Can differential interpretation of common information explain the distinct stock holdings of foreign investors?

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Abstract

This paper proposes and tests a *symmetric* information-based explanation for different stock holdings between domestic and foreign investors. Specifically, we extend Pastor (2000) and Li (2004) to the within-country stock selection problem by positing that domestic stocks are evaluated by investors through their own home-country market portfolio. This difference in "model" allows locals and foreigners to interpret common information differently and build different opinions on domestic stocks, leading them to hold different domestic stock portfolios. Using data from Korea, we find strong evidence for this hypothesis. Additionally, we find that the differential interpretation of common information makes foreigners avoid some of the domestic stocks more than it increases the demand of foreign investors for other domestic stocks.

Keywords: Foreign investors, home bias, differential interpretation, asymmetric information,

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1. Introduction

As Morris (1995) points out, it is virtually "an article of faith among economists that differences in beliefs among rational individuals must be explained by different information. (p.227)" It is thus not surprising that different stock holdings between domestic and foreign investors have been explained mostly by differential access to information. This approach, however, proves inadequate, since the different stock holdings persist even when the barriers to foreign investors accessing information about domestic stocks are reduced significantly (see, e.g., Karolyi and Stulz 2003). In this paper, we take an alternative approach that is not based on asymmetric information. Specifically, we propose and test the hypothesis that the two groups of investors interpret the same information differently and thus hold different stock portfolios in a domestic market.

In economics and finance literature, it has been suggested that people can disagree even when they have the same set of information. For example, Harris and Raviv (1993) say that "disagreements can arise either because speculators have different private information or because they simply interpret commonly known data differently. (p.474)" Kandel and Pearson (1995) also show that it is too restrictive and also inconsistent with data to assume that investors interpret public information in the same fashion. More precisely, investors may have different priors before updating their beliefs in response to new information, or they may use different models in the updating process.[1] Either way, investors will agree to disagree as long as they do not learn from each other or do so only over an arbitrarily long time, a condition that is not unreasonable considering the various noises in actual learning process (Allen and Gale 1999). Given the few barriers to international investment and information acquisition at the present time, it is thus conceivable that the continued difference in stock selection between domestic and foreign

[1] For the first approach, see Varian (1985), Coval and Thakor (2005), or Boot, Gopalan, and Thakor (2006), among others. Studies taking the second approach include Harrison and Kreps (1978), Harris and Raviv (1993), and Kandel and Pearson (1995).

investors is attributable to their differential interpretation of common information rather than to differential information.

To operationalize this idea, we need a proxy for public information to which both domestic and foreign investors have the same access, and also need to stipulate how that public information is differently processed. To these ends, we hypothesize that past stock return, which is the incontrovertible public information, is differently interpreted by the two investor groups as they employ different asset pricing models. Specifically, we follow Pastor (2000) and Li (2004) by positing that investors begin with their home-country market portfolio in evaluating various investment opportunities both at home and abroad. These studies attempt to explain the overall underweighting of domestic stocks by foreign investors by allowing for the home country-oriented prior beliefs that can later be corrected. In contrast, we are interested in the different stock selection between domestic and foreign investors *within* a market. Hence, we assume that in a given market, domestic investors use the local version of the CAPM while foreign investors collectively use the global version of the CAPM. Furthermore, both groups are assumed to stand by their model and thus remain heterogeneous.

When an investor believes in a certain asset pricing model, she will expect the alpha – i.e., the extent to which a given stock is over- or undervalued – to be zero. Or equivalently, a non-zero alpha estimated from historical returns is expected to be short-lived. Specifically, a positive (negative) estimated alpha would mean that the stock is overvalued (undervalued) and therefore needs to be sold (bought). Our idea is that as domestic and foreign investors adopt different asset pricing models, they can arrive at different alpha estimates from the same past stock return, and thus react differently. As stocks are generally held by an investor who perceives them to be relatively cheaper, we thus predict that the difference between the local and global alpha estimates is positively related to foreign ownership. For example, when domestic investors perceive a stock to be relatively more overvalued (i.e., when the alpha difference is positive), the

stock is likely to be held by foreigners. Conversely, a negative alpha difference will be associated with a lower foreign ownership, again giving rise to a positive relation between the alpha difference and foreign ownership.

We test this hypothesis using data from Korea, which help us rule out many of the competing explanations from the outset. This country fully opened its stock market to foreigners after the 1997 financial crisis. Hence, by focusing on the post-crisis period, we can ensure that our results are not driven by any formal barriers to foreigners investing or collecting information. In addition, Korea uniquely offers insider ownership information for a large cross-section of stocks. This data availability is not trivial, since insider ownership is known to affect foreigners' stock selection (see, e.g., Dahlquist, Pinkowitz, Stulz, and Williamson 2003; Kho, Stulz, and Warnock 2006). We thus use the float-based foreign ownership to exclude this competing explanation and focus on testing our prediction. Additionally, we employ a large set of control variables to isolate the effect of the alpha difference.

Consistent with our prediction, we find that foreign ownership is significantly and positively related to the difference between the local CAPM alpha estimate and the global CAPM alpha estimate (both scaled by residual volatility). It is important to note that our results are not affected by the endogenous relation between the CAPM alpha and foreign ownership. Such endogeneity can arise if a higher foreign ownership makes a domestic stock conform better to the global CAPM and deviate more from the local CAPM. According to this endogeneity story, the alpha difference for the stock should be either very positive or very negative. This prediction is clearly inconsistent with our finding of a positive relation between alpha difference and foreign ownership. We also find that this positive relation is more pronounced when the alpha difference is negative. It thus follows that foreigners avoid over-valued stocks more than they prefer under-valued stocks, consistent with their overall underweighting of domestic stocks.

As we use the past stock return as a proxy for common information, it is also important to distinguish ourselves from the positive feedback trading hypothesis (e.g., Bohn and Tesar 1996; Brennan and Cao 1997). Foreigners' trend-chasing behavior will cause domestic investors to be the counterparty as a contrarian. Hence, it is possible that a positive return on a domestic stock is associated with a higher foreign ownership. Under this alternative explanation, it is the alpha estimate itself – not the alpha difference – that is related to foreign ownership. Consequently, this positive feedback trading hypothesis cannot explain our empirical results.

We also distinguish domestic individual investors from domestic institutional investors, because some of the studies on the Korean stock market find a meaningful difference between the two domestic investor groups (e.g., Choe et al. 2005). In the context of our hypothesis, domestic individuals are more likely to be fixated on their home-country market portfolio than domestic institutions are. However, domestic institutions are also expected to be homebound, to a lesser degree than the case of domestic individuals, because the rationale for the home-country market portfolio as a point of reference is its familiarity, not the accessibility. Hence, unlike foreign ownership, we predict that institutional ownership is not highly related to the alpha difference. Similarly, the holdings of domestic individual investors are predicted to be negatively (or much less positively) related to the alpha difference. Indeed, we find a strong support for these predictions.

