# Do foreign investors pay more for stocks in the United States?

# An analysis by country of origin

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**PRELIMINARY DRAFT**

**Abstract**

We examine whether and why implicit equity transaction costs incurred by institutional investors across 51 countries differ from those of domestic institutions in the United States. Using a proprietary institutional trading dataset that discloses the home country of the initiator of a trade, we analyze round-trip implicit transaction costs conditional on the trader's country of origin. The average daily equally (trade) weighted disadvantage of foreign institutional investors for purchases is 3.3 (3.3) basis points (bps) and 4.1 (3.0) bps for sales of common stocks and American Depository Receipts that traded on the NYSE, AMEX and NASDAQ between 1 July 1999 and 30 September 2004. Therefore a roundtrip daily equally weighted disadvantage to foreign institutional investors is approximately 7.4 (6.3) bps. Several institutional background factors related to foreign investors' countries of origin are relevant in explaining their disadvantage.

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## 1. Introduction

There is now a large and growing literature showing that foreign investors incur greater equity trade execution costs than domestic traders (see, for example, Bonser-Neal et al, 1999, and Choe et al, 2005 (CKS). Despite the acknowledged economic significance of the burden of being a foreign trader, the sources of the apparent disadvantage faced by external traders remain poorly understood. In this paper, we compare the execution costs incurred by foreign investors with execution costs for comparable domestic trades in the U.S. and examine factors related to the trader's institutional background that may influence their behavior when trading abroad.

We examine three views of the role of an investor's prior background. In one view, local investors' transaction cost advantages could be related to domestic traders' information advantage over foreigners (Low, 1992, Gehrig, 1993, Kang and Stulz, 1997 and Brennan and Cao, 1997). We call this the information asymmetry hypothesis. CKS and Dvorak (2005) trace the sources of foreign investors' disadvantage to trading outcomes – prices moving against foreign investors before they transact (CKS) and locals enjoying short term trading gains (Dvorak). We complement these studies by proxying for information asymmetry using measures of how distant a trader's institutional priors are, physically and in terms of professional connectedness, from the U.S. market.

In the second approach to understanding the determinants of differences in execution ability between locals and foreigners, reliance on one's institutional background could give rise to anchoring which biases traders' attitudes towards prices and costs incurred abroad. Tversky and Kahneman (1974) and Kahneman and Tversky (1979), building on Slovic and Lichtenstein (1971), show that people make incorrect

decisions when they use heuristics such as anchoring prices on arbitrary values and deviating only conservatively from such reference points. In our context, we hypothesize that investors from bullish national stock markets will likewise be optimistic, and possibly overconfident, about their U.S. equity trades. Likewise, the levels of home market transaction costs should be positively related to those incurred by international money managers abroad.

In the third view, institutional background matters. In the theory literature the idea that agents' culture and prior institutional backgrounds influence economic outcomes is gaining acceptance (see, for example, North (1990, 1991), Knack and Keefer (1995, 1997), Zak and Knack (2001), and Guiso, Sapienza and Zengales (2006)). However, its application in the finance literature has been restricted to the substantial number of studies relating legal systems to the growth of domestic economies.[1] We hypothesize that in buying and selling foreign securities, investors move from one formal institutional environment to another but may maintain the institutional advantages and constraints of their home countries. We examine the trading ability of investors from 51 countries while holding constant (1) the investment target (the U.S. stock market) and (2) the control set of investors.

This paper makes two important contributions to the existing literature. First, we compare the trading performance of domestic and foreign investors in the U.S., to the best of our knowledge, for the first time. Using a proprietary institutional trading data set provided by Abel Noser Corp (U.S.) that discloses the home country of the initiator of a trade, we analyze market impact or indirect transaction costs. We begin by matching

[1] One exception is Grosse and Golberg's (1991) study of relations between the presence of foreign banks in the U.S. and their country of origin characteristics.

foreign trades with domestic equivalents and then estimating differences between the two samples. Our empirical approach allows us analyse our results according to different trade venues. In this way, we are able to confirm that the disadvantage experienced by foreign investors as shown by Shukla and van Inwegen (1995), CKS, and Dvorak (2005), as well as the first part of our paper, holds across the main U.S. stock exchanges (NYSE, NASDAQ and AMEX). We are also able to check and report on the validity of our findings across the main types of equity securities – common stocks and American Depository Receipts.

Second, using the disclosure of country of origin property in our dataset, we are able to examine the impact of factors representing the institutional background of the foreign investors in our sample on their performance against local investors. We propose a set of categories of predetermined explanatory variables for the relative disadvantage of foreign traders or otherwise drawn from the existing literature. We identify variables representing: (1) trade characteristics and relative transactional difficulty, (2) information asymmetry between local and foreign investors, and (3) foreign investors' home market conditions.

While unique in its focus on explaining the role played by institutional factors in the burden faced by foreign investors, this paper also contributes to an important and growing strand of the international finance literature. Recent work has drawn attention to the fact that U.S. investors abroad earn substantially higher rates of return than those earned by foreign investors in the United States. For example, using estimates of U.S. assets and liabilities Gourinchas and Rey (2006) compute a set of total yields (dividends plus capital gains) for assets held by U.S. investors abroad and for foreign assets in the

United States. They find sizeable return differentials in favor of the U.S. The reasons for this gap are not yet fully understood. In this paper, we contribute to a greater understanding of the phenomenon by showing that at least part of the explanation lies in lower rates of return foreign investors earn on equity investments in the U.S. Krugman (2006) suggests that a large part of the gap "may be a statistical illusion created by tax shifting." We test whether investors from countries characterized as tax havens and international financial centers trade at a disadvantage to local investors.

The rest of the paper is organized as follows. In Section 2 we briefly review previous research comparing the performance of domestic and foreign investors. In Section 3 we describe the transactions data and the selection of the control sample. Section 4 quantifies the extent of foreign trader disadvantage. We investigate the determinants of relative differences in prices paid or received by foreign investors and summarize our findings in Section 5. Section 6 concludes.

## 2. Previous studies comparing domestic and foreign investor's performance

Previous empirical evidence on informational advantages for domestic investors is mixed. Some studies find superior performance by domestic investors (e.g. Shukla and van Inwegen, 1995 and Dvorak, 2005) while others document contrary findings (e.g. Grinblatt and Keloharju, 2000, Seasholes, 2000). A common feature of these studies is that, notwithstanding performance outcomes, foreign investors incur higher transaction costs measured as round trip costs (CKS) or market impact (Bonser-Neal et al, 1999 and Richards, 2005). Institutional investors are widely regarded as sophisticated yet foreign

investors who are mostly institutions appear on average to suffer a significant economically and statistically significant implicit transaction cost disadvantage (CKS).

Brennan et al (2005) employ a noisy rational expectations model extending the multi-asset model of Admati (1985) to analyze the determinants of the proportion of investors in country *m* with bullish and bearish views regarding the equity market of country *k*. Domestic investors in the Brennan et al (2005) model are assumed to be more knowledgeable about the returns on domestic investments than foreign investors. This causes foreign investors to be more attuned to new public information. Brennan et al (2005) find that foreign investors are more bullish (bearish) about a country as the returns of that country increase (decline), while domestic investors are not. Hau (2001), and Dvorak (2005) model inventory on transaction-level trading performance. Hau (2001) explores informational asymmetries from eight European countries using German data from the Xetra electronic trading platform. Similarly, Dvorak (2005) investigates informational asymmetries using aggregate trading accounts of Indonesian data from the Jakarta Stock Exchange. Both studies concur with the CKS findings that local investors have an informational advantage over foreign traders.

## 3. Data and control sample selection

The data used in this paper are from Abel/Noser Corp., an agency only brokerage firm located in New York. The data consist of U.S. equity trades initiated by institutional traders based in over 70 countries for the period 1 July 1999 to 30 September 2004. This data set has been intermittently released to academic researchers over the past two decades and has spawned studies starting with Berkowitz et al. (1988). The data include

the transactions of institutional brokers who subscribe to Abel-Noser's trade execution analysis services. It is worth noting that the investors represented in our sample are likely better informed about trading costs than the average trader. The trading costs we measure using this database may therefore understate the average trading costs of all institutional investors (Blume (1993)).

The critical attribute of the data set from the perspective of our study is that it contains identifiers for the country of origin of each trade initiator. This characteristic has not been used in the literature to date. We require that each foreign country have at least 100 trades, giving us a dataset covering 51 countries from which approximately 563,250 trades are executed. Another unique quality of the database is that the trade direction is explicitly given, removing the need to devise a separate method of distinguishing buy from sell initiated transactions. We also extract stock codes, CUSIPs, prices and volumes from the database.

We identify all instances when local investors initiate trades in the same securities as foreigners. We begin with trades recorded on the same day, then, separately, over the Monday to Friday week window when the financial markets are open except for holidays. We now have daily and weekly samples for the two classes of trades, domestic- and foreign-initiated, that form the basis of our analysis. Table 1 shows that 243,408 (43%) of foreign executed trades were NYSE common stock and 188,146 (33%) were ADRs, making a total of 431,554 (76.6%) traded through the NYSE exchange. A total of 123,308 (21.9%) trades were executed via the NASDAQ of which 38,732 (6.9%) were ADRs. The AMEX facilitated a total of 8,381 (1.5%) trades.

**Insert Table 1 Here**

We enrich the transactions database using information from several sources. First, to identify individual stock characteristics requiring time series data, including shares outstanding, number of trades per stock (for NASDAQ stocks), volume, opening and closing prices, spreads, and exchanges codes from the Center for Research in Security Prices (CRSP) database. We use Compustat data, including book value of assets and equity. For country level data we also use several data sources. We obtain national stock market indices from Datastream and purchased Elkins-McSherry quarterly transaction cost summary data for 44 countries. We use Standards and Poor's sovereign credit ratings and data from prior academic research, including La Porta et al. (1998, 2006), Aggarwal et al. (2005), and Bekaert et al. (2005). We also use various other public sources to collect data or verify information not available from the above repositories. We access data on international trade between the U.S. and the countries in our sample from the Bureau of Economic Analysis. We obtain data on inbound international portfolio flows arranged by country of origin from the U.S. Department of the Treasury's TIC or Treasury International Capital System.

