Does Foreign Investor Base Concentration Affect Stock Price Volatility?

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Abstract   This paper investigates the effect of foreign investor base concentration on stock price volatility. Concentrated foreign investor base is hypothesized to increase strategic complementarities among investors and therefore increase price volatilities for stocks with high foreign investor participation. Empirical analysis of the relationship between the concentration of foreign investor base and the volatility of stock prices shows that the foreign investor base concentration is positively associated with stock price volatility for the stocks with high foreign turnover.

Keywords   Price volatility · Foreign ownership · Investor base · Institutional ownership

Introduction

Since the 1990s, influence of foreign investors had grown rapidly along with the growth of cross-border equity investment. As a result, behaviors of foreign investors were often cited as the source of large degree of volatility synchronization in the global equity markets, especially during the global financial crisis in 2008. The volatility synchronization between the US stock

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market and the rest of the world was so large that it could not be fully explained by the degree of economic integration alone.

Against this backdrop, this paper examines the effect of foreign investment on the price volatility of stocks. More specifically, this paper analyzes the effect of foreign investor base concentration on stock price volatility.

I consider the strategic complementarity among investors as the channel through which investor base can affect price volatility. Strategic complementarity is a concept that represents the situation in which optimal strategies among economic agents form a complementary relationship. It serves as a core element of theories that try to explain financial market instability such as bank run, bubble formation and the following bust. Strategic complementarity among investors also has been discussed as a source of financial instability in mutual fund literature.[1] However, the effects of strategic complementarity among investors on international stock price volatilities has not been investigated.

In this paper, I examine the hypothesis that the higher homogeneity of the investor base, the more likely the strategic complementarity between investors will manifest and therefore the price volatility will increase. To measure the investor-base homogeneity, I construct a concentration measure of foreign investor base by using stock holdings data of international institutional investors. I selected individual stocks in 23 MSCI advanced markets and 23 emerging markets, and focused on the effect of investor base on stock price volatility.

The results of the cross-sectional regression analysis show that foreign investor base concentration increases price volatility for the stocks that had high foreign institutional investor turnover. In other words, I find price volatility tends to be higher for the stocks whose foreign investor base is more concentrated when the stock is frequently traded by foreign investors. This means having a diversified foreign investor base can help lower price volatility for the stocks that are frequently traded by foreigners. This finding is in line with my hypothesis since diversified investor base can reduce multiplying effects from strategic complementarity.

This finding contributes to the existing literature that studies the effects of foreign investors on the price volatilities of international stocks by utilizing better data for foreign ownership and by suggesting a new hypothesis of strategic complementarities among foreign investors. Previous papers have investigated the effects of foreign investors on price volatilities, but their data had limited information on foreign ownership. Bae, Chan, and Ng (2004) used foreign investibility index instead of actual foreign ownership. Li, Nguyen, Pham, and Wei (2011) used the data on large block shareholdings of foreign investors. This paper investigates the effects of foreign investors in more detail with more detailed data on foreign ownership which was not previously available.

The remainder of this paper is organized as follows. Section 2 presents a literature review and builds the main hypothesis. Section 3 describes the main data used. Section 4 describes the empirical estimation results. Finally, Section 5 concludes.

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[1] See Chen, Goldstein, and Jiang (2010), Goldstein, Jiang, and Ng (2017)

Literature Review and Hypothesis

Literature Review

Strategic complementarity is a concept that represents the situation in which the optimal strategies between economic actors form a complementary relationship. This is a key element in the theory that explains financial market instability such as bank run, exchange rate attack, bubble formation and collapse.

The classic bank run model was presented in Diamond and Dybvig (1983). In this theory, optimal strategies of depositors are to withdraw if other depositors are expected to withdraw, and not withdraw if other depositors are not expected to withdraw. The strategies of depositors enforce each other, and we call this state strategic complementarity. When there exists the mutual enforcement of optimal strategies among players, it is considered that the system is not stable and anxiety can be formed. However, in this model, the equilibrium is not unique and the bank run is not based on fundamentals, but rather by chance (panic-based). Also, this theory is difficult to verify empirically because it is assumed that a bank run occurs by chance.

