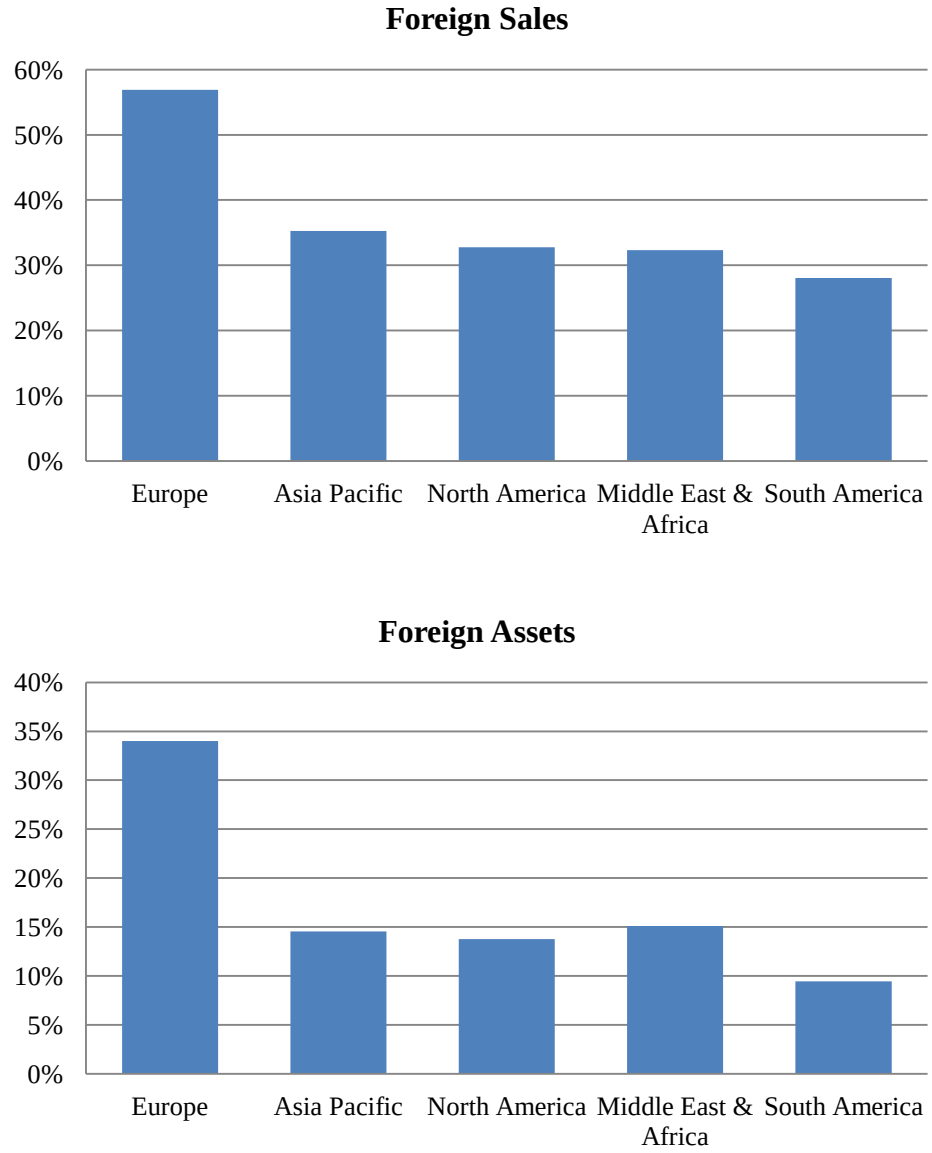
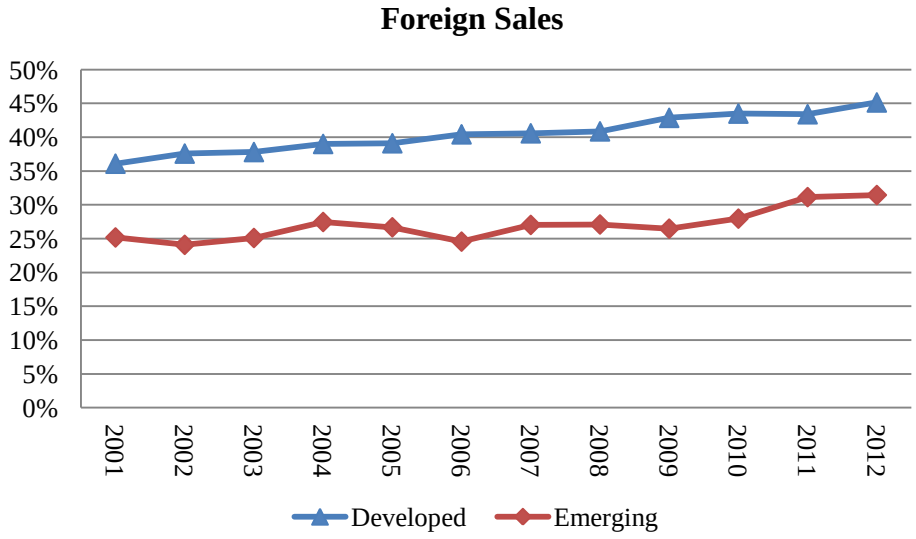