For data quality assurance we carried out a number of standard cross checks for variables contained in our base data set with other sources. For example, when matching stocks with other databases, we used ticker codes together with codes provided by Abel-Noser, and also cross referenced them with CUSIP numbers. The two-letter country codes in the Abel-Noser data set were cross referenced to United Nations data for validation. As a result, we excluded the few ambiguously referenced or coded country identifiers we found, including one or three letter codes. Other instances of cross referencing data included sovereign credit rating checks across the three main providers

(Fitch, Moody's and S&P). Similarly, we verified data such as corporate tax rates and market capitalizations using different sources to minimize variations.

## 4. Differences between foreign and domestic transaction costs

In this section we examine the differences between the costs incurred by foreign investors and those reported for the matched daily and weekly sample of domestic trades. We follow CKS in calculating the volume-weighted average price (VWAP) as in (1) below.

$$A_i^d = \frac{\sum_t P_i^{dt} V_i^{dt}}{\sum_t V_i^{dt}}. \tag{1}$$

In the specification, $P_i^{dt}$ is the price of stock *i* on day *d* for trade *t*. $V_i^{dt}$ is the number of shares of the trade for stock *i* on day *d* for trade *t*.

Next, the VWAP for purchases and sales measured separately for domestic and foreign investor classes, denoted *j*, is given by:

$$B_{i,j}^d = \frac{\sum_t P_{i,j}^{dt} V_{i,j}^{dt}}{\sum_t V_{i,j}^{dt}}. \tag{2}$$

Finally, we compute the price ratio, $B_{i,j}^d / A_i^d$, for all purchases (and sales) by institutional investors of type *j* for stock *i* on a given day *d* (and week). A price ratio of more than one for buys for a particular institutional investor implies that this investor has a buy trade on average above the mean price on that day (or week). CKS discuss the advantages of using price ratios in comparing the price performance of different investor types instead of deviations from model-driven expected price estimates. Further, CKS

argue the case for splitting our sample by trade sizes to take into account the fact that different prices may be determined differently for large versus small trades, for example. We therefore apply the execution performance measures described above on the full sample, and separately on samples representing large (over $150,000), medium (between $20,000 and $150,000) and small (below $20,000) trades.

To provide new evidence on the relative performance of investors conditioned on whether they are local or not, we measure differences in prices across different trading venues (NYSE, Nasdaq and Amex). We also consider each of the main stock types (common stocks and American Depository Receipts (ADRs)) separately.

**Insert Table 2 Here**

We begin by summarizing the results of univariate tests of differences between the foreign and domestic samples. Table 2 shows the results of simple difference in means tests on the implicit transaction costs of the two samples in the third last column. We arrange the table into nine panels starting with the results for the full sample and followed by subsamples sorted by trade venue and security type. Sample size restrictions preclude us from separating ADRs from common stocks in the case of the AMEX. Within each panel, we summarize results for the sample as a whole without considering trade size, followed by the findings based on our trade size categories. Throughout the table buys and sales are reported on separately.

The results in Table 2 in the column headed “D-F x 100” confirm that foreigners trade at a disadvantage most of the time they buy or sell stocks in the U.S. In Panel A we see that the average daily equally weighted disadvantage of foreign institutional investors (i.e., Domestic minus Foreign) for purchases is -3.3 basis points (bps) and 4.1 bps for

sales. The rest of the results in Table 2 generally attest to the robustness of the measures of the disadvantage experienced by foreign traders. The differences in prices realized persist regardless of type of security, trade size and trading venue. Note, though, that the results are slightly weaker for ADRs even though the signs on the coefficients are consistent (negative for buys and positive for sells).

Looking at the foreign disadvantage from the perspective of trade direction yields an interesting trend. It appears that the extent to which foreign investors 'overpay' on buying stocks is less than how much they are 'undercut' on selling stocks. Could it be that this finding is a result of foreign investors being more impatient when selling or choosing to sell when markets are illiquid? CKS test for this possibility and do not find evidence supporting the conjecture.

**Insert Table 3 Here**

The trade-weighted price ratios and differences across stocks over the 1320-day study period are summarized in Table 3. Our trade-weighted results are similar to our equally weighted results. This differs from CKS who report a much larger value weighted foreign disadvantage in Korea.

Our tests of foreign trader disadvantage so far include tax havens and U.S. territories such as, Bermuda, Cayman Islands, Netherland Antilles, Virgin Islands (British and U.S.), Marshall Islands, Bahamas, Barbados and Puerto Rico, which we term 'flag of convenience' (FOC) countries. The inclusion of these countries could confound our results as the motives of their U.S. bound portfolio flows could be affected by factors such as taxation treatment that do not apply to other countries. Moreover, making a clean distinction between traders based in FOC countries and purely domestic investors may be

problematic. As a robustness check we run the univariate statistics separately for the FOC data in Table 4. Table 4 presents the univariate results for all FOC countries, FOC trades for both NYSE and NASDAQ common stocks. There are too few FOC stocks in our sample that trade as ADRs on either the NYSE or NASDAQ to enable statistical analysis. The results in the column labeled “D-F x 100” of Table 4 show that the burden of being foreign is significantly lower in economic terms, and statistically significant, in a number of buy samples. However, many of the coefficients have opposite signs to those reflected in Table 2. We conjecture a phenomenon where domestic (U.S.) institutions invest through FOC countries for various reasons. For example, such purposes may include minimizing tax., and the quest to invest in U.S. assets registered offshore in their own right or to achieve anonymity. Hence in further tests we exclude FOC countries from our current study. We also exclude AMEX based trades because of the data restrictions noted above.

**Insert Tables 4 Here**

The results from our weekly analysis confirm our findings of foreign disadvantage with even more significance in economic terms than the daily results (see Table A1 in the Appendix for a selection of results based on equally weighted price ratios). To be conservative in our analysis, and for brevity, we base the remainder of our tests on daily observations.

In summary, foreigners clearly suffer from a 'burden of foreignness' in economic terms (bps) and statistically in most instances. Daily differences are narrower than weekly differences suggesting that difficulty in trade (inability of foreigners to fill trades in a short time) is an important issue requiring further analysis. Our univariate analysis of

differences in average prices paid between foreign and domestic traders strongly suggest that splitting trades by country of origin has a significant bearing on execution quality, specifically price impact. We still need to demonstrate that country-specific variables explain the differences after controlling for trade characteristics. We take up this task in the remainder of the paper.

## 5. Multivariate analysis

### *5.1. Empirical approach and possible determinants of foreign trader disadvantage*

In this section we perform regression analyses of the differences between foreigners' institutional and locals' (U.S.) institutions transaction costs. For these tests we use pooled samples of buy and sell initiated NYSE and NASDAQ stocks, followed by sub-samples arranged by trade size (small, medium and large) and type of equity (common or ADR stocks). Our empirical design incorporates a three-horse race between our three main views on the determinants of differences in the execution ability of domestic and foreign investors. The explanatory variables in the regressions are factors hypothesized to explain differences between foreign and domestic traders' transaction costs. The response variable derived from equations (1) and (2) is the difference in trade price ratios for domestic and foreign investors in basis points.

The explanatory variables are set out according to three main categories. First, we control for firm and trade characteristics. Second, we utilize a set of variables associated with the information asymmetry hypothesis – the idea that domestic traders have a natural information advantage over foreign investors. Finally, we use variables representing market conditions and the legal and governance framework in the foreign traders' countries. We discuss each group in turn.

*Firm and trade characteristics.* We include variables controlling for firm and trade-specific factors that may affect the difference in the price paid by foreigners compared to domestic trades. Following CKS and Choe et al. (1999), we construct a set of firm, momentum- and trade-related variables, and a market return measure to investigate trade price differences between domestic retail and institutional investors. We include the CKS and Choe et al. (1999) determinants to facilitate an out-of-sample test on U.S. data and for comparison purposes. The variables can be summarized as follows:

- *LNSIZE* = log market value of equity on the previous day,
- *BTM* = book-to-market ratio on the previous day,
- *EXCHRET* = index returns for the day (%) applicable to each U,S, exchange,
- *CTC5* = previous 5-day return (%) (previous $6^{th}$ day close to previous close),
- *CTO* = overnight return (%) (previous close to opening price),
- *OTC* = day-time return (%) (opening to close price),
- *AVGBAS* = average of previous 30 daily bid-ask spreads (at least 20 daily observations required), where daily bid-ask spread (%) = (ask-bid)/[(ask+bid)/2] prior to market close,
- *AVGSIG* = average of previous 30 daily volatilities (at least 20 daily observations required), where daily volatility (%) = (high-low)/[( high+low)/2],
- *AVGTURN* = average of previous 30 daily turnover ratios (at least 20 daily observations required), where daily turnover ratio (%) = total share trading volume for the day/total shares outstanding for the firm, and

- *AVGDF* = Buy (or sell) trade value differences between domestic and foreign institutions for a stock-day / total trade value for the stock-day (%).

In direct relation to investor behavior, Choe et al. (1999) report evidence of positive feedback trading and herding by foreign investors in Korea in 1997. The variables *CTC5*, *CTO*, and *OTC* capture those circumstances.

In addition to the CKS factors, we incorporate the Chicago Board Options Exchange Volatility Index (*VIX*) as a measure of general market sentiment. Volatility is often regarded as a proxy for market sentiment by both academics and practitioners (see Corrado and Miller, Jr. (2006) and Whaley (2000)). Foreign traders' execution performance could be affected by complexity inherent in the trade. We measure trade difficulty (*TRADEDIFF*) as the ratio of the shares included in the order at decision time to the average daily trading volume over the preceding five trading days following Chakravarty et al, 2004.