To sum up, this paper offers an explanation for the distinct stock holdings between domestic and foreign investors that is not based on asymmetric information. Specifically, we propose and confirm that the two investor groups interpret the common information differently and thus end with different portfolios. This approach to the stock holdings of foreign investors suggests that they will remain different from those of domestic investors even if the barriers to cross-border investment are at the extremely low level. One possible application of this notion is to acknowledge the asset pricing implications of the persistent heterogeneity among investors in the

domestic market. As uncertainty increases the likelihood of investor heterogeneity, we expect investor heterogeneity to be particularly relevant for asset pricing in emerging markets.[2]

This paper proceeds as follows. Section 2 reviews the related literature briefly and develops our testing hypothesis. Section 3 describes the sample and data. Our empirical results appear in Section 4, and Section 5 concludes the paper.

2. Background and testing hypothesis

2.1. Literature review

Stock holdings of foreign investors in a domestic market have received huge academic attention mostly by the name of home bias, which refers to the phenomenon that foreign investors underweight domestics stocks. It has been one of the major research topics in international finance, since the observed stock holdings imply that foreign investors are not maximizing the international diversification benefits.[3] Earlier studies had focused on the explicit barriers to cross-border investment to explain this puzzle, since such barriers were existent and, not surprisingly, they made it difficult for foreigners to hold domestic stocks (e.g., Black 1974; Stulz 1981). However, even with the massive financial integration during the 1980s and 1990s and the resulting fewer obstacles to foreign investors, the lopsided holdings towards the home-country stocks remained robust (e.g., Ahearne, Griever, and Warnock 2001; Glassman and Riddick 2001). Other studies had noted the cross-country differences in economic uncertainty related to consumption opportunities, inflation, or non-traded assets. Those studies raised the possibility that locals and foreigners hold different stock portfolios because they use stocks to hedge against different types of uncertainty. Empirical support for this hypothesis is, however, weak (e.g., Cooper and Kaplanis 1994; Baxter and Jermann 1997; Glassman and Riddick 2001).

[2] Jung, Lee, and Park (2008) provide empirical results that are consistent with this prediction.
[3] See Lewis (1999) or Karolyi and Stulz (2003) for a survey on this literature.

Kang and Stulz (1997) take a different approach to addressing the home bias puzzle. Specifically, they examine the stock holdings at the individual firm level rather that at the country level. Using data from Japan, Kang and Stulz find that foreigners do not hold the Japanese market portfolio and instead disproportionately prefer large stocks. Their findings suggest that even within a market, the obstacles facing foreigners are different from one stock to another. An important observation per se, this uneven barrier within a country can also be related to the overall underweighting of domestic stocks by foreign investors. Since large firms generally have more information available to outside investors, their results are consistent with foreign investors being informationally disadvantaged and thus investing in stocks for which more information is available.

This interpretation, once applied to the aggregate level, suggests that the home bias puzzle is due to the information asymmetries between domestic and foreign investors. It is plausible since foreigners are geographically remote and also have different cultures and languages, all of which are shown to be relevant for portfolio choice decision (Coval and Moskowitz 1999, 2001; Grinblatt and Keloharju 2001). However, empirical evidence for the information asymmetry between domestic and foreign investors is quite mixed (Grinblatt and Keloharju 2000; Seasholes 2000; Choe, Kho, and Stulz 2005). Furthermore, as with the explicit investment barriers, the information asymmetry does not provide a satisfactory answer to the question of why home bias persists despite the significantly reduced costs of foreigners accessing information about domestic stocks.

It is thus natural to ask whether and how investors with the same set of information can disagree and hold different stock portfolios. In fact, there is a growing literature that shows that people with the equal access to new information may well agree to disagree if they start with different prior beliefs or if they employ different models to update their beliefs in response to new information, provided that the learning process is somehow imperfect (see, e.g., Allen and Gale

1999). Pastor (2000) and later Li (2004) apply this notion to the home bias by hypothesizing that investors use their own home-country market portfolio as a point of reference and thus bias themselves towards the home-country stocks.[4] Both studies, using the aggregate data, find that only a very strong belief in the home-country CAPM would be consistent with the observed stock holdings of foreign investors.

2.2. Hypothesis - Idea

We extend the above line of research by postulating that domestic and foreign investors start with their home-country market portfolio as a starting point and "stick to" it, and then examining how well this approach explains the *disaggregated* holdings of foreigners at the individual firm level *within* a market. We believe that this investigation can offer new insights for the following reason.

As Li (2004) and others acknowledge, the word "home bias" can be somewhat controversial, since it is defined as a deviation from a certain asset pricing model despite the possibility that the assumed model is simply wrong. In line with this criticism, Pastor (2000) notes that "several recent studies cannot reject the hypothesis that the global mean-variance efficient portfolios puts zero weights on non-U.S. stocks, (p.182)" which would justify the "biased" behavior of U.S. investors. In fact, Karolyi and Stulz (2003) assess the international asset pricing literature and conclude that the national risk premium is determined by its covariance with the world market portfolio but the cross-section of individual stock returns is not easily understood in the international asset pricing framework. In other words, foreigners' stock holdings are more of a puzzle when they are considered within a market in comparison to the holdings of domestic investors. The stock selection of foreign investors within a market is also an important issue by

[4] This line of research is rooted in the studies on familiarity. See, e.g., Huberman (2001).

itself, since it determines the extent of global risk-sharing and the cost of capital for domestic companies.

Consequently, it is warranted to seek an explanation for the different stock selection of foreign investors within a domestic market that is not based on asymmetric information. In line with Pastor (2000) and Li (2004), we attempt to understand how well the different-benchmark hypothesis explains the observed difference in portfolio decisions between domestic and foreign investors. Below we detail our empirical prediction.

2.3. Hypothesis – Prediction

Following Pastor (2000) and Li (2004), we begin with the presumption that investors believe that their home-country CAPM is the correct asset pricing model. It is a necessary device, since we are extending their research (which examines the extent to which the home-country-bound prior beliefs can explain the home bias at the country level) to different stock selection between domestic and foreign investors within a domestic market. This presumption implies that investors evaluate the past return on a stock through the following one-factor model:

$$R_{i,t}^{D} - r_{f}^{D} = \alpha_{i}^{D} + \beta_{i}^{D}\left(R_{mkt,t}^{D} - r_{f}^{D}\right) + \varepsilon_{i,t}^{D}, \qquad (1)$$

where $R_{i,t}^{D}$ is the domestic-currency return on stock *i*, r_{f}^{D} is the domestic risk-free rate, and $R_{mkt,t}^{D}$ is the domestic-currency return on a proxy for the domestic market portfolio.