Figure 2: Foreign Sales and Foreign Assets by Year
This figure shows foreign sales and foreign assets for developed and emerging markets over the period from 2001 to 2012. Foreign sales are defined as sales generated from operations in foreign countries scaled by total sales. Foreign assets are defined as assets of operations in foreign countries scaled by total assets. The countries that comprise developed and emerging markets are provided in Table 1.



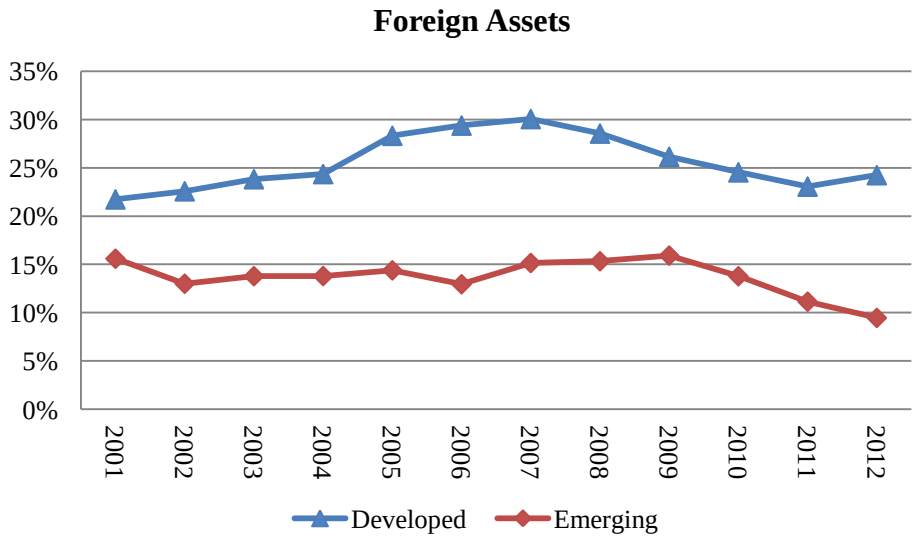


Table 1: Sample of Firms and Summary Statistics by Country

This table provides summary statistics for firms in the sample. I report the number of observations and the average values of firm characteristics by country. Panel A reports the number of observations and the average values of firm characteristics for developed markets. Panel B reports the number of observations and the average values of firm characteristics for emerging markets. The sample period is from 2001 to 2012. Refer to Appendix A for variable definitions.