*Asymmetric information factors*. We hypothesize that the difference in the price performance of foreign versus domestic investors is related to the well-documented disparity in information endowments between the two classes of investors. Our first proxy for information asymmetry between foreign and local investors is *LNDISTANCE*, the natural logarithm of the physical distance in kilometers from foreign countries' stock exchange or capital cities to New York. We use great circle geographic distance measures derived from the latitude and longitude coordinates from the country's city location of either its main stock exchange or, absent an exchange, to the country's capital city.

Distance is regarded as a reliable proxy for information asymmetry in the finance literature (see, for example, Petersen and Rajan (2002) and Portes and Rey (2005)).

We also wish to investigate the idea that countries with closer trading ties are more likely to experience exchanges of financial assets with each other. Managers from such countries could be more familiar with the functioning of U.S. capital markets and less prone to make inefficient trades. The relation between bilateral trade and cross-border flows is now fairly well established in theory (Obstfeld and Rogoff (2000)) and empirical research (Portes et al. (2001), Portes and Rey (2005) and Aviat and Coerdacier (2006)). We measure trade dependence (*TRADEDEP*) from the perspective of the fund manager's home country by taking the total trade (imports and exports) with the U.S. weighted by the country's GDP. We expect a negative relation between trade dependence and the trade performance differential between foreign and domestic investors. We complement trade reliance with a direct measure of financial links between the U.S. and other countries – monthly inbound portfolio flows (*FLOWS_TO_US*) collated by the Department of the Treasury's TIC system. To account for the effects of potential serial correlation in portfolio flows to the U.S., we include up to four flow lags of *FLOWS_TO_US*.

We incorporate *TIMESYNC*, a variable denoted 1 if the home country's trading hours overlap with the U.S., and zero otherwise, to represent the synchronicity of foreign countries' trading times with the U.S. where stock markets are open from 9.30am to 4.00pm (Eastern U.S. time zone). We hypothesize that investors from countries with trading times that overlap with the U.S. may have less of a trading disadvantage than others.

Finally, Guiso et al. (2006) show that culture affects economic outcomes. We expect that traders who are based in countries that share a similar cultural background with the U.S. may know more about U.S. stock markets than other foreign investors and possibly show less of a disadvantage relative to U.S. investors. We turn to the predominant business language as a representative of cultural background. *ENGLISH* is a dummy variable, denoted 1 if English language is the dominant mode of communication, and 0 otherwise.

*Anchoring and home market characteristics:* A major concern of this paper is the contribution of investors' home market background to their behavior and performance when they trade externally. Our first set of variables in this regard concern the trading environment of investors' home markets. Our hypothesis is that anchoring-induced biases may be explained by foreign investors' awareness of conditions in their home market. We are concerned with the role of the variables relative to the U.S. As such, for all our continuous variables, wherever possible, we took the difference between the variable and its U.S. equivalent, resulting in the postscript "*F_D*" for the variables in the tabulated results. We first incorporate the daily return on the stock market index (*HMKTRET*) measured over the previous 20 days. Investors would likely be indifferent to the costs of trading in the U.S. if they are investing abroad to avoid poor returns, for example. The reverse in this instance is true – investors could reasonably be expected to disregard lower selling prices in the haste of divesting out of U.S. securities to take advantage of superior returns back home. The levels of transaction costs incurred in the home market could also affect an investor's attitude towards the costs of trading in U.S. stock markets. Our measures, *EM_COMM*, *EM_FEES*, and *EM_MKT_IMPACT* represent the Elkins-

McSherry quarterly commissions, fees and taxes, and market impact transaction costs in basis points and are available for most of the countries in our data set.

We also incorporate variables from the international finance literature that proxy for the financial characteristics of traders' home countries. Foreign investors may be trading in the U.S. in response to conditions prevailing in their home market. Studies such as Eleswarapu and Venkataraman (2002) Chakravarty et al (2004) and Jiang and Kim (2005) show that non-U.S. (or home) country factors influence differences between trading costs on dually listed securities.

To reflect the effect of market size on the propensity of investors to invest externally, we use *LNMKTCAP*, the natural log of the market capitalization of a foreign country's main stock exchange(s). As an alternative measure we also use *LNFIRMS* or the natural log of the number of domestic firms listed in a given country in 1999 and 2000.

Many studies have viewed law and governance factors as important determinants of institutional investors' asset allocations. Extending these factors to our context, we expect that the law and governance quality of home markets may contain information about the trading ability of foreign investors. We therefore use Daouk et al.'s (2006) capital market governance index (*CM_GOV*) to incorporate a country's quality of security laws, encompassing the degree of earnings opacity, the enforcement of insider laws, and the effect of removing short-selling restrictions. The countries in our sample have a *CM_GOV* range of 3 to 8. The higher the value, the poorer the governance of capital markets. To capture governance characteristics that are possibly not fully reflected

in *CM_GOV*, we include the Index of Economic Freedom (*ECONFREE*) of Gelos and Wei (2005) for each country

A country's mutual funds total net assets proxy as funds available to be invested in equities including offshore. We include the natural log *LNMUTUALFUNDS* for this measure.. Credit standing can also affect the perception of a country by investors based there, with potential implications for their behavior when investing abroad. In our analysis *SP_LC_LT* ranges from 1 (best) to 5 (worst) calibrated in 25 increments from 1 to 5, matching S&P's sovereign rating letter scale. We choose the foreign country's long term local currency sovereign credit rating because our emphasis is on the home markets of the foreign investors.

Finally, we hypothesize that the macroeconomic environment of traders' home markets may help predict their behavior when investing outside their countries. Tax considerations are represented in our models by the variable *TAX_RATE*, the home country's prevailing corporate tax rate (sourced from KPMG International's corporate tax rates survey and various websites). *REALGDP* is each country's real gross domestic product growth rate.

**Insert Table 5 Here**

Before discussing our multivariate regression results, we present some preliminary statistics on the explanatory variables. Table 5 displays mean, median, minimum, maximum, and standard deviation statistics. There are 34,417 buy trade days and 30,302 sell trade days when FOC stocks are excluded over our 1,320 day study period. The mean for *TRADEDEP* variable states that on average, countries in our sample rely on trading imports plus exports with the U.S. to the tune of about 20% of GDP.

Similarly, with *TIMESYNC* 79% of foreign countries time zones overlap with the U.S. exchanges, and on average 37.5% of these countries are English speaking.

*5.2 Results*

Given the large number of variables predicted as determinants of the level of foreign investors' disadvantage when trading against local investors in the U.S., for ease of interpretation, our discussion of Tables 6, 7, and 8 summarizing our main findings closely follows the classification of regressors we have used above.

**Insert Table 6 Here**

Table 6 shows the determinants of differences between domestic and foreign institutional investors for the total sample. We discuss trade characteristics and market returns, information asymmetry factors, and investors' home country attributes in turn and split the analysis between buy and sell trades in Panels A and B, respectively.

Considering buy trades, lagged stock returns (*CTC5*, *CTO and OTC*) are significant in explaining differences in trade ratios between domestic and foreign institutional investors. Across the four sample sizes, most of the coeeficients on these variables are positive (the exception being *CTO* and *OTC* in the case of the full sample). The open-to-close return, *OTC*, represents the permanent effect (see Chan and Lakonishok 1993). These findings show that in general positive feedback trading[2] strategies decrease the disadvantage experienced by foreign investors when they trade in U.S. equities. In terms of market-wide variables, the composite return on the two

[2] Most herding models suggest that investors follow some common signal. Feedback trading, a special case of herding, results when lag returns, or variables correlated with lag returns (e.g., earnings momentum, decisions of previous traders, changes in firm characteristics, etc), act as the common signal (Nofsinger and Sias, 1999, p.2263 footnote 1).

exchanges hosting the trades in our analysis is negatively related to the difference in price ratios for the total sample but not the small sample. As well, market volatility reduces the apparent disadvantage of foreign traders for trades under $150,000. Moreover, trade value differences between domestic and foreign institutions (*AVGDF*) and market sentiment (*VIX*) are highly significant for the total sample. The positive coefficients on these two variables suggest that as local markets become buoyant or more 'noisy', foreign institutions incur lower impact transaction costs.

When selling, momentum factors also seem to explain the difference in foreign and domestic investors' price ratios. However, the positive signs observed for the full sample buy trades do not change in the case of the open-to-close return (*OTC*) coefficient i.e., sells coeffients are all positive meaning that an increase in *OTC* increases the foreign disadvantage. It would appear from momentum factors that foreign investors ameliorate their losses on selling relative to local institutional investors when reacting to average five-day returns, *CTC5*, and overnight returns, *CTO*, (medium sales) but not intraday returns, *OTC*, or overnight returns valued under $20,000. The remainder of the results is mixed with significance seemingly clustered around large and medium trade characteristics. Typically, the signs on the coefficient change, depending on the trade size category used. Although the mixed findings preclude us from making more definitive comments on the roles of, the significance of many of the variables allows us to proceed to our regressors of interest with the knowledge that we have controlled for trade characteristics that are relevant to explaining the disadvantage experienced by foreign investors.

With respect to information asymmetry characteristics, for purchases the variables that really help to significantly explain differences in trade ratios are distance (*LNDISTANCE*), trade dependence (*TRADEDEP*). Contemproaneous net trade flows and their third and forth lags (*FLOWS-TO-US, FLOWS-TO-US*$_{t-3}$*, FLOWS-TO-US*$_{t-4}$) reduce foreign traders' disadvantage at the total sample level. The language (*ENGLISH)* and time zone (*TIMESYNC*) indicators matter for trades valued over $150,000 and under $50,000 respectively. For example, when buying stocks, investors from countries that share a cultural background with the U.S. as represented by commonality in business language reduce their relative disadvantage at least for medium sized trades. However, traders from countries whose time zones overlap with U.S. stock market opening hours are prone to buying at higher prices when the trades are of small sizes. Turning to sales, we find that our information asymmetry variables representing distance (*LNDISTANCE*), trade dependence (*TRADEDEP*) and time zone (*TIMESYNC*) are highly significant in explaining the relative performance of foreign large and medium sell trades. Net portfolio flows (*FLOWS-TO-US*) are significant for sales above $20,000. The ability to speak English (*ENGLISH*) does not matter when making sales. Why do measures of traders' closeness to the U.S. act to minimize the difference in the price they pay for stocks relative to locals while widening the price gap when they sell? Answers my lie in behavioral explanations. For example familiarity with the U.S. may result in clientele effects whereby foreign investors, exposed to similar information sources, move out of stocks in a predictable manner that is liable to be exploited by locals (see Blackburn et al. (2006) for a summary of the clientele effects literature).