A strong belief in the CAPM will convince the investor that a non-zero alpha estimated by historical returns is only ephemeral. That is, a positive alpha estimate, for example, is a signal that the stock has been overvalued and is expected to fall in value subsequently: therefore, it is the "sell" or "not hold" recommendation. In this interpretation, it is necessary to scale the estimated alpha by residual volatility (i.e., volatility of $\varepsilon_{i,t}^{D}$) to correctly take into account the possibility that the non-zero alpha is the compensation for some missing risk factors (MacKinlay 1995).

Foreign investors in a domestic market will similarly start with their home-country CAPM as the benchmark. The benchmark of foreign investors *as a whole* will therefore be the world market portfolio. Specifically, they interpret the past stock return through the following model:

$$R_{i,t}^{W} - r_{f}^{W} = \alpha_{i}^{W} + \beta_{i}^{W}\left(R_{mkt,t}^{W} - r_{f}^{W}\right) + \varepsilon_{i,t}^{W}, \qquad (2)$$

where $R_{i,t}^{W}$ is the foreign-currency return on stock *i*, r_{f}^{W} is the foreign risk-free rate, and $R_{mkt,t}^{W}$ is the foreign-currency return on a proxy for the world market portfolio. Alternatively, the following equation can be considered that is the same in spirit as equation (2):

$$R_{i,t}^{D} - r_{f}^{W} = \alpha_{i}^{W} + \beta_{i}^{W}\left(R_{mkt,t}^{W} - r_{f}^{W}\right) + \beta_{i}^{fx} fx_{t} + \varepsilon_{i,t}^{W}, \qquad (2a)$$

where fx_{t} is the change in the exchange rate between the domestic and foreign currencies. (The foreign-currency return on a stock is approximately the domestic-currency return minus the changes in foreign exchange rate between the two currencies.)

The prediction of the estimated alpha, α_{i}^{W}, remains the same as the domestic alpha. A positive estimate for the world CAPM alpha means that foreigners perceive the stock to be overvalued and as a result either reduce their holdings of the stock or just stay away from it. A negative alpha estimate will have the opposite meaning.

It then follows that, in a market where domestic and foreign investors together clear the market, their opinions can diverge as the same information – namely, past stock returns – can be interpreted differently into α_{i}^{D} and α_{i}^{W}. Even if both groups feel that a certain stock is overvalued, there might be a difference in the degree of the perceived overvaluation, that is, a difference between the two positive alpha estimates. In this case, the stock will be held by those investors who consider the stock to be relatively cheaper. Hence, a positive difference between the domestic and global alphas would imply that domestic investors perceive the stock to be relatively more overvalued, or equivalently, that foreign investors perceive the stock to be relatively cheaper. This is translated into our empirical prediction:

Prediction: The difference between the domestic CAPM alpha and the world CAPM alpha (both scaled by residual volatility) is positively related to foreign ownership.

As in most finance research, our empirical results can potentially be affected by endogeneity. Specifically, it is possible that some stocks are held by many foreign investors and thus conform better to the world CAPM than to the domestic CAPM. If so, then a spurious relation between the alpha difference and foreign ownership can arise. A closer examination of this claim reveals its difference from our prediction. It predicts that the absolute deviation from the domestic CAPM is inversely related to the deviation from the world CAPM, so that either a very positive or very negative alpha difference is associated with a higher foreign ownership. In contrast, our prediction has a unidirectional implication that the alpha difference will be positively related to foreign ownership regardless of whether the alpha difference itself is positive or negative.

The preceding discussion begs the question of what is the true asset pricing model and how that affects our results. Although we are not in the business of speculating on the true asset pricing model in this paper, we can discuss its implications for our investigation. Suppose that the world CAPM is the correct model, meaning that financial markets are fully integrated across countries. If so, then the alpha estimated by foreigners will be uniformly zero across all stocks and the alpha difference will be completely driven by the alpha estimated through the domestic version of the CAPM. Conversely, for a severely segmented market for which the domestic CAPM is more appropriate, the alpha difference will be dominated by the global alpha. Hence, depending on the degree of financial integration, the explanatory power of the alpha difference is attributable more to either alpha.[5]

[5] Stulz (1995) shows that when the global CAPM is correct but investors mistakenly use the local CAPM, the aggregate mistake (i.e., the weighted average of domestic alphas) is zero.

3. Sample and data

Our sample includes all non-financial Korean companies listed on the Korean Stock Exchange whose foreign ownership, accounting information, and daily stock return data are available. Foreign ownership information is compiled by the Exchange, while accounting data are obtained from a database maintained by the Korea Listed Companies Association (TS2000). Stock return data are provided by the Korea Securities Research Institute. We focus on the period after the country fully opened its stock market to foreign investors, namely, the period from 2000 to 2004. As a result, 2,702 firm-year observations are used for our empirical analysis. As shown in Table 1, our sample includes more than 70 percent of all Korean companies listed on the Exchange.

In measuring foreign ownership, we use the public float instead of the total number of shares outstanding. This approach is motivated by the fact that shares held by insiders are not available for foreign investors (e.g., Dahlquist, Pinkowitz, Stulz, and Williamson 2003; Kho, Stulz, and Warnock 2006). Given that corporate ownership is concentrated in most countries except for the U.S. and the U.K (La Porta et al. 1999), it is important to control for insider ownership in analyzing the stock selection of foreign investors. Since the Exchange provides the outstanding shares-based foreign ownership, we divide this original foreign ownership measure by (1 – insider ownership), where the insider ownership is measured by the number of shares held by controlling shareholders, related parties, and treasury stock, divided by the total number of shares outstanding. The resulting number is the float-based foreign ownership.

Besides insider ownership, there are quite a few other factors that are known to affect foreign ownership. We thus employ a large set of control variables to correctly attribute our results to the relative valuation between domestic and foreign investors (i.e., alpha difference). Specifically, we use firm size, profitability, book-to-market ratio, leverage, dividend yield, stock turnover, asset

liquidity, and export-to-sales ratio (see, e.g., Kang and Stulz 1997; Dahlquist and Robertsson 2001). The exact definitions of these variables are provided in Table 2. To avoid endogeneity, these variables are measured or constructed in year t-1 and then are associated with foreign ownership in year t. The alpha difference is also estimated over year t-1 to explain foreign ownership in year t.

4. Empirical results

4.1. Summary statistics

We begin by reporting the summary statistics of foreign ownership and the variables we use to explain the foreign ownership. Table 2 first reports foreign ownership. On average, about 11 percent of the public float is held by foreign investors in the Korean stock market. However, the distribution seems to be positively skewed, as the median is at a much lower level of 1 percent. Not surprisingly, some stocks have no foreign investors (zero foreign ownership) while other stocks are held virtually entirely by them (close-to-one foreign ownership).