The above theoretical limitation was in part overcome by introduction of global game with imperfect information.[2] Morris and Shin (1998) used this framework to model currency attacks. The development of the theory is very important because the model achieves a unique equilibrium and because the probability of a currency attack occurring can be derived from the model. In the model, economic actors are supposed to react to incomplete information about fundamentals, and the theory is structured to be based on fundamentals rather than a currency attack by chance. The global game used in this paper was also used to extend the theory explaining the bank run.[3]

In a theory where strategic complementarity exists, homogeneity between decision makers plays an important role. This is because systematic instability occurs if players' optimal decisions are to act before others when players are facing similar situations. In this context, Herrendorf, Valentinyi and Waldmann (2000) showed that if sufficient heterogeneity exists between economic players, instability caused by strategic complementarity can be reduced.

Further development was made that considered cases where a small number of large investors and a large number of small investors coexist. Corsetti, Dasgupta, Morris and Shin (2004) modeled a currency attack when a large number of small investors and a small number of large investors coexist. As a result of the paper, it was analyzed that if there are a few large investors, the likelihood of an exchange rate attack increases. These results suggest that when small and large investors coexist, the balance is determined in the direction of more profits for large investors. On a similar note, the theory of bank runs by Goldstein and Pauzner (2005) suggested that the probability of a bank run becomes smaller if there exist a small number of large investors.

Based on this theory, Chen, Goldstein and Jiang (2010) also empirically analyzed the strategic complementarity that can occur in mutual funds. The paper finds that when mutual funds invests in illiquid assets, they are more sensitive to redemption in response to poor performance in the past, and when large investors were the fund's main customers, the degree to which they were sensitive to past performance decreased. According to the theory suggested in the paper,

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[2] Carlsson and van Damm (1993)
[3] Goldstein and Pauzner (2005)

there is a high level of strategic complementarity if the fund's assets are illiquid because losses of not redeeming before others can be large. In addition, when large investors are the main investors of the fund, the degree of strategic complementarity is small because large investors are relatively less affected by the actions of other investors.

Hypothesis

Based on the literature discussed above, I form the following hypothesis.

> *Hypothesis 1:* *the increased homogeneity of investors will increase the price volatility due to increased possibility of strategic complementarity between investors.*
>
> *Hypothesis 2:* *the increased homogeneity among foreign investors will increase the price volatility if foreign investors' participation is significantly high.*

The first hypothesis naturally follows from the literature. As homogeneity of investors increases, we are expected to see more strategic complementarity among investors which will lead to more instability in prices. Increased strategic complementarity among more homogeneous investors and its associated fragility was theoretically discussed in multiple settings in the literature.[4]

The statement in the first hypothesis can be extended to homogeneity of foreign investors if added homogeneity in foreign investor would add homogeneity of the overall investor base. Since the foreign investor base is a part of the overall investor base that includes local investors, the homogeneity among foreign investors may have different effects depending on how the overall investor base is shaped. Foreign investors often face different compensation from that of local investors because their returns from investments are influenced by foreign exchange rates. Also, foreign investors are more influenced by their respective local shocks and are less affected by the domestic shocks that originates from the country where the stock is listed. For this reason, introduction of foreign investors can reduce homogeneity in the total investor base if foreign investor participation is low.

On the other hand, if foreign investor participation is high, then homogeneity of foreign investors can add to the homogeneity of the overall investor base. Foreign investors are homogeneous in a sense that they are affected by the shared shocks such as foreign exchange rate shocks and overall international financial market shocks. If a large portion of investor participation comes from the foreign investors, then the homogeneity of foreign investors can result in increased strategic complementarity among the total investor base.