The results also point to an interesting role for some home market characteristics. The findings are more stable in two respects. When the buy anchoring variables *LNMUTUALFUND*, *HMKTRET*, *LNMRKCAP*, *MKTCAPGDP*, *SP_LC_LT*, *TAX_RATE*, and *REALGDP* increase by one unit the foreign disadvantage decreases. We also report that traders from markets with higher total transaction costs (commissions and fees - which includes taxes) seem to reduce their disadvantage when it comes to investing in the U.S. However, an increase (decrease) *LNMKTCAP* increases (decreases) the foreign disadvantage

Finally, on selling, the home market characteristics that explain the relative performance of foreign investors are concentrated among small trades. When returns are rising in their countries of origin, foreign investors seem to receive lower prices for their sell trades. Poor capital market governance for sales under $20,000 is associated with wider differences in price ratios but not for medium sales valued between $20,000 and $150,000. This finding suggests that traders from countries with poorly governed capital markets experience more disadvantage for small sales when trading compared to local investors. There may be an element of flight-to-quality explaining their apparent indifference to such disadvantage in their quest to leave their home markets and invest in the U.S. Traders from countries experiencing high GDP growth also secure higher prices when selling in the U.S. However, those with falling sovereign credit ratings at home seem to realize poor prices for their trades in the U.S.

Insert Table 7 Here

Next we highlight the main results for common stocks shown in Table 7 and ADRs in Table 8. Economically and statistically, equally- and value-weighted results

from Tables 2 and 3 respectively, illustrate foreign institutional investors are worse off when trading common stocks and ADRs on the NYSE than the NASDAQ. Starting with common stock, for buy trades, book-to-market ratios (*BTM*) are highly significant for trades under $150,000 and for firm size variable (*LNSIZE*) under $20,000. Overnight stock returns (*CTO*) are significant also with positive coefficients across the four size samples in explaining differences in trade ratios between domestic and foreign institutional investors. This means a one unit increase (decrease) in *CTC5* decreases (increases) the foreign disadvantage Similarly, the higher the turnover on the stock (*AVGTURN*) the wider the price ratio difference. However, the coefficients on this variable when trade size sub-samples are considered only the medium value size is significant. The sign on the coefficient on trade difficulty is negative, at a high level of statistical significance, suggesting that for difficult trades, foreign investors are astute enough to avoid being disadvantaged. In terms of market-wide variables, the composite return on the two exchanges hosting the trades in our analysis is negatively related to the difference in price ratios i.e., for a one unit increase in *EXCHCOMPRET* the foreign disadvantage increases. As well, market volatility reduces the apparent disadvantage of foreign traders. Significant coefficients for volatility (*AVGSIG*) and market sentiment (*VIX*) both have negative signs while *AVGDF* and trade complexity (*TRADEDIFF*) both have positive signs which means that a one unit increase in the former (latter) will increase (decrease) the foreign disadvantage relative to the average U.S. institution.

When selling, momentum factors also seem to explain the difference in foreign and domestic investors' price ratios. However, the positive signs observed for buy trades do not change in the case of the open-to-close return (*OTC*) coefficient, except for

medium sized trades. We interpret the sign switching to infer the benefit or disadvantage of foreign institutions trading at different value trade ranges.

It would appear from this finding that foreign investors ameliorate their losses on selling relative to local institutional investors when reacting to intraday returns.

After conditioning our tests on common stock as the security being traded, it appears only is a few instances do our asymmetry variables seem to help explain differences in sell trade ratios. For buy trades, traders from countries whose time zones overlap with the U.S. stock market opening hours are prone to buying at higher prices when the trades are of medium sizes. Net portfolio flows and lag of 3-days (*FLOWS-TO-US*) for the total sample are significant and with a one unit increase for these variables the foreign disadvantage decreases.

We find for sell trades, that for time zone overlap (*TIMESYNC*) and culture (*ENGLISH*) variables the significant coefficients switch signs. Foreigners incur a disadvantage when the *TIMESYNC* sample size is small and for *ENGLISH* when selling medium valued trades. Only lagged net portfolio flow variables show any significance and foreigners are at a disadvantage when trading under $20,000 with a 1-day lag when lagged *FLOWS-TO-US* increase or they decrease then for the total (2-day) and medium (4-day) samples.

Foreign home market and anchoring variables are significant for medium and small buy and sell samples only. For purchases foreigners incur a disadvantage with small trades when home market return (*HMKTRET*) and their associated commissions (*EM_COMM*) increase. Similarly, foreigners when making purchases will also incur a disadvantage should the *LNMUTUALFUND* and *LNMKTCAP* variables decrease.

Looking at home market sales foreigners incur a disadvantage for *HMKTRET*, *EM_COMM*, *CM_GOV* (all medium) when these variables increase. Other significant variables *EM_MKT_IMPACT*, *LNMKTCAP*, *CM_GOV*, and *ECONFREE* (all small trade value) and *SP_LC_LT* (medium) variables need to decrease for foreigners to incur a disadvantage relative to U.S. institutional traders.

**Insert Table 8 Here**

We summarize our findings on the trading of ADRs in Table 8. Recall that ADRs may attract the attention of investors domiciled in the same country as the issuer of the security, other international traders as well as U.S. based market participants. We expect that the disadvantage experienced by foreign investors when trading ADRs will be more sensitive to their home market characteristics than the CKS factors. As panels A and B in Table 8 show, this expectation is partially confirmed by the results. For buy trades, the distribution of significant coefficients is apparently skewed towards home country variables. However, U.S. market conditions and particular trade characteristics play a role in the relative performance of foreigners on ADR trades. When buying, foreigners seemingly use little of their knowledge of the ADR issuer's home market to advantage. The findings worth noting are that shared language with the U.S. does tends to increase the disadvantage when foreign investors buy ADRs, while sharing the same time zone decreases the average prices paid on small trade parcels.

Other home market variables show up more strongly in explaining the difference in ADR prices paid. For example, across the size samples, traders from countries with well-established mutual fund markets buy far more as shown by the negative coefficient (i.e., a foreign disadvantage for a 1-unit increase in *LNMUTUALFUNDS*) on

*LNMUTUALFUNDS* in Panel A. The size of the stock market relative to a country's GDP predicts that its investors will also decrease their disadvantage on ADRs. Traders experiencing high transaction costs and corporate tax in their home markets also fair worse when buying ADRs in the U.S. Other factors offering the same information are the relative credit rating and economic growth. We interpret these findings as relating to the price pressure exerted by investors on their own market as market capitalization fails to meet the appetite of growing funds under management. The variable that stands out for reducing the disadvantage suffered by foreigners then buying ADRs is the size of the stock market relative to the U.S. (*LNMKTCAP_D_F*). However, on balance, factors relating to anchoring are not significant in decreasing the prices paid by foreigners on ADRs.

Casting a look over the sell results shows a large cluster of significant determinants for CSK momentum related proxies, volatility measure, average bid-ask spread and mean trade value difference for all, large and medium sample sizes. We find strong confirmation that all information asymmetry proxies except the language variable are associated with higher prices paid on ADRs by foreigners. This finding may be a sign that U.S. investors may also be at an advantage in relation to cross-listed stocks.

### *5.3 Robustness checks and further tests*

We carried out a number of robustness checks on some factors that could be reasonably expected to affect our findings. First, we investigated whether the foreigner disadvantage could be related to the industry sectors by incorporating SIC codes obtained from CRSP. We also included day of the week dummy variables. To account for the

relative sophistication of countries in our sample, we defined an indicator dummy variable for emerging markets. Instead of time zones we also used dummy variables of the five continents (North America, South America, Africa, Europe, and Asia), and separated the world into eight time zones each of three-hour duration (see Pulatkonak, and Sofianos, 1999).

## 6. Conclusion

This paper has used proprietary daily and weekly transaction costs data for U.S. based trades by foreign investors from 38 countries to measure the extent of their disadvantage compared with domestic institutions when buying and selling the same equity securities. The findings show that foreign institutional investors pay high and sell low relative to domestic investors. Trade weighted buy (sell) disadvantage of approximately 3.3 (3.0) basis, leaving a roundtrip foreign disadvantage of approximately 7.4 (6.3) basis points. These figures are based on daily data – looked in annual terms, for example, they are a considerable drag on returns earned by foreign investors in U.S. stock trades. Our headline measures of foreign disadvantage are broadly consistent across trade sizes and the main U.S. stock exchanges.

In the presence of trade and market return variables motivated by the existing literature, some country specific variables measuring information asymmetry between foreign and domestic investors as well as the institutional background of foreign traders' home markets are significant in explaining the discrepancy. Trade-specific variables relate to the disadvantage faced by foreign investors in a manner that is similar to what has been previously been documented. Our new variables, volatility as a measure of the

dispersion of investor sentiment and trade difficulty are also significant. We incorporate variables that proxy for information asymmetry between foreigners and locals and find that relative proximity does reduce the disadvantage we find in this paper but only for stock purchases. A trader's increasing familiarity with the U.S. tends to widen the price gap between the lower stock prices paid by locals and those incurred by foreigners. We find several home-country specific variables that lend support to the hypothesis that investors use their institutional priors as "anchors' or reference points for when they trade abroad. When buying, investors reduce their disadvantage when they come from countries with sizeable stock and mutual fund markets, and bullish equity markets. High equity trading costs incurred at home a associated with lower transaction expenses incurred abroad. However on selling, the home market characteristics show mixed results suggesting a lower bearing on the equity trading decisions of their initiators. In general these findings hold for when we analyze common stocks separately. However, one outstanding finding is that home market variables have a stronger association in the case of both buys and sells of ADRs, pointing to separate effects of investors' familiarity with stocks from their home markets.