The variables of our interests are the alpha estimates either from the domestic version of the CAPM (α^D) or from the world CAPM (α^W). They are estimated respectively via equations (1) and (2a). In estimating equation (2a), we use the exchange rate changes that are orthogonal to the world market portfolio returns to correctly isolate the exchange rate effect. As we estimate those alphas using daily stock returns (with a minimum of 200 observations), they are quite small in magnitude: on average, they are respectively 0.04 and 0.07 percents. In annual terms, however, they amount to approximately 16 and 29 percents (e.g., $1.0004^{365} \approx 1.1572$), which are not negligible. The economic significance of the estimated alphas can be better understood when they are scaled by the residual volatility. This scaling also takes into consideration the possible missing risk factors. According to MacKinlay (1995), if there are other risk factors that are not included in the regression, the resulting alpha estimate can represent the compensation for those

omitted factors. Consequently, there will be a positive relation between the alpha estimate and the residual volatility. The scaling thus helps obtain a metric for temporary swings in stock prices. For these reasons, we first divide the alpha estimate by the corresponding residual volatility, and then obtain the difference between the two scaled alphas.

Along with alphas, we report the beta estimates. As might be expected, the domestic beta (β^D) is greater than the world beta (β^W). Perhaps this is why domestic investors use the local CAPM rather than its global version: the domestic market portfolio better explains returns on domestic stocks. The foreign exchange rate beta (β^W) is on average negative, since the domestic-currency return on a stock should be discounted by the depreciation of the currency itself.

Additionally, we employ as many as eight variables that can potentially affect the preference of foreigners for domestic stocks. Earlier studies have documented that those firm characteristics are correlated with foreign ownership (e.g., Kang and Stulz 1997; Kahlquist and Robertsson 2001). Among others, market value of equity, often dubbed firm size, is the most widely employed firm characteristic to explain foreign ownership. In our analysis, this variable is in log (hence, denoted by *ln*(mktcap)) due to its positive skewness. Corporate profitability, as measured by the earnings before interests, taxes, depreciations, and amortizations (EBITDA), can also potentially affect foreigners' demand for domestic stocks. Book-to-market ratio (BM) is generally known to be negatively related to foreign ownership, since foreigners tend to hold growth stocks. This variable often causes the outlier problem with extreme valued-observations. To mitigate this problem, we only use those observations that are within the two standard deviations. Leverage is the ratio of total debt to total assets, and has been shown to be negatively related to foreign ownership by earlier studies.

Dividend yield (DivYld) can speak to the governance-related preference of foreign investors, since well-governed companies tend to pay out more (La Porta et al. 2000) and foreigners prefer

companies with good governance (Lins and Warnock 2006).[6] Viewed this way, dividend yield will be positively related to foreign ownership. However, this prediction may be complicated by investor horizon. More specifically, investors with a short horizon may well care for immediate capital gains rather than stable dividend income. Since foreign investors in the Korean market have a longer investment horizon (Choe et al. 2005), a positive association between dividend yield and foreign ownership may stem from this. Hence, we include turnover (Turnover), which is the total number of shares traded during the year, divided by the number of shares outstanding. Finally, we use the current assets divided by current liabilities (Liquidity) and the fraction of export in total sales (Export) as additional explanatory variables for foreign ownership.

The correlation coefficients between the above variables are provided in Table 3. First, against foreign ownership, virtually all variables are highly correlated, justifying our choice of those variables. Although a few variables are not significantly correlated with foreign ownership in this univariate setting, they are correlated with other variables and thus justify themselves as a legitimate control variable.

With the explanatory variables for foreign ownership, we expect most of them to be highly correlated with each other. What we want to make sure is that the variable of our interest, the scaled alpha difference, is not that highly correlated with other explanatory variables. As the table shows, the correlations between the scaled alpha difference and some of the control variables are significant. For example, with firm size, the correlation coefficient is significant and negative (ρ = -0.076 with the *p*-value of 0.000) probably because the domestic betas of large stocks are greater than their world beta. The correlation coefficient with export is similarly negative (ρ = -0.037 with the *p*-value of 0.055), but the scaled alpha difference is significantly and positively correlated with profitability (ρ = 0.035 with the *p*-value of 0.070) and dividend yield (ρ = 0.052

[6] Of course, dividend can serve as a governance proxy only when growth opportunities are correctly taken into account.

with the *p*-value of 0.007). However, the magnitude of the coefficients is all below 10%. The variance inflation factor (VIF), motivated by the same spirit, also ensures that multicollinearity for the alpha difference is not much of a concern.

4.2. Panel regressions – Main results

We now present our main results, which are obtained through the following equation:

$$FO_{i,t} = \alpha_0 + \beta \ AD_{i,t-1} + \sum_{k=1}^{K} \gamma_k X_{k,i,t-1} + f_i + y_t + \varepsilon_{i,t}, \qquad (3)$$

Where $FO_{i,t}$ is the float-based foreign ownership of stock i at the end of year t, $AD_{i,t-1}$ is the scaled alpha difference for stock i estimated during year t-1, $X_{k,i,t-1}$ is one of the control variables for stock i that are measured at the end of or during year t-1, f_i is the firm fixed effect, and y_t is the year fixed effect.[7] We use several different sets of control variables to ensure robustness of our results. We also use the White (1980) covariance estimator to control for heteroscedasticity.

The first specification, Model (1) in Table 4, shows that the scaled alpha difference is significantly and positively related to foreign ownership even after firm size and other firm characteristics are taken into account. The *t*-statistic for alpha difference is as high as 4.47 and thus lends strong support to our prediction. Among control variables, firm size is positively related to foreign ownership, confirming the preference of foreign investors towards large stocks. Dividend yield is also positively correlated with foreign ownership. Consistent with prior studies (e.g., Choe et al. 2005), stocks held by foreigners tend to trade less frequently. In an unreported result, we found that BM, when put in log, is negatively correlated with foreign ownership, meaning that foreigners hold growth stocks. However, this relation does not seem to be robust to different regression specifications.

[7] Our choice of the fixed effect model over the random effect model is based on the Hausman test results.

The second model disaggregates the alpha difference measure. Consistent with our prediction, the domestic alpha is positively related to foreign ownership (i.e., stocks that domestic investors perceive to be overvalued will be held by foreign investors), and the world alpha is negatively related to foreign ownership (i.e., stocks that foreign investors find overvalued will be held by domestic investors). Since both alpha estimates are found to be statistically and economically significant, one can conclude that neither the domestic CAPM nor its global version is the correct asset pricing model in the Korean market.[8] At the same time, however, their *t*-statistics suggest that the Korean market is more of a globally integrated market, since the deviation from the domestic CAPM (i.e, domestic alpha) plays a bigger role. This conjecture is not unreasonable given that our sample period spans 2000 to 2004.