Since data on overall investor base is unavailable, I focus on testing the second hypothesis on foreign investors in this paper. Data on equity ownership by financial institutions are usually available due to regulatory requirements for the institutions to report their holdings either to financial regulators or to their investors, but there is no readily available data on ownership by large shareholders and individuals who are not required to disclose their holdings. Also coverage

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[4] The theories in Corsetti, Dasgupta, Morris and Shin (2004), Goldstein and Pauzner (2005), and Chen, Goldstein and Jiang (2010) were respectively developed in the settings of currency attacks, bank runs, and mutual funds.

on ownership of domestic institutions was comparably smaller than that of foreign institutions for international equities in international ownership data.[5]

Data and Variables

Data

Equities from 23 developed countries and 23 emerging countries were selected for the hypothesis testing presented in the previous chapter. Equities were chosen for the testing because of the advantage of having public information about the investor base compared to other assets. However, data on the investor base that are available is based on reports of institutional investors, and in some countries, there is a limitation on the data that there are insufficient information on domestic institutional investors. Therefore, I do not use holdings data by domestic institutional investors, but focus on the holdings data by foreign institutional investors with a higher degree of completeness.

The data used in this paper come from two main sources. The institutional ownership data on international equities are from FactSet Ownership and daily data on international stocks are downloaded from Datastream.

FactSet Ownership contains data on equity holdings by international institutions. Sample period of the ownership data used in this paper is from the first quarter of 2001 to the last quarter of 2013. During this period, there were holdings data by 9,884 institutions from 89 countries on 142,022 securities from 138 countries.

FactSet Ownership holdings data contains two main databases. One is institutional level holdings and the other is fund level holdings data. This paper merges the two databases to maximize the coverage.

Fund level holdings data describes how many number of shares of a certain security is held by a certain fund at a specific date. These fund level holdings data are often recorded periodically, but report dates are not aligned across funds. Also many funds report their holdings quarterly, but there are some funds reporting semiannually or even once a year. In this paper, I use fund level holdings data for the funds that report at least 2 times in a year on average. For those funds with less frequent reporting than quarterly but reports at least two times in a year on average, I filled in missing quarterly holdings data using the latest holdings data. For funds with shorter reporting frequency than quarterly, I used the holdings data from the latest report date in a quarter converting the holdings data into quarterly data.

After making the fund level data into quarterly data, I have merged the data with the institutional level holdings data. The institutional holdings data are mostly quarterly, so there is less data cleaning needed. When merging with the fund level data, I only used institutional data that are reported quarterly. Identifiers that links funds with its parent institution was used to merge the fund level data into the institutional level data. When there are overlapping holdings data of a stock from fund level data and institutional level data, I only used institutional level data to avoid double counting.

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[5] See Bartram, Griffin, Lim, and Ng (2015)

Daily stock returns, prices, trading volume, shares outstanding are downloaded from Datastream. In order to manage accuracy of price information, we only included stocks that are traded more than 200 days in the previous year. Since this paper relies on the information on foreign investor base, stocks with positive foreign ownership are selected. Also, I require stocks be held by at least 5 institutions for the accuracy of foreign investor base variable.

Variables

In this section, I construct variables to be used in the empirical analysis. The main hypothesis to be tested is that foreign investor homogeneity can increase price volatility when foreign investors' participation is high. In order to test this hypothesis we need to construct two variables. One that measures investor homogeneity and the other for participation of foreign investors.

For the measure of investor homogeneity, I construct foreign investor base concentration (FIBC) variable that is similar to Herfindahl-Hirschman index (HHI). Foreign investors of a stock are grouped into types and HHI is constructed from shares of ownership by each type of foreign investor. Foreign investor base concentration of stock i in quarter t is defined as follows:

$$FIBC_{i,t} = \sum_{c=1}^{N} \left(\frac{H_{i,c,t}}{\sum_{d=1}^{N} H_{i,d,t}} \right)^2$$

where $H_{i,c,t}$ is the number of shares of stock i held by investor type c at quarter t and N is number of investor types.