Panel A: Developed Markets

Country	*N*	*VOL*	*IO_FOR*	*IO_DOM*	*MV ($ mil)*	*MB*	*LEV*	*ROE*	*VOLP*	*DIV*	*AGE*	*FS*	*FA*
Australia	5,377	0.60	0.03	0.01	1,901	3.01	0.32	-0.07	0.81	0.48	13.02	0.28	0.23
Austria	570	0.38	0.08	0.02	1,725	1.55	1.04	0.07	0.19	0.69	14.13	0.54	0.40
Belgium	728	0.32	0.07	0.03	2,921	2.02	0.72	0.10	0.17	0.77	17.40	0.46	0.31
Canada	2,525	0.98	0.15	0.18	3,510	2.23	0.53	0.02	0.64	0.46	8.91	0.45	0.28
Denmark	801	0.38	0.04	0.09	2,169	3.09	0.75	0.08	0.27	0.63	18.78	0.47	0.28
Finland	984	0.36	0.10	0.09	3,544	2.04	0.51	0.08	0.30	0.84	12.32	0.56	0.34
France	4,463	0.39	0.06	0.04	5,466	1.98	0.75	0.07	0.47	0.71	14.21	0.41	0.26
Germany	4,075	0.41	0.07	0.04	4,534	1.93	0.74	0.05	0.57	0.62	15.13	0.44	0.27
Hong Kong	1,710	0.49	0.04	0.01	2,405	2.28	0.39	0.06	0.40	0.67	16.64	0.51	0.37
Ireland	477	0.47	0.14	0.01	3,002	3.44	0.76	0.04	0.49	0.57	19.27	0.62	0.46
Israel	1,050	0.45	0.07	0.01	1,370	3.92	0.95	0.05	0.47	0.42	11.22	0.59	0.22
Italy	1,835	0.36	0.05	0.02	4,086	1.79	1.45	0.02	0.26	0.72	14.95	0.35	0.16
Japan	15,258	0.39	0.04	0.03	2,462	1.58	0.44	0.05	0.16	0.90	21.51	0.18	0.12
Netherlands	1,378	0.39	0.13	0.04	6,334	2.40	0.55	0.11	0.44	0.71	19.15	0.58	0.49
New Zealand	409	0.29	0.03	0.01	601	2.84	0.39	0.10	0.19	0.81	13.12	0.31	0.24
Norway	833	0.46	0.08	0.10	3,150	3.82	1.24	0.09	0.62	0.60	12.77	0.55	0.36
Portugal	328	0.33	0.04	0.03	2,978	2.67	1.84	0.12	0.42	0.78	13.05	0.35	0.25
Singapore	3,095	0.52	0.03	0.01	782	1.54	0.37	0.07	0.44	0.69	13.33	0.50	0.33
Spain	1,102	0.34	0.06	0.03	8,507	2.48	1.23	0.10	0.27	0.77	14.49	0.34	0.26
Sweden	1,658	0.39	0.07	0.15	2,765	2.77	0.43	0.08	0.37	0.71	13.07	0.55	0.36
Switzerland	1,854	0.34	0.09	0.06	8,605	2.36	0.51	0.09	0.24	0.74	17.74	0.53	0.32
United Kingdom	9,880	0.45	0.04	0.14	4,340	2.93	0.37	0.03	0.87	0.65	18.40	0.39	0.25
United States	47,434	0.58	0.03	0.40	3,028	2.61	0.63	0.00	1.00	0.39	15.71	0.17	0.07
Average	4,688	0.44	0.07	0.07	3,486	2.49	0.73	0.06	0.44	0.67	15.14	0.44	0.29