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**Table 1. Institutional Trading in U.S. Domiciled Equities by Foreign Countries**

Data on institutional trading in U.S. domiciled equities of foreign countries are obtained from Abel Noser Corp (U.S) from July 1, 1999 to September 30, 2004. This table contains summary characteristics of institutional trading in equities and ADRs that were traded on the NYSE, AMEX, and Nasdaq markets in the U.S. from 51 countries. These include developed, emerging markets, and 'flag of convenience' countries. Total number of executed trades includes both buyer- and seller-initiated trades.

| | Listed | | | | Non-listed | | |
|---|---|---|---|---|---|---|---|
| | Common Stock | | ADRs | | Common Stock | ADRs | |
| | NYSE | AMEX | NYSE | AMEX | Nasdaq | Nasdaq | Total |
| Number of Securities | 875 | 38 | 297 | 2 | 431 | 112 | 1,755 |
| Number of Executed Trades | 243,408 | 8,206 | 188,146 | 175 | 84,576 | 38,732 | 563,243 |
| Average Number of Executed Trades per Security | 278 | 216 | 634 | 88 | 196 | 345 | 321 |

**Table 2. Univariate statistics for domestic and foreign investors' equally-weighted daily price ratios: July 1999-September 2004**

This table reports the prices incurred by domestic and foreign institutional investors trading stocks in the U.S. calculated using equations 1 and 2. The number of observations is shown in parentheses. Panels B-I are based on sub-samples of the full sample used in Panel A. The first four columns are the mean and standard deviations for domestic (D) and foreign (F), respectively. The difference between domestic and foreign investors' trade price ratios is given by D-F x100 where one percent corresponds to 100 basis points (bps). The t-value and p-value coefficients are based on difference in means t-tests.

| | Domestic Trades (D) | | Foreign Trades (F) | | | *H0*: D - F = 0 | |
|---|---|---|---|---|---|---|---|
| Sample/Market | Mean | Std. Dev. | Mean | Std. Dev. | **D-F x100** | *t*-Statistic | *p*-value |
| **Panel A: Full sample** | | | | | | | |
| Daily_All Buy (47,427) | 1.0001 | 0.0089 | 1.0005 | 0.0088 | -0.0326 | -5.35 | 0.00 |
| Daily_All Sell (40,863) | 1.0000 | 0.0093 | 0.9996 | 0.0101 | 0.0408 | 5.74 | 0.00 |
| Daily_Large Buy (20,812) | 1.0002 | 0.0093 | 1.0004 | 0.0088 | -0.0182 | -1.81 | 0.07 |
| Daily_Large Sell (18,723) | 1.0000 | 0.0096 | 0.9997 | 0.0091 | 0.0369 | 3.52 | 0.00 |
| Daily_Medium Buy (21,148) | 1.0001 | 0.0144 | 1.0003 | 0.0092 | -0.0225 | -1.92 | 0.05 |
| Daily_Medium Sell (17,393) | 1.0002 | 0.0092 | 0.9998 | 0.0107 | 0.0453 | 4.65 | 0.00 |
| Daily_Small Buy (16,694) | 1.0001 | 0.0101 | 1.0001 | 0.0108 | -0.0051 | -0.52 | 0.60 |
| Daily_Small Sell (12,840) | 1.0070 | 0.7738 | 0.9999 | 0.0121 | 0.7070 | 1.03 | 0.30 |
| **Panel B: Full sample ex 'FOC'** | | | | | | | |
| Daily_All Buy (34,417) | 1.0001 | 0.0093 | 1.0006 | 0.0089 | -0.0472 | -6.39 | 0.00 |
| Daily_All Sell (30,302) | 1.0001 | 0.0092 | 0.9996 | 0.0098 | 0.0523 | 6.43 | 0.00 |
| Daily_Large Buy (14,612) | 1.0001 | 0.0099 | 1.0006 | 0.0091 | -0.0497 | -3.91 | 0.00 |
| Daily_Large Sell (13,211) | 1.0001 | 0.0100 | 0.9996 | 0.0090 | 0.0501 | 3.96 | 0.00 |
| Daily_Medium Buy (14,668) | 1.0002 | 0.0164 | 1.0004 | 0.0094 | -0.0285 | -1.83 | 0.07 |
| Daily_Medium Sell (12,350) | 1.0002 | 0.0094 | 0.9996 | 0.0097 | 0.0632 | 5.70 | 0.00 |
| Daily_Small Buy (11,387) | 1.0000 | 0.0105 | 1.0000 | 0.0110 | -0.0004 | -0.04 | 0.97 |
| Daily_Small Sell (9,192) | 1.0097 | 0.9145 | 0.9998 | 0.0125 | 0.9912 | 1.03 | 0.30 |
| **Panel C: Common stocks only (NYSE & NASDAQ)** | | | | | | | |
| Daily_All Buy (11,416) | 1.0001 | 0.0122 | 1.0007 | 0.0115 | -0.0638 | -3.69 | 0.00 |
| Daily_All Sell (10,374) | 1.0000 | 0.0104 | 0.9995 | 0.0114 | 0.0499 | 3.06 | 0.00 |
| Daily_Large Buy (5,116) | 1.0001 | 0.0136 | 1.0007 | 0.0125 | -0.0654 | -2.15 | 0.03 |
| Daily_Large Sell (4,842) | 1.0001 | 0.0124 | 0.9995 | 0.0113 | 0.0566 | 2.15 | 0.03 |
| Daily_Medium Buy (4,917) | 0.9998 | 0.0102 | 1.0005 | 0.0121 | -0.0767 | -3.58 | 0.00 |
| Daily_Medium Sell (4,166) | 1.0003 | 0.0109 | 0.9994 | 0.0120 | 0.0905 | 3.75 | 0.00 |
| Daily_Small Buy (3,941) | 0.9999 | 0.0139 | 1.0000 | 0.0142 | -0.0039 | -0.14 | 0.89 |
| Daily_Small Sell (3,072) | 1.0006 | 0.0131 | 0.9998 | 0.0127 | 0.0878 | 2.90 | 0.00 |
| **Panel D: ADRs only (NYSE & NASDAQ)** | | | | | | | |
| Daily_All Buy (22,332) | 1.0001 | 0.0072 | 1.0005 | 0.0072 | -0.0394 | -5.71 | 0.00 |
| Daily_All Sell (19,326) | 1.0001 | 0.0084 | 0.9995 | 0.0086 | 0.0537 | 5.97 | 0.00 |
| Daily_Large Buy (9,203) | 1.0001 | 0.0072 | 1.0005 | 0.0066 | -0.0414 | -3.82 | 0.00 |
| Daily_Large Sell (8,111) | 1.0000 | 0.0084 | 0.9996 | 0.0072 | 0.0474 | 3.61 | 0.00 |
| Daily_Medium Buy (9,429) | 1.0004 | 0.0190 | 1.0004 | 0.0076 | -0.0008 | -0.04 | 0.97 |
| Daily_Medium Sell (7,952) | 1.0002 | 0.0082 | 0.9997 | 0.0080 | 0.0445 | 3.99 | 0.00 |
| Daily_Small Buy (7,104) | 1.0001 | 0.0082 | 1.0001 | 0.0088 | -0.0045 | -0.42 | 0.68 |
| Daily_Small Sell (5,877) | 1.0149 | 1.1437 | 0.9998 | 0.0124 | 1.5062 | 1.00 | 0.32 |