This foreign investor base concentration (FIBC) variable describes how the holdings of investor is concentrated by investor type. The variable is equal to one if the stock is owned by a single type of investor, and the variable is close to zero if the holdings are evenly distributed across different types of investors.

In this paper, I chose domicile countries of institutions as the main foreign investor type in constructing the FIBC. There is no restriction on the types of investors thus one could use other categories for foreign investors, but domicile country seems to be a natural starting point for the analysis of investor base homogeneity.

For measuring foreign investor participation, I construct foreign turnover variable from changes of holdings using ownership data. Foreign turnover (FT) of stock i in quarter t is defined as follows:

$$FT_{i,t} = \sum_{k=1}^{K} \left| S_{i,k,t} - S_{i,k,t-1} \right|$$

where $S_{i,k,t}$ is share of stock i held by institution k at quarter t and K is number of foreign institutions.

Measuring foreign turnover (FT) from quarterly holdings data has its limitation that the measure understates its actual turnover by foreign investors. This is because the turnover is

measured using two end-of-period holdings not capturing trading that may have occurred during the quarter. Also, the institutional holdings data do not fully represent all of foreign investors. If data on trading volume by foreigners were available in all countries as it is in Korean stock exchanges, such data would have been used. However, such statistic is not available in most of countries, therefore I decided to use this foreign turnover variable for measuring foreign investor participation. To insure the accuracy of this variable, I have imposed two filtering conditions for stocks to be included in our sample. To be included in the sample, a stock has to have at least 5 foreign institutional investor holding the stock. Also, I only included holdings data for institutions that report frequently. Also, to overcome possible infrequency of holdings data, I used four-quarter rolling average for this variable.

Price volatility and turnover variables are constructed from Datastream data. Price volatility (P VOL) is annualized standard deviation of weekly returns within a quarter. Turnover (TURN) is quarterly trading volume divided by shares outstanding.

Table 1 reports summary statistics of the price volatility (P VOL), turnover (TURN), market capitalization (ME), foreign ownership (FO), and foreign investor base concentration (FIBC). First panel is summary statistics for all sample and the rest are the same statistics for three subsamples sorted by average of foreign turnover (FT) in the past four quarters. The stocks with low foreign turnover, shown in panel B, has low market capitalization as well as low overall turnover. In addition, it can be seen that the FBCI is relatively high and foreign ownership is low. On the other hand, stocks with high foreign turnover, shown in Panel D, are large stocks with high foreign ownership, and heterogeneous foreign investor base.

Table 1 Summary Statistics

This table reports summary statistics of the variables. Panel A reports the statistics for all firm-quarter panel data. Panel B, C, D reports the same statistics for firms divided into three bins sorted by foreign ownership turnover. Price volatility (P VOL) is annualized standard deviation of weekly returns within a quarter. Turnover (TURN) is annualized quarterly turnover. Market capitalization (ME) is in million USD. Foreign ownership (FO) is in percent. Foreign investor base concentration (FIBC) is based on Herfindahl-Hirschman Index from foreign ownership. Ownership related data come from FactSet Ownership and returns, turnover, market capitalization are retrieved from Datastream.

	P VOL	TURN	ME	FO	FIBC
Panel A: All sample					
Average	38.16	151.99	4,615	8.10	0.43
Dev.	23.68	187.76	15,492	9.60	0.22
Panel B: Low Foreign Turnover					
Average	38.20	110.35	1,361	2.58	0.50
Std.	24.28	154.14	5,216	3.11	0.22
Panel C: Medium Foreign Turnover					
Average	37.78	157.22	4,463	5.78	0.39
Std.	23.12	178.94	17,913	4.64	0.20
Panel D: High Foreign Turnover					
Average	38.47	187.25	7,934	15.74	0.38
Std.	23.58	215.51	18,671	12.16	0.21