Table 1: Continued

Panel B: Emerging Markets

Country	*N*	*VOL*	*IO_FOR*	*IO_DOM*	*MV ($ mil)*	*MB*	*LEV*	*ROE*	*VOLP*	*DIV*	*AGE*	*FS*	*FA*
Brazil	1,136	0.42	0.10	0.01	3,721	7.99	0.70	0.17	0.44	0.84	10.52	0.10	0.01
Chile	225	0.26	0.03	0.00	3,808	14.97	0.26	0.14	0.09	0.97	15.59	0.47	0.28
China	1,984	0.46	0.02	0.01	2,079	3.46	0.48	0.05	0.28	0.37	10.81	0.14	0.01
Colombia	19	0.29	0.01	0.00	2,434	1.34	0.80	0.05	0.03	0.95	13.68	0.27	0.12
Czech Republic	59	0.41	0.07	0.01	4,363	2.24	0.65	0.08	0.19	0.56	12.00	0.35	0.18
Egypt	174	0.42	0.04	0.00	1,389	2.40	0.25	0.19	0.18	0.85	9.84	0.06	0.06
Greece	739	0.55	0.04	0.00	1,073	1.52	1.31	0.01	0.33	0.72	13.68	0.28	0.14
Hungary	154	0.32	0.12	0.01	1,860	2.03	0.53	0.10	0.13	0.57	11.06	0.33	0.18
India	8,633	0.52	0.02	0.02	904	2.17	0.96	0.15	0.31	0.72	12.76	0.12	0.04
Indonesia	1,157	0.54	0.03	0.00	995	3.82	0.74	0.13	0.69	0.49	13.50	0.08	0.02
Malaysia	4,784	0.44	0.01	0.00	366	1.14	0.42	0.05	0.28	0.64	13.70	0.19	0.11
Mexico	405	0.38	0.06	0.00	5,616	4.45	0.63	0.10	0.14	0.60	13.19	0.38	0.34
Peru	73	0.38	0.06	0.00	2,642	3.96	0.30	0.23	0.12	0.82	13.19	0.27	0.17
Philippines	304	0.44	0.05	0.00	807	3.14	0.42	0.13	0.40	0.61	15.69	0.12	0.10
Poland	753	0.43	0.04	0.19	888	1.88	0.38	0.10	0.27	0.50	8.93	0.17	0.06
Russia	244	0.46	0.07	0.00	9,720	8.19	1.09	0.20	0.89	0.69	6.54	0.15	0.04
South Africa	1,134	0.35	0.06	0.04	3,032	3.00	0.21	0.20	0.34	0.83	16.31	0.26	0.20
South Korea	1,444	0.49	0.05	0.00	2,436	1.31	0.81	0.06	0.29	0.76	16.73	0.30	0.14
Taiwan	3,323	0.42	0.04	0.01	1,376	1.74	0.25	0.08	0.12	0.69	12.49	0.37	0.23
Thailand	1,700	0.41	0.02	0.00	361	1.51	0.57	0.09	0.52	0.70	14.93	0.11	0.04
Turkey	712	0.48	0.14	0.01	1,300	3.84	0.30	0.11	0.32	0.56	14.60	0.09	0.06
Average	1,388	0.42	0.05	0.02	2,437	3.62	0.57	0.12	0.30	0.69	12.84	0.22	0.12

Table 2: Summary Statistics

This table reports summary statistics of firm characteristics for all firms in the sample. The sample period is from 2001 to 2012. Refer to Appendix A for variable definitions.

Variables	*N*	*Mean*	*Std. Dev.*	*Min.*	*Q1*	*Median*	*Q3*	*Max.*
Dependent Variable								
$log(VOL)_t$	136,980	-0.875	0.575	-2.174	-1.272	-0.916	-0.523	0.824
Ownership Variables								
IO_FOR_{t-1}	136,980	0.040	0.087	0.000	0.000	0.006	0.042	1.000
IO_DOM_{t-1}	136,980	0.167	0.272	0.000	0.000	0.023	0.196	1.000
Control Variables								
$SIZE_{t-1}$	136,980	5.478	2.217	0.255	3.930	5.412	6.970	10.572
MB_{t-1}	136,980	2.430	4.453	-6.121	0.789	1.404	2.527	34.381
LEV_{t-1}	136,980	0.597	1.404	0.000	0.005	0.145	0.523	9.927
ROE_{t-1}	136,980	0.044	0.477	-2.665	-0.001	0.083	0.176	2.002
$VOLP_{t-1}$	136,980	0.619	2.133	0.008	0.050	0.108	0.266	17.208
DIV_{t-1}	136,980	0.588	0.492	0.000	0.000	1.000	1.000	1.000
$log(1+AGE)_t$	136,980	2.621	0.642	0.000	2.197	2.639	3.091	3.892
Interacting Variables								
FS_t	136,980	0.259	0.315	0.000	0.000	0.106	0.476	1.000
FA_t	113,216	0.142	0.235	0.000	0.000	0.000	0.198	0.986

Table 3: Correlation Coefficients

This table shows correlation coefficients of key variables. The sample period is from 2001 to 2012. The variable definitions are provided in Appendix A. The p-values are reported in parentheses.

	log(VOL)	*IO_FOR*	*IO_DOM*	*SIZE*	*MB*	*LEV*	*ROE*	*VOLP*	*DIV*	*log(1+AGE)*
log(VOL)										
IO_FOR	-0.062									
	(0.000)									
IO_DOM	-0.046	-0.007								
	(0.000)	(0.012)								
SIZE	-0.427	0.368	0.304							
	(0.000)	(0.000)	(0.000)							
MB	-0.002	0.067	0.040	0.171						
	(0.536)	(0.000)	(0.000)	(0.000)						
LEV	0.119	-0.046	-0.059	-0.099	-0.135					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000					
ROE	-0.209	0.064	0.029	0.193	-0.011	-0.071				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
VOLP	0.246	-0.044	-0.036	-0.170	0.081	0.009	-0.092			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)			
DIV	-0.459	0.116	-0.134	0.381	-0.030	-0.039	0.211	-0.227		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
log(1+AGE)	-0.196	0.048	0.080	0.203	-0.068	0.007	0.055	-0.141	0.202	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)	(0.000)	(0.000)	(0.000)	