As shown in Table 3, the two alpha estimates are highly correlated (ρ = 0.901). Hence, it is easily expected that those alphas are similarly related to foreign ownership when they enter the regression separately (Models (3) and (4)). Their positive coefficients can be interpreted as domestic investors being contrarians and foreign investors being momentum traders (Brennan and Cao 1997; Grinblatt and Keloharju 2000): that is, stocks with a greater (or more positive) alpha estimate are held by foreign investors. This result is readily reconciled with our prediction, since we allow for the possibility that *all* investors perceive a certain stock to be under- or overvalued. We only argue that there might be a difference in the degree of such perception and that the varying degrees of the perceived misvaluation can help explain the stock holdings distribution among investors. In terms of the R-squared, the alpha difference in Model (1) explains more variations of foreign ownership than the alpha estimates individually do in Models (3) and (4). Moreover, Model (2) shows that the two alphas estimates, when orthogonalized to each other, have the opposite effect on foreign ownership. Obviously, these results cannot be explained by

[8] Consistent with this observation, Jung, Lee, and Park (2008) find that a two-factor model containing the domestic market portfolio and the additional factor based on foreign ownership outperforms the domestic CAPM and the Fama-French three-factor model.

the interplay between the extrapolative behavior of foreign investors and the contrarian behavior of domestic investors.

In Model (5), we also include the beta estimates. Adding them to the regression does not affect the significance of the alpha difference. Finally, in Model (6), we use the difference between the domestic beta and world beta rather than having them separately. Several existing international asset pricing models suggest it as a measure of international diversification benefits (e.g., Alexander, Eun, Janakiramanan 1987). With the beta difference included in the same regression, the alpha difference remains significant. Interestingly, the beta difference itself enters the regression with a weakly significant and positive coefficient, suggesting that foreign investors pay some attention to the diversification potential when they choose domestic stocks. A significant and positive coefficient for the foreign exchange beta (β^{fx}) is interpreted as foreigners holding stocks that perform well when the domestic currency depreciates. However, a somewhat passive interpretation can also be made that foreign investors are reluctant to hold stocks that are heavily affected by changes in domestic currency value.

4.3. Robustness

4.3.1. Alternative specifications

As the first attempt to ensure robustness of our main results, we explore several different deviations from the baseline specifications in Table 4. First, we replace the original foreign ownership with its log transformation. Since foreign ownership is oftentimes zero, we add one to the ownership and then take log (i.e., *ln*(1+foreign ownership). This approach puts greater emphasis on dispersion among low foreign ownership measures. For example, it would take the difference between 0% and 5% foreign ownership more seriously than the difference between 90% and 95% foreign ownership. The first column in Table 5 indicates that this modification does not affect the significance of the alpha difference measure.

Another deviation from the baseline specification is to estimate the Tobit model. This alternative specification is naturally motivated, since our dependent variable is censored at 0 and 1. The results in the second column of Table 5 are virtually the same in spirit as those in Table 4 or those in the first column of Table 5. Of course, the coefficients are different due to the differences between Tobit and least squares estimations.

The third column in Table 5 reports the results for the alpha difference that is estimated using weekly stock returns. We require 52 weekly observations during the estimation year, so our sample is reduced to 2,337 firm-year observations. When the domestic and world CAPMs are estimated at the weekly frequency, the beta estimates tend to increase and the alpha estimates tend to be smaller. Perhaps for this reason, the *t*-statistic for the alpha difference is reduced, but it is still greater than 2.

As another alternative specification, we calculate the annual abnormal return by first obtaining the benchmark-adjusted return every day and then cumulating them over the year. We simply deduct the market return so that we don't introduce any bias in estimating the alpha and beta using data at a particular frequency. The results based on this "annual alpha difference" are reported in the fourth column of Table 5. The variable of our interest remains significant both economically and statistically.

Finally, we associate the changes in foreign ownership with changes in explanatory variables. If investors evaluate past stock return using their own asset pricing model and rebalance their portfolios accordingly, then changes in alpha will also be associated with changes in foreign ownership. We confirm this conjecture, as the results in the last column of the table shows that the coefficient for the alpha difference change remains positive and significant.

4.3.2. Year-by-year results

Thus far, we have presented the panel regression results that include both firm and time fixed effects. Since we have a short time-series (5 years from 2000 to 2004), we believe that panel regressions are the best way to utilize the data. However, the year-by-year results and their average (i.e., Fama-MacBeth) will also be instructive to understand how persistent our results are.

Table 6 reports those results. Of the five sample years, we have the significant coefficient for the scaled alpha difference in three years. When the coefficients are averaged as in Fama MacBeth (1973), the *t*-statistic for the scaled alpha difference is 2.65. Although the meaningful inference is difficult with the 5 years' worth data, these analyses indicate that our results are not driven by several peculiar years.

4.4. Analysis of asymmetry in positive and negative alpha difference

We now examine whether there is asymmetry in the relationship between alpha difference and foreign ownership. As mentioned earlier, the asymmetry test is useful in addressing one version of endogeneity criticisms about our analysis. If some stocks are held by many foreign investors and as a result conform to the world CAPM more than to the domestic CAPM, then the relationship between the alpha difference and foreign ownership will be positive when the alpha difference is positive, and it will be negative when the alpha difference is negative. In other words, a higher foreign ownership should be associated with either a very positive alpha difference or a very negative alpha difference.

To address this endogeneity issue, we split the sample into two sub-samples by the sign of alpha difference. The first two columns of Table 7 report the regression results obtained separately from each sub-sample. Inconsistent with the endogeneity story, a positive relation between alpha difference and foreign ownership is found only in the sub-sample with a negative alpha difference. In the other sub-sample, the coefficient for alpha difference is negative but insignificant. This result suggests that the relative valuation between domestic and foreign

investors makes foreigners avoid the overvalued domestic stocks more than it increases the demand of foreign investors for undervalued domestic stocks. It is consistent with the general underweighting of domestic stocks by foreign investors.

Alternatively, we decompose the sample into two by the sign of the domestic or world alpha estimate. As reported in the third to sixth columns of Table 7, all the four sub-samples have a positive coefficient for the alpha difference, but it is statistically significant only when the world alpha is positive. This result again demonstrates the limitations of the positive feedback trading (contrarian) behavior of foreign (domestic) investors. More specifically, it is unclear why foreign investors, among stocks with a positive return (i.e., stocks with a positive α^W), take a greater position in stocks whose α^W is *smaller* than α^D. Rather, this pattern is better understood when the α^W-sorted sub-sample results are compared with the alpha difference-sorted sub-sample results. As suggested by the signs and magnitudes of the regression coefficients, a positive α^W seems to be the sideshow of the negative alpha difference. Viewed this way, it becomes much clear why the alpha difference is positively related to foreign ownership among stocks in this sub-sample.