**Table 2.** (*Continued*)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Panel E: NYSE Common stocks only** | | | | | | | |
| Daily_All Buy (6,264) | 1.0000 | 0.0119 | 1.0009 | 0.0092 | -0.0889 | -4.06 | <.0001 |
| Daily_All Sell (5,767) | 1.0002 | 0.0077 | 0.9994 | 0.0082 | 0.0867 | 5.62 | <.0001 |
| Daily_Large Buy (2,558) | 0.9999 | 0.0152 | 1.0010 | 0.0106 | -0.1154 | -2.57 | 0.0102 |
| Daily_Large Sell (2,389) | 1.0002 | 0.0077 | 0.9991 | 0.0081 | 0.1087 | 4.30 | <.0001 |
| Daily_Medium Buy (2,610) | 0.9998 | 0.0078 | 1.0007 | 0.0091 | -0.0914 | -3.90 | <.0001 |
| Daily_Medium Sell (2,295) | 1.0000 | 0.0084 | 0.9995 | 0.0100 | 0.0524 | 2.02 | 0.0440 |
| Daily_Small Buy (2,105) | 1.0001 | 0.0100 | 1.0002 | 0.0094 | -0.0022 | -0.08 | 0.9399 |
| Daily_Small Sell (1,667) | 1.0002 | 0.0114 | 0.9997 | 0.0103 | 0.0517 | 5.62 | <.0001 |
| **Panel F: NYSE ADRs only** | | | | | | | |
| Daily_All Buy (15,190) | 1.0001 | 0.0068 | 1.0005 | 0.0100 | -0.0377 | -3.67 | 0.0002 |
| Daily_All Sell (13,653) | 1.0000 | 0.0074 | 0.9996 | 0.0068 | 0.0413 | 4.83 | <.0001 |
| Daily_Large Buy (6,755) | 1.0001 | 0.0069 | 1.0007 | 0.0060 | -0.0589 | -5.01 | <.0001 |
| Daily_Large Sell (6,211) | 1.0000 | 0.0076 | 0.9995 | 0.0067 | 0.0519 | 3.80 | 0.0001 |
| Daily_Medium Buy (6,336) | 1.0009 | 0.0408 | 1.0003 | 0.0140 | 0.0668 | 1.02 | 0.3065 |
| Daily_Medium Sell (5,694) | 1.0001 | 0.0071 | 0.9997 | 0.0074 | 0.0405 | 3.49 | 0.0005 |
| Daily_Small Buy (4,622) | 1.0001 | 0.0076 | 1.0000 | 0.0088 | 0.0057 | 0.46 | 0.6449 |
| Daily_Small Sell (3,895) | 0.9999 | 0.0072 | 0.9999 | 0.0081 | 0.0040 | 0.31 | 0.7576 |
| **Panel G: NASDAQ common stocks only** | | | | | | | |
| Daily_All Buy (4,801) | 0.9998 | 0.0125 | 1.0006 | 0.0141 | -0.0790 | -2.67 | 0.0077 |
| Daily_All Sell (4,174) | 1.0002 | 0.0141 | 0.9997 | 0.0146 | 0.0413 | 1.20 | 0.2293 |
| Daily_Large Buy (2,002) | 1.0000 | 0.0122 | 1.0006 | 0.0148 | -0.0575 | -1.17 | 0.2441 |
| Daily_Large Sell (1,914) | 1.0002 | 0.0174 | 0.9998 | 0.0149 | 0.0325 | 0.57 | 0.5717 |
| Daily_Medium Buy (1,620) | 0.9998 | 0.0128 | 1.0008 | 0.0160 | -0.0906 | -1.80 | 0.0728 |
| Daily_Medium Sell (1,268) | 1.0009 | 0.0157 | 0.9991 | 0.0164 | 0.1803 | 2.95 | 0.0033 |
| Daily_Small Buy (1,354) | 0.9997 | 0.0140 | 1.0001 | 0.0187 | -0.0398 | -0.65 | 0.5151 |
| Daily_Small Sell (876) | 1.0014 | 0.0161 | 0.9996 | 0.0160 | 0.1799 | 2.61 | 0.0092 |
| **Panel H: NASDAQ ADRs** | | | | | | | |
| Daily_All Buy (3,157) | 1.0000 | 0.0102 | 1.0008 | 0.0096 | -0.0799 | -3.18 | 0.0015 |
| Daily_All Sell (2,718) | 1.0005 | 0.0116 | 0.9995 | 0.0098 | 0.1003 | 3.20 | 0.0014 |
| Daily_Large Buy (1,460) | 1.0004 | 0.0091 | 1.0008 | 0.0093 | -0.0354 | -1.02 | 0.3098 |
| Daily_Large Sell (1,304) | 1.0000 | 0.0097 | 0.9994 | 0.0092 | 0.0632 | 1.51 | 0.1302 |
| Daily_Medium Buy (1,069) | 1.0001 | 0.0123 | 1.0006 | 0.0102 | -0.0493 | -0.98 | 0.3293 |
| Daily_Medium Sell (891) | 1.0003 | 0.0112 | 0.9994 | 0.0089 | 0.0841 | 1.83 | 0.0683 |
| Daily_Small Buy (823) | 1.0000 | 0.0177 | 1.0006 | 0.0112 | -0.0559 | -0.87 | 0.3856 |
| Daily_Small Sell (687) | 0.9996 | 0.0119 | 1.0002 | 0.0118 | -0.0621 | -1.06 | 0.2887 |
| **Panel I: AMEX Common stocks and ADRs** | | | | | | | |
| Daily_All Buy (552) | 1.0003 | 0.0064 | 1.0004 | 0.0068 | -0.0080 | -0.19 | 0.85 |
| Daily_All Sell (431) | 1.0004 | 0.0061 | 0.9998 | 0.0068 | 0.0599 | 1.34 | 0.18 |
| Daily_Large Buy (282) | 1.0006 | 0.0065 | 1.0007 | 0.0067 | -0.0086 | 0.48 | 0.63 |
| Daily_Large Sell (273) | 1.0003 | 0.0070 | 1.0001 | 0.0063 | 0.0206 | 1.10 | 0.27 |
| Daily_Medium Buy (419) | 1.0001 | 0.0070 | 1.0001 | 0.0085 | -0.0006 | 0.99 | 0.33 |
| Daily_Medium Sell (340) | 1.0002 | 0.0068 | 0.9998 | 0.0070 | 0.0446 | 0.89 | 0.37 |
| Daily_Small Buy (346) | 1.0005 | 0.0084 | 1.0004 | 0.0066 | 0.0139 | 0.94 | 0.35 |
| Daily_Small Sell (281) | 1.0001 | 0.0083 | 1.0006 | 0.0087 | -0.0562 | -1.19 | 0.23 |

**Table 3. Univariate statistics for domestic and foreign investors' trade-weighted price ratios: July 1999-September 2004**

This table reports the prices incurred by domestic and foreign institutional investors trading stocks in the U.S. calculated using equations 1 and 2 modified to a trade weighted basis. The number of observations is shown in parentheses. Panels B-D are based on sub-samples of the full sample used in Panel A. The first four columns are the mean and standard deviations for domestic (D) and foreign (F), respectively. The difference between domestic and foreign investors' trade price ratios is given by D-F x100 where one percent corresponds to 100 basis points (bps). The t-value and p-value coefficients are based on difference in means t-tests.