Table 4: The Effect of Foreign Sales on the Relation between Foreign Institutional Ownership and Volatility

This table shows results of panel regressions of the log of volatility on foreign institutional ownership conditional on foreign sales and the tertile membership of foreign sales. The sample period is from 2001 to 2012. I run fixed effect regressions including country, industry and year dummies. The standard errors are corrected for firm-level clustering. The explanatory variables are all lagged by one period except the log of one plus age, foreign sales and the tertile membership of foreign sales. The definitions of all variables are provided in Appendix A. The standard errors are reported in parentheses. *,**,*** indicate significance at the 10%, 5% and 1% level.

	(1)	(2)	(3)
IO_FOR_{t-1}	0.455***	0.688***	0.597***
	(0.035)	(0.047)	(0.054)
IO_FOR_{t-1} x FS_t		-0.535***	
		(0.074)	
IO_FOR_{t-1} x $TERTILE2_t$			0.020
			(0.082)
IO_FOR_{t-1} x $TERTILE3_t$			-0.268***
			(0.065)
IO_DOM_{t-1}	-0.126***	-0.132***	-0.140***
	(0.011)	(0.011)	(0.011)
$SIZE_{t-1}$	-0.069***	-0.074***	-0.074***
	(0.001)	(0.001)	(0.001)
MB_{t-1}	0.004***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)
LEV_{t-1}	0.038***	0.038***	0.038***
	(0.002)	(0.002)	(0.002)
ROE_{t-1}	-0.089***	-0.087***	-0.088***
	(0.004)	(0.004)	(0.004)
$VOLP_{t-1}$	0.027***	0.028***	0.028***
	(0.001)	(0.001)	(0.001)
DIV_{t-1}	-0.300***	-0.296***	-0.297***
	(0.005)	(0.005)	(0.005)
$log(1+AGE)_t$	-0.033***	-0.032***	-0.034***
	(0.003)	(0.003)	(0.003)
FS_t		0.132***	
		(0.008)	
$TERTILE2_t$			0.045***
			(0.006)
$TERTILE3_t$			0.095***
			(0.006)
Observations	136,980	136,980	136,980
Adj. R^2	0.479	0.482	0.482

Table 5: The Determinants of the Relation between Foreign Institutional Ownership and Volatility

This table shows results of panel regressions of the log of volatility on foreign institutional ownership conditional on foreign sales and foreign assets. The sample period is from 2001 to 2012. I run fixed effect regressions including country, industry and year dummies. The standard errors are corrected for firm-level clustering. The explanatory variables are all lagged by one period except the log of one plus age, foreign sales and foreign assets. The definitions of all variables are provided in Appendix A. The standard errors are reported in parentheses. *,**,*** indicate significance at the 10%, 5% and 1% level.

	(1)	(2)	(3)
IO_FOR_{t-1}	0.688***	0.551***	0.698***
	(0.047)	(0.045)	(0.050)
$IO\_FOR_{t-1} \times FS_t$	-0.535***		-0.615***
	(0.074)		(0.095)
$IO\_FOR_{t-1} \times FA_t$		-0.303***	0.171
		(0.098)	(0.118)
IO_DOM_{t-1}	-0.132***	-0.107***	-0.114***
	(0.011)	(0.013)	(0.012)
$SIZE_{t-1}$	-0.074***	-0.077***	-0.079***
	(0.001)	(0.002)	(0.002)
MB_{t-1}	0.004***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)
LEV_{t-1}	0.038***	0.039***	0.039***
	(0.002)	(0.002)	(0.002)
ROE_{t-1}	-0.087***	-0.084***	-0.083***
	(0.004)	(0.004)	(0.004)
$VOLP_{t-1}$	0.028***	0.028***	0.028***
	(0.001)	(0.001)	(0.001)
DIV_{t-1}	-0.296***	-0.303***	-0.301***
	(0.005)	(0.005)	(0.005)
$log(1+AGE)_t$	-0.032***	-0.031***	-0.031***
	(0.003)	(0.004)	(0.004)
FS_t	0.132***		0.104***
	(0.008)		(0.010)
FA_t		0.154***	0.070***
		(0.011)	(0.013)
Observations	136,980	113,216	113,216
Adj. R^2	0.482	0.490	0.491