Empirical Results

Methodology

I begin with a simple cross-sectional regression framework of price volatilities. Cross-sectional regression model used here is Fama-MacBeth regression and the base line model is

$$\sigma_{i,t+1} = \beta_0 + \beta_\sigma \sigma_{i,t} + \beta_R R_{i,t} + \beta_{SZ} \ln ME_{it} + \beta_{TO} TO_{it} + \varepsilon_{i,t+1} \tag{1}$$

The dependent variable is price volatility of stock i at quarter $t+1$. Lagged dependent variable, return $R_{i,t}$, log of market capitalization $\ln ME_{it}$, turnover $TO_{i,t}$ are the explanatory variables. Quarterly price volatility is calculated using standard deviation of weekly returns within a quarter. Turnover is trading volume divided by shares outstanding. In order to compare the size of estimated coefficients, dependent and explanatory variables are standardized every quarter. Standard errors of estimated coefficients are Newey-West adjusted.

The lagged dependent variable is included in the regression to control for high autocorrelation in price volatility. The return is included to control for the effects of increased volatility during negative shocks to returns. The log of market capitalization is included to control for size effects on volatility. The variables included in the baseline regression was referenced from baseline models of Bae, Chan, and Ng (2004) and Li, Nguyen, Pham, and Wei (2011).

Starting from the baseline regression model above, the main hypothesis is tested by adding the main variable in the regression. The main hypothesis is that when foreign investors' participation is high, the increased homogeneity among foreign investors will increase the price volatility. To test this hypothesis, I add foreign investor base concentration (FIBC) variable to the regression. In addition, since the relationship between foreign investor homogeneity and price volatility is conditioned upon having high foreign investor participation, I am going to divide the sample according to foreign turnover (FT) and run the same regression using the divided subsamples.

Main Results

The main hypothesis of the paper predicts that the foreign investor base concentration is going to be positively associated with price volatility when foreign turnover is high. The foreign investor base concentration is a measure of foreign investor base homogeneity, and the effect of investor base homogeneity can have different effects on price volatility depending on whether homogeneity in foreign investor adds to the homogeneity of overall investors or not. If foreign investor participation is low, foreign investor homogeneity can have only little effect on overall investor homogeneity. However, for the stocks that have large foreign investors participation, the foreign investor base homogeneity can increase the overall investor base homogeneity therefore have a large effect on overall stability of prices. In this case, the foreign investor base concentration can be significantly associated with the price volatility.

Table 2 reports results from cross-sectional Fama-MacBeth regressions for all stocks, and for subsamples sorted by foreign turnover (FT) in the past four quarters. The regression model

is based on the baseline regression model discussed in the previous section and added explanatory variable in the model is the foreign investor base concentration (FIBC) variable that proxies foreign investor base homogeneity. I find that FIBC is very significant in the sample of stocks with high foreign turnover, but is not significant in other sample of stocks with medium or low foreign turnover. The foreign investor base concentration has negligible effect on price volatility unconditionally, but for stocks with high foreign turnover its effect is significant. These results are in line with the prediction of the main hypothesis and therefore empirically support it.

Table 2 Main results

This table reports Fama-MacBeth regression results. Dependent variables are price volatilities. Explanatory variables are lagged values of foreign investor base concentration measure, price volatility, return, log of market capitalization, and turnover. Regressions are run using all samples (ALL), stocks with low foreign turnover (LOW), medium foreign turnover (MED), and high foreign turnover (HIGH). Sample period is from the first quarter of 2001 to the last quarter of 2013. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		Foreign Turnover		
	ALL	LOW	MED	HIGH
Main variable				
Foreign investor base	0.004	-0.007	0.005	0.028***
concentration	(1.25)	(-1.42)	(1.46)	(3.64)
Other variables				
Price volatility	0.497***	0.486***	0.476***	0.478***
	(38.11)	(31.76)	(38.46)	(37.11)
Return	-0.089***	-0.082***	-0.084***	-0.092***
	(-3.95)	(-4.10)	(-3.57)	(-3.77)
log(Market Cap)	-0.155***	-0.141***	-0.166***	-0.174***
	(-19.53)	(-19.37)	(-23.69)	(-17.15)
Turnover	0.102***	0.102***	0.105***	0.096***
	(16.16)	(10.65)	(14.67)	(16.74)
Adjusted R^2	0.413	0.389	0.421	0.441
Observations	327,625	106,625	106,499	109,526
Average number of stocks	6,300	2,050	2,048	2,106