| | Domestic Trades (D) | | Foreign Trades (F) | | | *H0*: D - F = 0 | |
|---|---|---|---|---|---|---|---|
| Sample/Market | Mean | Std. Dev. | Mean | Std. Dev. | **D-F x100** | *t* - value | *p*-value |
| **Panel A: Full sample** | | | | | | | |
| Daily_All Buy (1,320) | 1.0001 | 0.0031 | 1.0004 | 0.0031 | -0.0334 | -2.30 | 0.02 |
| Daily_All Sell (1,320) | 1.0000 | 0.0025 | 0.9997 | 0.0028 | 0.0303 | 2.45 | 0.01 |
| Daily_Large Buy (1,319) | 1.0001 | 0.0040 | 1.0005 | 0.0037 | -0.0418 | -2.25 | 0.02 |
| Daily_Large Sell (1318) | 1.0000 | 0.0030 | 0.9997 | 0.0032 | 0.0287 | 2.02 | 0.04 |
| Daily_Medium Buy (1,317) | 1.0004 | 0.0243 | 1.0002 | 0.0045 | 0.0198 | 0.28 | 0.78 |
| Daily_Medium Sell (1,310) | 1.0004 | 0.0047 | 0.9998 | 0.0050 | 0.0604 | 3.36 | 0.00 |
| Daily_Small Buy (1,286) | 0.9999 | 0.0060 | 1.0002 | 0.0054 | -0.0370 | -1.76 | 0.08 |
| Daily_Small Sell (1,262) | 1.0401 | 1.4105 | 1.0001 | 0.0073 | 4.0033 | 1.01 | 0.31 |
| **Panel B: Full sample ex 'FOC'** | | | | | | | |
| Daily_All Buy (1,320) | 1.0001 | 0.0038 | 1.0006 | 0.0032 | -0.0459 | -2.72 | 0.01 |
| Daily_All Sell (1,320) | 1.0000 | 0.0026 | 0.9996 | 0.0028 | 0.0398 | 3.38 | 0.00 |
| Daily_Large Buy (1,316) | 1.0000 | 0.0069 | 1.0006 | 0.0040 | -0.0596 | -2.23 | 0.03 |
| Daily_Large Sell (1,316) | 0.9999 | 0.0032 | 0.9995 | 0.0035 | 0.0447 | 3.11 | 0.00 |
| Daily_Medium Buy (1,305) | 1.0008 | 0.0354 | 1.0003 | 0.0054 | 0.0524 | 0.51 | 0.61 |
| Daily_Medium Sell (1,303) | 1.0003 | 0.0055 | 0.9997 | 0.0058 | 0.0664 | 3.53 | 0.00 |
| Daily_Small Buy (1,251) | 0.9999 | 0.0077 | 1.0001 | 0.0068 | -0.0215 | -0.78 | 0.44 |
| Daily_Small Sell (1,217) | 1.0519 | 1.7977 | 1.0000 | 0.0080 | 5.1843 | 1.01 | 0.31 |
| **Panel C: Common stocks only (NYSE & NASDAQ)** | | | | | | | |
| Daily_All Buy (1,311) | 0.9999 | 0.0136 | 1.0010 | 0.0091 | -0.1132 | -1.89 | 0.06 |
| Daily_All Sell (1,310) | 1.0000 | 0.0047 | 0.9994 | 0.0047 | 0.0641 | 3.15 | 0.00 |
| Daily_Large Buy (1,275) | 0.9997 | 0.0156 | 1.0012 | 0.0101 | -0.1454 | -2.16 | 0.03 |
| Daily_Large Sell (1,248) | 1.0001 | 0.0062 | 0.9993 | 0.0061 | 0.0843 | 3.08 | 0.00 |
| Daily_Medium Buy (1,239) | 0.9997 | 0.0069 | 1.0005 | 0.0099 | -0.0817 | -2.35 | 0.02 |
| Daily_Medium Sell (1,189) | 1.0000 | 0.0082 | 0.9994 | 0.0102 | 0.0612 | 1.88 | 0.06 |
| Daily_Small Buy (1,130) | 0.9999 | 0.0113 | 1.0003 | 0.0114 | -0.0385 | -0.86 | 0.39 |
| Daily_Small Sell (1,010) | 1.0008 | 0.0136 | 0.9998 | 0.0115 | 0.1024 | 1.96 | 0.05 |
| **Panel D: ADRs only (NYSE & NASDAQ)** | | | | | | | |
| Daily_All Buy (1,319) | 1.0002 | 0.0042 | 1.0005 | 0.0031 | -0.0308 | -1.90 | 0.06 |
| Daily_All Sell (1,310) | 1.0000 | 0.0047 | 0.9994 | 0.0047 | 0.0641 | 3.15 | 0.00 |
| Daily_Large Buy (1,295) | 1.0001 | 0.0047 | 1.0004 | 0.0038 | -0.0364 | -2.07 | 0.04 |
| Daily_Large Sell (1,302) | 1.0000 | 0.0038 | 0.9995 | 0.0036 | 0.0421 | 2.57 | 0.01 |
| Daily_Medium Buy (1,265) | 1.0012 | 0.0449 | 1.0004 | 0.0050 | 0.0764 | 0.59 | 0.56 |
| Daily_Medium Sell (1,168) | 1.0003 | 0.0053 | 0.9997 | 0.0050 | 0.0553 | 2.81 | 0.01 |
| Daily_Small Buy (1,170) | 1.0000 | 0.0056 | 1.0001 | 0.0062 | -0.0185 | -0.84 | 0.40 |
| Daily_Small Sell (1,129) | 1.0640 | 2.1452 | 0.9999 | 0.0068 | 6.4105 | 1.00 | 0.32 |
| **Panel E: NYSE Common stocks** | | | | | | | |
| Daily_All Buy (1,289) | 0.9997 | 0.0191 | 1.0013 | 0.0103 | -0.1611 | -2.09 | 0.0365 |
| Daily_All Sell (1,278) | 1.0002 | 0.0052 | 0.9993 | 0.0057 | 0.0907 | 3.84 | 0.0001 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Daily_Large Buy (1,111) | 0.9997 | 0.0209 | 1.0014 | 0.0116 | -0.1700 | -1.86 | 0.0627 |
| Daily_Large Sell (1,090) | 1.0002 | 0.0063 | 0.9991 | 0.0070 | 0.1054 | 3.36 | 0.0008 |
| Daily_Medium Buy (1,058) | 0.9998 | 0.0065 | 1.0008 | 0.0089 | -0.1012 | -2.96 | 0.0031 |
| Daily_Medium Sell (1,015) | 0.9999 | 0.0070 | 0.9994 | 0.0091 | 0.0511 | 1.48 | 0.1395 |
| Daily_Small Buy (906) | 0.9999 | 0.0105 | 0.9999 | 0.0091 | 0.0001 | 0.00 | 0.9982 |
| Daily_Small Sell (816) | 1.0003 | 0.0124 | 0.9998 | 0.0092 | 0.0437 | 0.81 | 0.4170 |
| **Panel F: NYSE ADRs** | | | | | | | |
| Daily_All Buy (1,313) | 1.0002 | 0.0050 | 1.0005 | 0.0036 | -0.0282 | -1.40 | 0.1613 |
| Daily_All Sell (1,317) | 1.0000 | 0.0031 | 0.9995 | 0.0034 | 0.0500 | 3.61 | 0.0003 |
| Daily_Large Buy (1,282) | 1.0000 | 0.0049 | 1.0005 | 0.0041 | -0.0508 | -2.94 | 0.0033 |
| Daily_Large Sell (1,295) | 1.0000 | 0.0048 | 0.9995 | 0.0040 | 0.0541 | 2.88 | 0.0040 |
| Daily_Medium Buy (1,241) | 1.0034 | 0.0830 | 1.0002 | 0.0057 | 0.3180 | 1.30 | 0.1928 |
| Daily_Medium Sell (1,225) | 1.0003 | 0.0052 | 0.9998 | 0.0055 | 0.0502 | 2.28 | 0.0227 |
| Daily_Small Buy (1,115) | 0.9999 | 0.0085 | 0.9999 | 0.0088 | 0.0022 | 0.09 | 0.9248 |
| Daily_Small Sell (1,049) | 1.0002 | 0.0060 | 0.9999 | 0.0062 | 0.0297 | 1.50 | 0.1327 |
| **Panel G: NASDAQ Common stocks** | | | | | | | |
| Daily_All Buy (1,244) | 0.9999 | 0.0071 | 1.0006 | 0.0075 | -0.0681 | -2.10 | 0.0362 |
| Daily_All Sell (1,204) | 1.0001 | 0.0087 | 0.9992 | 0.0088 | 0.0900 | 2.34 | 0.0197 |
| Daily_Large Buy (1,033) | 0.9998 | 0.0090 | 1.0007 | 0.0101 | -0.0873 | -1.86 | 0.0637 |
| Daily_Large Sell (947) | 1.0002 | 0.0104 | 0.9996 | 0.0106 | 0.0634 | 1.21 | 0.2280 |
| Daily_Medium Buy (930) | 1.0000 | 0.0102 | 1.0003 | 0.0132 | -0.0326 | -0.60 | 0.5473 |
| Daily_Medium Sell (800) | 1.0009 | 0.0149 | 0.9991 | 0.0162 | 0.1853 | 2.63 | 0.0087 |
| Daily_Small Buy (835) | 0.9999 | 0.0126 | 1.0001 | 0.0155 | -0.0228 | -0.37 | 0.7093 |
| Daily_Small Sell (618) | 1.0017 | 0.0158 | 0.9994 | 0.0157 | 0.2306 | 2.86 | 0.0044 |
| **Panel H: NASDAQ ADRs** | | | | | | | |
| Daily_All Buy (1,180) | 1.0002 | 0.0064 | 1.0006 | 0.0075 | -0.0412 | -1.40 | 0.1612 |
| Daily_All Sell (1,159) | 1.0002 | 0.0076 | 0.9997 | 0.0068 | 0.0492 | 1.46 | 0.1450 |
| Daily_Large Buy (893) | 1.0004 | 0.0068 | 1.0007 | 0.0080 | -0.0304 | -0.83 | 0.4094 |
| Daily_Large Sell (877) | 0.9999 | 0.0087 | 0.9997 | 0.0075 | 0.0216 | 0.50 | 0.6158 |
| Daily_Medium Buy (721) | 0.9999 | 0.0125 | 1.0005 | 0.0100 | -0.0551 | -0.91 | 0.3643 |
| Daily_Medium Sell (641) | 1.0006 | 0.0109 | 0.9996 | 0.0088 | 0.1011 | 1.96 | 0.0506 |
| Daily_Small Buy (571) | 0.9998 | 0.0118 | 1.0005 | 0.0111 | -0.0676 | -1.29 | 0.1962 |
| Daily_Small Sell (490) | 0.9995 | 0.0107 | 0.9999 | 0.0099 | -0.0411 | -0.65 | 0.5130 |

**Table 4. Univariate statistics for domestic and foreign investors' equal-weighted price ratios: Flag of Convenience Countries**

This table reports the prices incurred by domestic and foreign institutional investors trading stocks in the U.S. calculated using equations 1 and 2. The number of observations is shown in parentheses. Panels B-I are based on sub-samples of the full sample used in Panel A. The first four columns are the mean and standard deviations for domestic (D) and foreign (F), respectively. The difference between domestic and foreign investors' trade price ratios is given by D-F x100 where one percent corresponds to 100 basis points (bps). The t-value and p-value coefficients are based on difference in means t-tests.

| | Domestic (U.S.) Trades (D) | | Foreign Trades (F) | | | | *H0*: D - F = 0 | |
|---|---|---|---|---|---|---|---|---|
| Sample/Market | Mean | Std. Dev. | Mean | Std. Dev. | *Adj R-Sq* | **D-F x100** | *t* - value | *p*-value |
| **Panel A: Full sample** | | | | | | | | |
| Daily_All Buy (12,270) | 1.0002 | 0.0077 | 1.0002 | 0.0086 | 0.0104 | 0.0015 | 0.14 | 0.89 |
| Daily_All Sell (9,779) | 0.9999 | 0.0094 | 0.9998 | 0.0094 | 0.0107 | 0.0109 | 0.78 | 0.44 |
| Daily_Large Buy (6,080) | 1.0004 | 0.0079 | 0.9999 | 0.0078 | 0.058 | 0.0475 | 2.99 | 0.00 |
| Daily_Large Sell (5,301) | 0.9999 | 0.0082 | 0.9999 | 0.0093 | 0.055 | 0.0026 | 0.14 | 0.89 |
| Daily_Medium Buy (6,029) | 1 | 0.008 | 1.0002 | 0.009 | 0.0057 | -0.0193 | -1.29 | 0.20 |
| Daily_Medium Sell (4,609) | 1.0001 | 0.0083 | 1 | 0.0098 | 0.0152 | 0.0155 | 0.88 | 0.38 |
| Daily_Small Buy (5,217) | 1.0001 | 0.0091 | 1.0004 | 0.0105 | 0.0387 | -0.0228 | -1.32 | 0.19 |
| Daily_Small Sell (3,157) | 1.0001 | 0.0097 | 1.0002 | 0.0106 | 0.0237 | -0.006 | -0.26 | 0.80 |
| **Panel B: Common stocks only (NYSE)** | | | | | | | | |
| Daily_All Buy (10,009) | 1.0001 | 0.0061 | 1.0003 | 0.0074 | 0.0026 | -0.015 | -1.52 | 0.13 |
| Daily_All Sell (8,104) | 0.9999 | 0.0081 | 0.9998 | 0.0081 | 0.0006 | 0.0038 | 0.29 | 0.77 |
| Daily_Large Buy (5,145) | 1.0002 | 0.006 | 1.0001 | 0.0072 | 0.0484 | 0.013 | 0.91 | 0.36 |
| Daily_Large Sell (4,489) | 0.9999 | 0.0065 | 1.0001 | 0.0078 | 0.023 | -0.0191 | -1.18 | 0.24 |
| Daily_Medium Buy (5,104) | 1.0001 | 0.0065 | 1.0003 | 0.0079 | 0.0039 | -0.0198 | -1.43 | 0.15 |
| Daily_Medium Sell (3,943) | 1.0001 | 0.0073 | 1 | 0.0091 | 0.0335 | 0.0056 | 0.33 | 0.74 |
| Daily_Small Buy (4,384) | 1.0001 | 0.0076 | 1.0004 | 0.009 | 0.0423 | -0.0346 | -2.18 | 0.03 |
| Daily_Small Sell (2,615) | 1.0003 | 0.0077 | 1.0002 | 0.009 | 0.0208 | 0.0086 | 0.40 | 0.69 |
| **Panel C: Common srocks only (NASDAQ)** | | | | | | | | |
| Daily_All Buy (2,194) | 1.0007 | 0.0126 | 0.9999 | 0.0124 | 0.0263 | 0.0799 | 1.96 | 0.05 |
| Daily_All Sell (1,605) | 0.9999 | 0.014 | 0.9993 | 0.014 | 0.0466 | 0.0541 | 0.99 | 0.32 |
| Daily_Large Buy (909) | 1.0017 | 0.0145 | 0.9992 | 0.0105 | 0.0824 | 0.2458 | 3.67 | 0.00 |
| Daily_Large Sell (786) | 1.0001 | 0.0144 | 0.9991 | 0.0153 | 0.1107 | 0.0986 | 1.14 | 0.25 |
| Daily_Medium Buy (908) | 0.9997 | 0.0137 | 0.9997 | 0.0137 | 0.0094 | -0.0036 | -0.06 | 0.95 |
| Daily_Medium Sell (644) | 1.0008 | 0.0119 | 0.9998 | 0.0131 | -0.0012 | 0.0947 | 1.35 | 0.18 |
| Daily_Small Buy (828) | 1.0005 | 0.0148 | 1.0002 | 0.0162 | 0.0411 | 0.0253 | 0.37 | 0.71 |
| Daily_Small Sell (518) | 0.9996 | 0.0156 | 0.9997 | 0.0158 | 0.0537 | -0.005 | -0.06 | 0.95 |