Table 6: Summary Statistics and Correlation Coefficients of Variables in the Analysis of the Future Earnings Response Coefficients

This table provides summary statistics and correlation coefficients of variables used in the analysis of the future earnings response coefficients. Panel A reports summary statistics for all firms in the sample. Panel B reports correlation coefficients for all firms in the sample. The sample period is from 2001 to 2010. Refer to Appendix A for variable definitions.

Panel A: Summary Statistics

Variables	*N*	*Mean*	*Std. Dev.*	*Min.*	*Q1*	*Median*	*Q3*	*Max.*
R_t	16,935	0.167	0.609	-0.898	-0.191	0.079	0.382	3.771
X_FOR_{t-1}	16,935	0.016	0.075	-0.316	-0.000	0.014	0.040	0.213
X_DOM_{t-1}	16,935	0.014	0.220	-2.843	0.000	0.038	0.075	0.591
X_FOR_t	16,935	0.021	0.077	-0.300	-0.000	0.017	0.047	0.247
X_DOM_t	16,935	0.026	0.184	-2.527	0.000	0.041	0.081	0.732
$X3\_FOR_t$	16,935	0.119	0.236	-0.408	0.004	0.067	0.183	0.955
$X3\_DOM_t$	16,935	0.147	0.505	-4.498	0.008	0.135	0.284	3.055
$R3_t$	16,935	0.460	1.192	-0.999	-0.266	0.189	0.792	7.556
IO_FOR_{t-1}	16,935	0.046	0.092	0.000	0.001	0.016	0.055	1.000
$SIZE_{t-1}$	16,711	6.436	2.209	-0.342	4.892	6.390	8.030	10.623
$log(1+NANAL)_{t-1}$	16,935	1.288	1.082	0.000	0.000	1.099	2.197	3.850
$LOSS_t$	16,935	0.223	0.416	0.000	0.000	0.000	0.000	1.000
$EARNSTD_t$	16,935	0.048	0.077	0.000	0.008	0.020	0.050	0.403

Panel B: Correlation Coefficients

	R_t	X_FOR_{t-1}	X_DOM_{t-1}	X_FOR_t	X_DOM_t	$X3\_FOR_t$	$X3\_DOM_t$	$R3_t$
R_t								
X_FOR_{t-1}	-0.047							
	(0.000)							
X_DOM_{t-1}	-0.044	0.010						
	(0.000)	(0.215)						
X_FOR_t	0.125	0.520	0.096					
	(0.000)	(0.000)	(0.000)					
X_DOM_t	0.058	0.088	0.529	-0.080				
	(0.000)	(0.000)	(0.000)	(0.000)				
$X3\_FOR_t$	0.251	0.315	0.010	0.465	0.027			
	(0.000)	(0.000)	(0.197)	(0.000)	(0.001)			
$X3\_DOM_t$	0.174	0.020	0.323	0.026	0.448	-0.032		
	(0.000)	(0.010)	(0.000)	(0.001)	(0.000)	(0.000)		
$R3_t$	-0.090	-0.014	-0.036	-0.012	-0.014	0.243	0.207	
	(0.000)	(0.079)	(0.000)	(0.117)	(0.069)	(0.000)	(0.000)	

Table 7: Regressions of Current Returns on Future Earnings from Foreign Operations and Interactions with Foreign Institutional Ownership

This table shows results of Ordinary Least Squares regression estimation results. The sample period is from 2001 to 2010. Column (1) reports the estimates of the following regression:

$$R_t = b_0 + b_1 X\_FOR_{t-1} + b_2 X\_DOM_{t-1} + b_3 X\_FOR_t + b_4 X\_DOM_t + b_5 X3\_FOR_t + b_6 X3\_DOM_t + b_7 R3_t + \varepsilon_t.$$

Column (2) reports the estimates of the above regression including interactions with foreign institutional ownership. Foreign institutional ownership is lagged by one period. The definitions of all variables are provided in Appendix A. The standard errors corrected for firm-level clustering are reported in parentheses. *,**,*** indicate significance at the 10%, 5% and 1% level.