Robustness test

To check the robustness of the results, I added one additional control variable suggested by existing literature that may be associated with price volatility at the same time related to foreign investors. Bae, Chan, and Ng (2004) find volatility is positively related to foreign investment openness. To control for this effect, I include foreign ownership as additional control variable in the baseline regression.

In addition, I check if the our main hypothesis is true for both developed and emerging markets. It is possible that the strategic complementarity effect can be driven by either of the markets. Since strategic complementarity is more likely to affect illiquid markets, we may see

the effect in the hypothesis taking place mainly in emerging markets.

Table 3 reports the results for the regression discussed above for six samples. The regression results using all samples are reported in column (1). The FIBC remains insignificant as seen in our main results even after controlling for foreign ownership, while foreign ownership is positively significant. The significantly positive association between foreign ownership and price volatility is consistent with the findings in Bae, Chan, and Ng (2004). The results in column (2) using stocks with high foreign turnover in all markets show that FIBC is positively significant even after controlling the foreign ownership effect. The same relationships can be found in both developed and emerging markets showing robust results consistent with our main result. However, the coefficient on foreign ownership from high foreign turnover stocks in emerging markets is no longer significant. This may suggests that, for stocks with high foreign investor participation, the way foreign investor base is concentrated can give more important information on price volatility than the size of foreign investment.

Table 3 Robustness check

This table reports Fama-MacBeth regression results. Dependent variables are price volatilities. Explanatory variables are lagged values of foreign investor base concentration (FIBC) measure, foreign ownership (FO), price volatility (P VOL), return, log of market capitalization (ME), and turnover. Regressions are run using all samples (ALL), stocks with high foreign turnover from all samples (All HI), samples from developed markets (DM), stocks with high foreign turnover in DM (DM HI), samples from emerging markets (EM), and stocks with high foreign turnover in EM (EM HI). Sample period is from the first quarter of 2001 to the last quarter of 2013. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	All	All HI	DM	DM HI	EM	EM HI
	(1)	(2)	(3)	(4)	(5)	(6)
FIBC	-0.002	0.019***	-0.005	0.020***	0.009	0.028***
	(-0.93)	(2.61)	(-1.43)	(2.35)	(1.51)	(3.29)
FO	0.037***	0.023***	0.038***	0.021***	0.029***	-0.001
	(7.37)	(6.61)	(7.91)	(6.10)	(3.19)	(-0.05)
P VOL	0.493***	0.478***	0.493***	0.478***	0.449***	0.451***
	(36.86)	(36.67)	(34.36)	(33.62)	(33.25)	(20.13)
Return	-0.088***	-0.093***	-0.093***	-0.100***	-0.060***	-0.044
	(-3.95)	(-3.81)	(-4.11)	(-3.98)	(-2.68)	(-1.61)
log(ME)	-0.166***	-0.176***	-0.181***	-0.182***	-0.100***	-0.101***
	(-20.94)	(-17.33)	(-20.59)	(-18.23)	(-11.70)	(-5.38)
Turnover	0.104***	0.098***	0.114***	0.105***	0.093***	0.098***
	(16.21)	(17.30)	(16.45)	(13.60)	(11.35)	(9.89)
Adj R^2	0.415	0.442	0.434	0.464	0.323	0.357
Obs	327,457	109,526	262,575	88,024	64,882	21,456
Avg nobs	6,297	2,106	5,050	1,693	1,248	413