4.5. Analysis of stock holdings of domestic institutions and individuals

Prior studies on the Korean stock market find that there is a meaningful difference between domestic individual investors and domestic institutional investors, as well as between domestic investors as a whole and foreign investors. Hence, it is natural to ask how our results are affected when we explicitly recognize the heterogeneity within the domestic investor group.

We conjecture that domestic individual investors are much more fixated on the home-country market portfolio than domestic institutions. There are in fact good reasons for this conjecture. With less experience and sophistication, individuals are more likely to start with the home-country stocks and stay with them even though accessing foreign stocks are theoretically possible (e.g., by way of various mutual funds). In terms of accessibility, domestic institutions are likely to

have the same access to stocks overseas as foreign investors. However, the home-country-bound priors stem from familiarity rather than from accessibility, we conjecture that domestic institutions are also different, to a lesser degree, from foreign investors.

Table 8 shows the explanatory power of the alpha difference for the holdings of domestic individuals, domestic institutions, and foreign investors. We confirm both of our conjectures. First, the relationship between the holdings of domestic institutions and the alpha difference is different from the foreign ownership case. At the same time, the relationship between the holdings of domestic individual investors and the alpha difference is significant and *negative*.

5. Conclusions

In this paper, we propose and test a *symmetric* information-based explanation for different stock holdings between domestic and foreign investors. Specifically, we extend Pastor (2000) and Li (2004) to the within-country stock selection problem by positing that domestic stocks are evaluated by investors through their own home-country market portfolio. We argue that this difference in "model" allows locals and foreigners to interpret common information differently and build different opinions on domestic stocks, leading them to hold different domestic stock portfolios. Using data from Korea, we find strong evidence for this hypothesis.

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Table 1. A rundown of sample

This table reports the run-down of our sample

	Year-by-year					Total
	2000	2001	2002	2003	2004	
Companies listed on the Korean Stock Exchange	710	695	685	680	676	3,446
(Financial companies)	(75)	(68)	(64)	(61)	(57)	(325)
(Non-financial companies with insufficient data)	(127)	(100)	(84)	(61)	(47)	(419)
Final sample	**508**	**527**	**537**	**558**	**572**	**2,702**
Fraction of the total	71.5%	75.8%	78.4%	82.1%	84.6%	78.4%

Table 2. Summary statistics of foreign ownership and explanatory variables

This table reports the summary statistics of the variables.

variable	n	mean	median	stdev	min	max
Foreign ownership	2702	0.112	0.010	0.192	0.000	0.992
α^D	2702	0.0004	0.0003	0.0023	-0.0133	0.0134
α^W	2702	0.0007	0.0006	0.0025	-0.0138	0.0155
$\sigma(\varepsilon^D)$	2702	0.040	0.038	0.015	0.010	0.099
$\sigma(\varepsilon^W)$	2702	0.042	0.041	0.015	0.010	0.098
$\alpha^D/\sigma(\varepsilon^D)$	2702	0.009	0.009	0.054	-0.196	0.199
$\alpha^W/\sigma(\varepsilon^W)$	2702	0.018	0.015	0.053	-0.200	0.219
$\alpha^D/\sigma(\varepsilon^D)$–$\alpha^W/\sigma(\varepsilon^W)$	2702	-0.010	-0.010	0.024	-0.118	0.094
β^D	2702	0.673	0.655	0.285	-0.279	2.043
β^W	2702	0.445	0.424	0.340	-0.823	1.793
β^{fx}	2702	-0.083	-0.055	0.700	-4.023	2.498
ln(mktcap)	2702	17.60	17.33	1.60	12.20	24.95
EBITDA	2702	0.05	0.06	0.09	-2.08	0.46
BM	2702	0.84	0.85	1.18	-14.49	18.10
Leverage	2702	0.52	0.52	0.20	0.04	1.00
DivYld	2702	0.03	0.02	0.04	0.00	0.68
Turnover	2702	5.72	3.40	7.22	0.08	79.81
Liquidity	2702	1.24	0.94	1.16	0.04	25.20
Export	2702	0.29	0.19	0.30	0.00	1.00

Table 3. Correlation coefficients between foreign ownership (FO) and other variables

This table reports the correlation coefficients of the variables.

	FO	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) $\alpha^D/\sigma(\varepsilon^D)$	0.239													
	(0.000)													
(2) $\alpha^W/\sigma(\varepsilon^W)$	0.229	0.901												
	(0.000)	*(0.000)*												
(3) $\alpha^D/\sigma(\varepsilon^D)$–$\alpha^W/\sigma(\varepsilon^W)$	0.028	0.239	-0.207											
	(0.144)	*(0.000)*	*(0.000)*											
(4) β^D	0.153	-0.037	0.010	-0.106										
	(0.000)	*(0.055)*	*(0.587)*	*(0.000)*										
(5) β^W	0.032	-0.032	-0.036	0.007	0.496									
	(0.093)	*(0.095)*	*(0.065)*	*(0.714)*	*(0.000)*									
(6) β^{fx}	0.032	0.056	-0.039	0.213	-0.036	-0.077								
	(0.093)	*(0.004)*	*(0.041)*	*(0.000)*	*(0.061)*	*(0.000)*								
(7) *ln*(mktcap)	0.636	0.220	0.256	-0.076	0.370	0.165	-0.013							
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.512)*							
(8) EBITDA	0.274	0.239	0.226	0.035	0.002	-0.003	0.061	0.259						
	(0.000)	*(0.000)*	*(0.000)*	*(0.070)*	*(0.903)*	*(0.890)*	*(0.002)*	*(0.000)*						
(9) BM	-0.070	-0.027	-0.033	0.013	-0.026	-0.016	0.073	-0.123	-0.024					
	(0.000)	*(0.156)*	*(0.083)*	*(0.500)*	*(0.177)*	*(0.400)*	*(0.000)*	*(0.000)*	*(0.208)*					
(10) Leverage	-0.167	-0.059	-0.072	0.029	0.119	0.066	-0.068	-0.173	-0.197	0.022				
	(0.000)	*(0.002)*	*(0.000)*	*(0.131)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.252)*				
(11) DivYld	0.023	0.078	0.055	0.052	-0.125	-0.041	0.061	-0.064	0.196	0.025	-0.215			
	(0.237)	*(0.000)*	*(0.004)*	*(0.007)*	*(0.000)*	*(0.034)*	*(0.002)*	*(0.001)*	*(0.000)*	*(0.199)*	*(0.000)*			
(12) Turnover	-0.232	-0.020	-0.029	0.019	0.219	0.088	-0.082	-0.178	-0.286	0.040	0.169	-0.192		
	(0.000)	*(0.292)*	*(0.131)*	*(0.318)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.038)*	*(0.000)*	*(0.000)*		
(13) Liquidity	-0.014	0.002	0.001	0.001	-0.119	-0.075	0.002	-0.054	0.067	-0.058	-0.372	-0.027	-0.018	
	(0.480)	*(0.937)*	*(0.959)*	*(0.950)*	*(0.000)*	*(0.000)*	*(0.912)*	*(0.005)*	*(0.001)*	*(0.002)*	*(0.000)*	*(0.168)*	*(0.351)*	
(14) Export	0.042	-0.059	-0.043	-0.037	0.161	0.101	0.023	0.091	-0.119	0.004	0.004	-0.048	0.036	-0.052
	(0.028)	*(0.002)*	*(0.027)*	*(0.055)*	*(0.000)*	*(0.000)*	*(0.232)*	*(0.000)*	*(0.000)*	*(0.858)*	*(0.840)*	*(0.013)*	*(0.060)*	*(0.007)*