	(1)	(2)
X_FOR_{t-1}	-1.703***	-1.790***
	(0.129)	(0.141)
X_DOM_{t-1}	-0.471***	-0.515***
	(0.064)	(0.067)
X_FOR_t	0.653***	0.834***
	(0.139)	(0.149)
X_DOM_t	0.123*	0.230***
	(0.072)	(0.073)
$X3\_FOR_t$	0.891***	0.838***
	(0.039)	(0.043)
$X3\_DOM_t$	0.331***	0.307***
	(0.027)	(0.028)
$R3_t$	-0.122***	-0.115***
	(0.006)	(0.006)
IO_FOR_{t-1}		-0.170*
		(0.092)
IO_FOR_{t-1} x X_FOR_{t-1}		2.837**
		(1.313)
IO_FOR_{t-1} x X_DOM_{t-1}		2.213**
		(1.123)
IO_FOR_{t-1} x X_FOR_t		-5.351***
		(1.396)
IO_FOR_{t-1} x X_DOM_t		-4.402***
		(1.110)
IO_FOR_{t-1} x $X3\_FOR_t$		1.415***
		(0.383)
IO_FOR_{t-1} x $X3\_DOM_t$		0.961***
		(0.373)
IO_FOR_{t-1} x $R3_t$		-0.198***
		(0.065)
Observations	16,935	16,935
Adj. R^2	0.186	0.192

Table 8: Regressions of Current Returns on Future Earnings from Foreign Operations and Interactions with Foreign Institutional Ownership and Controls for the Determinants of the Future Earnings Response Coefficients

This table shows results of Ordinary Least Squares regression estimation results. The sample period is from 2001 to 2010. The columns report the estimates of the following regression including interactions with foreign institutional ownership and 4 different control variables:

$$R_t = b_0 + b_1 X\_FOR_{t-1} + b_2 X\_DOM_{t-1} + b_3 X\_FOR_t + b_4 X\_DOM_t + b_5 X3\_FOR_t + b_6 X3\_DOM_t + b_7 R3_t + \varepsilon_t.$$

Foreign institutional ownership, size and the log of one plus the number of analysts are lagged by one period. The definitions of all variables are provided in Appendix A. The standard errors are corrected for firm-level clustering. *,**,*** indicate significance at the 10%, 5% and 1% level.

Model	(1)	(2)	(3)	(4)
	$SIZE_{t-1}$	$log(1+NANAL)_{t-1}$	$LOSS_t$	$EARNSTD_t$
X_FOR_{t-1}	-1.736***	-1.818***	-1.736***	-1.898***
X_DOM_{t-1}	-0.568***	-0.501***	-0.408***	-0.733***
X_FOR_t	1.264***	1.223***	0.843***	1.124***
X_DOM_t	0.391***	0.317***	0.252***	0.421***
$X3\_FOR_t$	0.648***	0.693***	1.089***	0.806***
$X3\_DOM_t$	0.172***	0.224***	0.382***	0.499***
$R3_t$	-0.104***	-0.096***	-0.126***	-0.133***
IO_FOR_{t-1}	0.171*	-0.005	-0.149*	-0.128
IO_FOR_{t-1} x X_FOR_{t-1}	2.989**	3.122**	2.430**	2.491**
IO_FOR_{t-1} x X_DOM_{t-1}	1.759	2.243*	1.841*	1.824*
IO_FOR_{t-1} x X_FOR_t	-4.748***	-4.067***	-4.798***	-4.581***
IO_FOR_{t-1} x X_DOM_t	-4.152***	-3.531***	-3.883***	-3.606***
IO_FOR_{t-1} x $X3\_FOR_t$	1.065***	0.825**	1.225***	1.236***
IO_FOR_{t-1} x $X3\_DOM_t$	0.520	0.178	0.889**	0.710*
IO_FOR_{t-1} x $R3_t$	-0.196***	-0.147**	-0.183***	-0.152**
Control	-0.041***	-0.041***	-0.020	1.485***
Control x X_FOR_{t-1}	0.025	0.060	0.252	2.025*
Control x X_DOM_{t-1}	0.029	-0.007	-0.057	1.422***
Control x X_FOR_t	-0.079	-0.525***	0.216	-0.836
Control x X_DOM_t	-0.029	-0.162**	0.086	-0.955**
Control x $X3\_FOR_t$	0.036*	0.193***	-1.691***	-0.896***
Control x $X3\_DOM_t$	0.032**	0.143***	-0.242***	-0.981***
Control x $R3_t$	-0.003	-0.023***	0.041***	0.077
Observations	16,711	16,935	16,935	16,935
Adj. R^2	0.210	0.203	0.222	0.230