Robustness of foreign turnover as our measure of foreign investor participation is also considered.[6] Table 1 shows that foreign turnover may be highly correlated with market capitalization and foreign ownership. This is understandable because foreign investors generally trade the stocks that has large market capitalization and the stocks that they already own. For this reason, it is possible that our finding regarding foreign turnover could be driven by a common factor that drives all of foreign turnover, market capitalization, and foreign ownership. To test this possibility, I sort the sample by foreign ownership and market capitalization each quarter, and run the same robustness regressions in Table 3.

Table 4 reports the regression results. The signs of the coefficients on FIBC are positive for stocks with high ownership (3) and high market capitalization (6), however the coefficients in those regressions are no longer significant. These results suggest the foreign turnover is indeed a meaningful measure of foreign investor participation. It further suggests foreign turnover can provide an important condition under which the foreign investor base concentration effects on price volatility are significant.

Table 4 Foreign turnover robustness check

This table reports Fama-MacBeth regression results. Dependent variables are price volatilities. Explanatory variables are lagged values of foreign investor base concentration (FIBC) measure, foreign ownership (FO), price volatility (P VOL), return, log of market capitalization (ME), and turnover. Regressions are run using samples with low FO (1), medium FO (2), high FO (3), low ME (4), medium ME (5), and high ME (6). Sample period is from the first quarter of 2001 to the last quarter of 2013. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	FO			ME		
	Low	Med	High	Low	Med	High
	(1)	(2)	(3)	(4)	(5)	(6)
FIBC	-0.010	0.001	0.011	-0.010**	-0.016***	0.008
	(-1.52)	(0.21)	(1.60)	(-2.31)	(-3.21)	(1.44)
FO	-0.014***	0.009***	0.036***	0.020***	0.053***	0.038***
	(-2.71)	(3.34)	(10.88)	(2.72)	(9.50)	(5.90)
P VOL	0.492***	0.471***	0.484***	0.463***	0.458***	0.496***
	(30.07)	(35.57)	(43.92)	(36.41)	(31.53)	(38.87)
Return	-0.087***	-0.085***	-0.092***	-0.107***	-0.053**	-0.048*
	(-4.49)	(-3.54)	(-3.75)	(-5.29)	(-2.28)	(-1.67)
log(ME)	-0.150***	-0.162***	-0.170***	-0.141***	-0.059***	-0.075***
	(-23.66)	(-16.09)	(-20.30)	(-14.46)	(-21.28)	(-9.35)
Turnover	0.106***	0.120***	0.092***	0.102***	0.150***	0.114***
	(10.20)	(15.43)	(23.77)	(11.05)	(27.32)	(16.15)
Adj R	0.413	0.408	0.430	0.377	0.354	0.390
Obs	106,097	106,560	109,993	105,557	106,780	110,313
Avg no	2,040	2,049	2,115	2,030	2,053	2,121

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[6] I thank the anonymous referee for suggesting this robustness check.

Concluding Remarks

This paper investigates the effects of foreign investor base concentration on price volatilities of equities from 46 countries. Based on theories of strategic complementarities among investors, I hypothesize that price volatilities can increase as concentration of foreign investor is increased for equities with high foreign investor activities. I find robust empirical evidence supporting the hypothesis.

The contribution of this paper is twofold. First, the paper sheds new light on the possibility that strategic complementarity among investors can act as a factor for price volatilities on international equities. The paper argues that price volatilities of equities can increase if investor base is homogenous. Strategic complementarities can be formed among homogenous investor base and this could lead to instabilities in the market. Second, the paper is the first in the literature to investigate the effects of investor base homogeneity in the international equities. Effects of foreign ownership on the price volatilities has been investigated in the literature, but investigating the effects for foreign investor base has not been done before. This investigation was made possible by analyzing the details of foreign ownership data, which was not available previously.

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