Table 4. Panel regressions of foreign ownership on alpha difference and other variables

This table reports the regressions of foreign ownership on firm characteristics.

	Dependent variable: foreign ownership					
	(1)	(2)	(3)	(4)	(5)	(6)
$\alpha^D/\sigma(\varepsilon^D)$–$\alpha^W/\sigma(\varepsilon^W)$	0.693				0.663	0.661
	[4.47]				[4.24]	[4.29]
$\alpha^D/\sigma(\varepsilon^D)$		0.574	0.244			
		[3.78]	[5.87]			
$\alpha^W/\sigma(\varepsilon^W)$		-0.364		0.232		
		[-2.30]		[5.32]		
β^D					0.012	
					[1.14]	
β^W					-0.011	
					[-1.84]	
β^D–β^W						0.012
						[1.91]
β^{fx}					0.007	0.007
					[2.57]	[2.57]
ln(mktcap)	0.028	0.022	0.022	0.023	0.028	0.028
	[7.54]	[6.14]	[6.10]	[6.29]	[7.50]	[7.53]
EBITDA	0.052	0.036	0.036	0.039	0.052	0.052
	[2.07]	[1.59]	[1.56]	[1.62]	[2.04]	[2.05]
BM	0.002	0.001	0.001	0.002	0.001	0.001
	[1.43]	[1.33]	[1.35]	[1.39]	[1.19]	[1.19]
Leverage	-0.017	-0.031	-0.031	-0.028	-0.018	-0.018
	[-0.79]	[-1.51]	[-1.50]	[-1.35]	[-0.85]	[-0.85]
DivYld	0.128	0.091	0.090	0.096	0.126	0.126
	[3.34]	[2.36]	[2.34]	[2.48]	[3.35]	[3.35]
Turnover	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	[-2.83]	[-3.81]	[-3.81]	[-3.64]	[-2.66]	[-2.63]
Liquidity	0.002	0.001	0.001	0.001	0.001	0.001
	[0.61]	[0.39]	[0.38]	[0.42]	[0.57]	[0.57]
Export	-0.010	-0.010	-0.011	-0.011	-0.013	-0.013
	[-0.60]	[-0.59]	[-0.63]	[-0.67]	[-0.73]	[-0.73]
Constant term is in the regressions but not reported here.						
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	39.0%	37.3%	37.4%	37.9%	38.8%	38.8%
# of obs.	2,702	2,702	2,702	2,702	2,702	2,702

Table 5. Alternative specifications for panel regressions of foreign ownership on alpha difference and other variables

This table reports the regressions of foreign ownership on firm characteristics.

	ln(1+FO)	Tobit	Weekly	Annual	Changes
$\alpha^D/\sigma(\varepsilon^D)$–$\alpha^W/\sigma(\varepsilon^W)$	0.487	0.592	0.105	0.001	0.248
	[4.06]	[3.85]	[2.01]	[2.28]	[2.46]
β^D	0.009	0.010	0.017	0.004	0.017
	[1.08]	[0.94]	[2.01]	[0.38]	[1.84]
β^W	-0.009	-0.014	-0.012	-0.010	-0.004
	[-1.89]	[-2.05]	[-3.03]	[-1.62]	[-0.91]
β^{fx}	0.005	0.007	0.003	0.008	0.002
	[2.64]	[2.63]	[2.16]	[3.02]	[0.85]
ln(mktcap)	0.022	0.033	0.036	0.028	-0.002
	[7.59]	[9.54]	[7.02]	[7.55]	[-0.58]
EBITDA	0.041	0.061	0.073	0.057	-0.014
	[2.02]	[2.34]	[1.61]	[2.10]	[-0.59]
BM	0.001	0.002	0.003	0.001	0.000
	[1.30]	[0.96]	[1.61]	[1.22]	[0.06]
Leverage	-0.018	-0.023	-0.032	-0.016	-0.033
	[-1.04]	[-1.03]	[-1.11]	[-0.72]	[-1.36]
DivYld	0.104	0.140	0.129	0.132	0.087
	[3.39]	[2.58]	[2.68]	[3.48]	[2.07]
Turnover	-0.001	-0.001	-0.001	-0.001	0.000
	[-2.62]	[-1.75]	[-2.92]	[-2.50]	[0.09]
Liquidity	0.001	0.002	0.000	0.001	-0.001
	[0.51]	[0.67]	[-0.10]	[0.52]	[-0.30]
Export	-0.010	-0.017	-0.003	-0.014	-0.025
	[-0.78]	[-1.02]	[-0.13]	[-0.80]	[-1.72]
Constant term is in the regressions but not reported here.					
Year fixed-effects	Yes	Yes	Yes	Yes	Yes
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes
R-squared (LogLH)	40.3%	(2603.05)	43.2%	39.0%	2.6%
# of obs.	2,702	2,702	2,337	2,702	2,026

Table 6. Year-by-year and Fama-MacBeth regressions of foreign ownership on alpha difference and other variables

This table reports the regressions of foreign ownership on firm characteristics.