APPENDIX A: VARIABLE DEFINITIONS

Variable Name	Description
Dependent Variables	
VOL_t	standard deviation of weekly returns multiplied by $\sqrt{52}$ in year *t*
$log(VOL)_t$	log of standard deviation of weekly returns multiplied by $\sqrt{52}$ in year *t*
Ownership Variables	
IO_FOR_{t-1}	number of shares held by foreign institutions divided by total number of shares outstanding at the end of year *t-1*
IO_DOM_{t-1}	number of shares held by domestic institutions divided by total number of shares outstanding at the end of year *t-1*
Control Variables	
MV_{t-1}	market value of equity ($ mil) at the end of year *t-1*
$SIZE_{t-1}$	log of market value of equity ($ mil) at the end of year *t-1*
MB_{t-1}	market value of equity divided by book value of equity in year *t-1*
LEV_{t-1}	long-term debt divided by market value of equity in year *t-1*
ROE_{t-1}	net income before extraordinary items in year *t-1* divided by book value of equity at the end of year *t-2*
$VOLP_{t-1}$	standard deviation of *ROE*s using the previous 6 years of data for year *t-1*
DIV_{t-1}	indicator variable set to 1 if the firm pays dividends and 0 if the firm does not pay dividends in year *t-1*
AGE_t	number of years since firms appear on Datastream in year *t*
$log(1+AGE)_t$	log of one plus the number of years since firms appear on Datastream in year *t*
Interacting Variables	
FS_t	foreign sales divided by total sales in year *t*
FA_t	foreign assets divided by total assets in year *t*
Variables in the Future Earnings Response Coefficient Regressions	
R_t	buy-and-hold return for year *t* over the 12-month period ending three months after the year *t* fiscal year-end
$R3_t$	buy-and-hold return for the three-year period following year *t* starting three months after the year *t* fiscal year-end
X_FOR_{t-1}	foreign operating income less net interest expense allocated to foreign operations in year *t-1* scaled by market value of equity three months after the year *t-1* fiscal year-end
X_FOR_t	foreign operating income less net interest expense allocated to foreign operations in year *t* scaled by market value of equity three months after the year *t-1* fiscal year-end
$X3\_FOR_t$	sum of foreign operating income less net interest expense allocated to foreign operations for 3-year period from year *t+1* to year *t+3* scaled by market value of equity three months after the year *t-1* fiscal year-end
X_DOM_{t-1}	domestic operating income less net interest expense allocated to domestic operations in year *t-1* scaled by market value of equity three months after the year *t-1* fiscal year-end

APPENDIX A (CONTINUED)

X_DOM_t	domestic operating income less net interest expense allocated to domestic operations in year *t* scaled by market value of equity three months after the year *t-1* fiscal year-end
$X3\_DOM_t$	sum of domestic operating income less net interest expense allocated to domestic operations for 3-year period from year *t+1* to year *t+3* scaled by market value of equity three months after the year *t-1* fiscal year-end
$NANAL_{t-1}$	number of analysts following the firm at the end of year *t-1*
$log(1+NANAL)_{t-1}$	log of one plus the number of analysts following the firm at the end of year *t-1*
$LOSS_t$	variable set to1 if $X3\_FOR_t$ is negative, and 0 otherwise
$EARNSTD_t$	standard deviation of *X_FOR* for year *t* through *t+3*

APPENDIX B: THE LIST OF COUNTRIES BY GEOGRAPHIC REGION

Europe
Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, Switzerland, United Kingdom

Middle East & Africa
Egypt, Israel, South Africa, Turkey

Asia Pacific
Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Taiwan, Thailand

North America
Canada, Mexico, United States

South America
Brazil, Chile, Colombia, Peru

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