	Year-by-year					Fama-MacBeth
	2000	2001	2002	2003	2004	
$\alpha^D/\sigma(\varepsilon^D)-\alpha^W/\sigma(\varepsilon^W)$	0.779	2.717	-0.025	4.098	2.029	1.920
	[0.94]	[2.77]	[-0.04]	[3.09]	[2.28]	[2.65]
β^D	0.043	-0.220	-0.051	-0.032	-0.003	-0.053
	[0.75]	[-5.06]	[-1.59]	[-1.07]	[-0.08]	[-1.18]
β^W	-0.017	0.024	-0.014	0.084	-0.079	0.000
	[-0.88]	[1.13]	[-0.65]	[2.14]	[-2.15]	[-0.01]
β^{fx}	0.003	-0.011	0.001	0.006	-0.012	-0.003
	[0.37]	[-1.65]	[0.12]	[0.69]	[-1.22]	[-0.71]
ln(mktcap)	0.047	0.066	0.070	0.080	0.098	0.072
	[9.82]	[9.76]	[12.33]	[13.34]	[20.30]	[8.65]
EBITDA	0.205	0.132	0.351	0.179	0.113	0.196
	[2.45]	[1.31]	[4.03]	[2.43]	[1.05]	[4.67]
BM	0.003	0.001	0.006	-0.001	-0.001	0.002
	[1.17]	[0.38]	[1.69]	[-0.21]	[-0.14]	[1.41]
Leverage	-0.018	0.028	-0.043	-0.033	-0.050	-0.023
	[-0.66]	[1.06]	[-1.47]	[-0.96]	[-1.17]	[-1.68]
DivYld	0.175	0.027	-0.701	-0.205	-0.054	-0.152
	[1.83]	[0.32]	[-3.07]	[-0.97]	[-0.22]	[-1.01]
Turnover	-0.007	-0.001	-0.002	-0.002	-0.001	-0.002
	[-4.44]	[-0.78]	[-2.86]	[-3.44]	[-1.24]	[-2.24]
Liquidity	-0.001	-0.003	-0.004	-0.005	0.000	-0.003
	[-0.18]	[-0.74]	[-1.01]	[-0.96]	[0.02]	[-2.90]
Export	0.040	0.001	0.007	-0.003	-0.005	0.008
	[2.21]	[0.04]	[0.34]	[-0.14]	[-0.21]	[0.94]
Constant	-0.728	-1.009	-1.069	-1.250	-1.495	-1.110
	[-8.82]	[-9.51]	[-11.94]	[-12.30]	[-17.43]	[-8.70]
R-squared	37.6%	41.1%	44.6%	50.3%	53.1%	45.3%
# of obs.	508	527	537	558	572	2,702

Table 7. Asymmetry tests for the relation between foreign ownership and alpha difference

This table reports the regressions of foreign ownership on firm characteristics.

	$\alpha^D/\sigma(\varepsilon^D)-\alpha^W/\sigma(\varepsilon^W)$		$\alpha^D/\sigma(\varepsilon^D)$		$\alpha^W/\sigma(\varepsilon^W)$	
	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.
$\alpha^D/\sigma(\varepsilon^D)-\alpha^W/\sigma(\varepsilon^W)$	0.942	-1.689	0.147	0.350	0.396	0.760
	[3.55]	[-1.28]	[0.59]	[1.31]	[1.45]	[3.19]
β^D	0.013	0.134	0.003	0.018	0.007	0.016
	[0.83]	[2.53]	[0.17]	[0.98]	[0.39]	[0.92]
β^W	-0.013	-0.074	-0.015	-0.010	-0.006	-0.011
	[-1.34]	[-2.30]	[-1.12]	[-1.05]	[-0.50]	[-1.20]
β^{fx}	0.016	-0.019	0.007	0.005	0.004	0.012
	[4.09]	[-1.74]	[1.62]	[1.15]	[0.94]	[2.63]
ln(mktcap)	0.030	0.022	0.014	0.027	0.006	0.033
	[6.02]	[1.46]	[2.32]	[3.88]	[1.07]	[4.63]
EBITDA	0.093	0.031	-0.009	0.090	-0.033	0.152
	[2.15]	[0.49]	[-0.48]	[1.37]	[-1.27]	[2.39]
BM	0.001	0.000	0.002	-0.001	0.002	-0.001
	[0.82]	[-0.15]	[1.44]	[-0.47]	[1.42]	[-0.42]
Leverage	-0.043	-0.056	-0.028	-0.059	-0.020	-0.058
	[-1.58]	[-0.64]	[-0.95]	[-1.25]	[-0.60]	[-1.29]
DivYld	0.123	0.058	0.103	0.155	0.091	0.157
	[2.28]	[0.41]	[1.06]	[2.48]	[0.60]	[2.70]
Turnover	-0.001	-0.002	-0.001	-0.001	-0.001	-0.001
	[-1.97]	[-1.72]	[-2.07]	[-1.34]	[-1.72]	[-1.81]
Liquidity	-0.001	0.006	0.004	-0.005	0.006	-0.004
	[-0.21]	[0.75]	[1.13]	[-2.20]	[1.65]	[-1.88]
Export	-0.021	-0.016	-0.030	-0.014	0.014	-0.031
	[-0.98]	[-0.27]	[-1.25]	[-0.52]	[0.62]	[-1.11]
Constant term is in the regressions but not reported here.						
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	37.0%	35.1%	22.5%	40.5%	11.5%	42.6%
# of obs.	1,881	821	1,181	1,521	1,011	1,691

Table 8. Comparison between domestic individuals, domestic institutions, and foreign investors

This table reports the regressions of foreign ownership on firm characteristics.

	Domestic individuals	Domestic institutions	Foreign investors
$\alpha^D/\sigma(\varepsilon^D)$–$\alpha^W/\sigma(\varepsilon^W)$	-0.462	-0.150	0.381
	[-1.93]	[-0.83]	[2.87]
β^D	0.028	-0.015	0.009
	[1.46]	[-1.11]	[0.98]
β^W	0.023	-0.012	-0.009
	[2.07]	[-1.45]	[-1.71]
β^{fx}	-0.002	-0.005	0.006
	[-0.32]	[-1.33]	[2.43]
ln(mktcap)	-0.014	0.001	0.010
	[-2.00]	[0.25]	[3.22]
EBITDA	0.063	0.029	0.038
	[0.95]	[0.63]	[1.36]
BM	0.002	-0.004	0.000
	[0.41]	[-1.42]	[0.51]
Leverage	0.081	-0.012	0.000
	[1.56]	[-0.36]	[0.00]
DivYld	-0.057	0.030	0.064
	[-0.72]	[0.60]	[2.16]
Turnover	-0.001	0.000	-0.001
	[-0.47]	[0.60]	[-2.40]
Liquidity	0.007	0.002	0.005
	[0.77]	[0.38]	[1.74]
Export	-0.029	0.032	-0.007
	[-0.61]	[1.35]	[-0.54]
Constant term is in the regressions but not reported here.			
Year fixed-effects	Yes	Yes	Yes
Firm fixed-effects	Yes	Yes	Yes
R-squared	10.4%	3.1%	24.9%
# of obs.	2,118	2,118	2,118