**Table 5. Descriptive statistics on the explanatory variables**

This table contains the descriptive statistics, mean, median, minimum, maximum, and standard deviation of the total buy sample (omit sells for brevity) that excludes flag of convenience countries. The first section contains trade characteristics the first 10 motivated by CSK. They include, firm size (*SIZE*) in thousands U.S. dollars, firm book-to-market (*BTM*) ratio, NYSE and NASDAQ composite indices daily returns (*EXCHRET*), average bid-ask spread (*AVGBAS*), similarly volatility (*AVGSIG*), and turnover ratio (*AVGTURN*) the last three variables calculated over the last 30 days. Momentum related trade characteristics are the previous 5-day return (*CTC5*), overnight return (*CTO*), and the day-time return (OTC). Chicago Board Options Exchange Volatility Index (*VIX*) is a measure of general market sentiment. Trade difficulty (*TRADEDIFF*) is the ratio of the shares included in the order at decision time to the average daily trading volume over the preceding five trading days (Chakravarty et al, 2004). Information asymmetry factors include distance (*DISTANCE*) in kilometers from the U.S (New York) to the capital city of the foreign country, trade dependence (*TRADEDEP*), time zone 1,0 variable 1 if the foreign countries overlaps with the US when the NYSE or NASDAQ is open, and a dummy variable if the foreign countries financial dealing are carried out in main U.S. language (*ENGLISH*). Net monthly portfolio flows (*FLOWS_TO_US)* and up to four lags collated from U.S. Department of Treasury TIC data . Source country characteristic *MUTUALFUNDS* is the total net assets of mutual funds in home market (ICI Fact Book, 2006). Remaining source country characteristics include home market daily return *HMKTRET*, natural logarithm of exchange market capitalization *MKTCAP*, Elkins-McSherry quarterly implicit and explicit transaction costs *EM_COMM* (commission), *EM_FEES* (fees and taxes), and *EM_MKT_IMPACT* (market impact costs). Capital market governance *CM_GOV* is an index ranging from 3 to 8, where higher values denote poor governance. *ECONFREE* is an index of the relative economic freedom of a country. *SP_LC_LT* is Standard & Poor's local currency long-term rating between 1 and 5, *TAX_RATE* is the corporate tax rate. *REAL_GDP* is the country's real gross nation product growth rate.

| Variable | Mean | Median | Minimum | Maximum | Standard Dev. |
|---|---|---|---|---|---|
| **Trade characteristics** | | | | | |
| *SIZE ('000's)* | 3,357,223 | 3,843,800 | 1 | 246,672,622 | 6 |
| *BTM* | 0.977 | 0.8489 | 0 | 11.0613 | 0.7462 |
| *EXCHRET* | 0.0005 | 0.0007 | -0.0967 | 0.1417 | 0.0149 |
| *AVGBAS* | 0.9715 | 0.3909 | -0.0831 | 48.7077 | 3.1318 |
| *AVGSIG* | 3.6542 | 2.9699 | 0 | 45.0451 | 3.1712 |
| *AVGTURN* | 1.2252 | 0.7332 | 0 | 143.93 | 2.1521 |
| *CTC5* | 0.7292 | 0.6181 | -100 | 68.6244 | 8.5271 |
| *CTO* | 0.0904 | 0.0153 | -80.09 | 31.08 | 2.68 |
| *OTC* | 0.2378 | 0.1723 | -99.27 | 28.12 | 3.1102 |
| *VIX* | 22.6341 | 21.25 | 6.0294 | 13.17 | 45.08 |
| *TRADEDIFF* | 3.2763 | 0.0312 | 2.03E-07 | 25823 | 182 |

**Table 5** (*Continued*)

| Variable | Mean | Median | Minimum | Maximum | Standard Dev. |
|---|---|---|---|---|---|
| **Information asymmetry proxies** | | | | | |
| *DISTANCE (kms)* | 3,767 | 5,877 | 303 | 14,453 | 3 |
| *TRADEDEP* | 0.2018 | 0.1068 | 0.0086 | 0.6333 | 0.1874 |
| *TIMESYNC* | 0.7929 | 1 | 0 | 1 | 0.4053 |
| *ENGLISH* | 0.3748 | 0 | 0 | 1 | 0.4841 |
| *FLOWS_TO_US (Monthly)* | -169.57 | -56 | -12132 | 14111 | 2167 |
| **Foreigners' home market and anchoring variables** | | | | | |
| *LNMUTUALFUNDS (US$Millions)* | 11.9026 | 12.1855 | 4.6821 | 14.1492 | 1.2297 |
| *HMKTRET* | 0.0008 | 0.0003 | -0.1889 | 0.1837 | 0.0158 |
| *EM_COMM (bps)* | 22.3802 | 19.92 | 6.1100 | 106.43 | 7.4002 |
| *EM_FEES (bps)* | 11.3072 | 1.0700 | 0 | 100.00 | 20.5192 |
| *EM_MKT_IMPACT (bps)* | 13.8941 | 11.830 | 0.4800 | 157.00 | 8.0102 |
| *LNMKTCAP (US$Billions)* | 6.0043 | 6.2681 | -0.9623 | 8.6733 | 1.1591 |
| *CM_GOV* | 6.1184 | 6.09 | 0 | 8.54 | 2.6662 |
| *ECONFREE* | 2.2680 | 2.075 | 1.2875 | 4.23 | 0.5051 |
| *SP_LC_LT* | 4.5464 | 5 | 0 | 5 | 0.9188 |
| *TAX_RATE (%)* | 0.3255 | 0.34 | 0.125 | 0.5231 | 0.0620 |
| *REAL_GDP (%)* | 2.0355 | 1.9555 | -11.7703 | 14.7273 | 2.4808 |

**Table 6. Determinants of differences in equity trade prices**

This table reports the results of pooled regressions of price ratio differences between domestic institutional investors and foreign investors trading in NYSE and NASDAQ equities. Panels A and B summarize the results for buy and sell trades, respectively. The explanatory variables are as defined in Table 5. Standard errors are consistent with White's (1980) heteroskedasticity adjustment. ***, **, and * represent statistical significance at the 1%, 5% and 10% levels, respectively.

**Panel A: Full sample (ex FOC) - Buys**

| | Sample Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | Large | | | Medium | | | Small | | |
| Variables | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | |
| **Trade characteristics** | | | | | | | | | | | | |
| *LNSIZE* | -0.4092 | 0.3939 | | 0.0248 | 0.0067 | *** | 0.0116 | 0.0062 | * | 0.0143 | 0.0080 | * |
| *BTM* | 0.0048 | 0.0074 | | 0.0038 | 0.0127 | | 0.0054 | 0.0123 | | 0.0237 | 0.0177 | |
| *EXCHRET* | 0.0228 | 0.0154 | *** | -0.6577 | 0.7611 | | 0.0566 | 0.7283 | | -2.5589 | 0.9253 | *** |
| *CTC5* | -2.2061 | 0.8848 | *** | 0.0025 | 0.0010 | *** | 0.0031 | 0.0010 | *** | -0.0003 | 0.0013 | |
| *CTO* | 0.0022 | 0.0012 | *** | 0.0189 | 0.0032 | *** | 0.0045 | 0.0032 | | 0.0435 | 0.0042 | *** |
| *OTC* | 0.0140 | 0.0039 | *** | 0.0004 | 0.0030 | | -0.0177 | 0.0031 | *** | 0.0166 | 0.0040 | *** |
| *AVGBAS* | 0.0369 | 0.0036 | | 0.0068 | 0.0054 | | 0.0146 | 0.0050 | *** | 0.0354 | 0.0061 | *** |
| *AVGSIG* | 0.0087 | 0.0060 | *** | -0.0019 | 0.0056 | | -0.0146 | 0.0054 | *** | -0.0393 | 0.0068 | *** |
| *AVGTURN* | -0.0128 | 0.0064 | | 0.0097 | 0.0056 | * | -0.0083 | 0.0058 | | 0.0005 | 0.0049 | |
| *AVGDF* | 0.0007 | 0.0050 | *** | | | | | | | | | |
| *VIX* | 0.0005 | 0.0002 | *** | -0.0001 | 0.0016 | | 0.0005 | 0.0015 | | -0.0019 | 0.0018 | |
| *TRADEDIFF* | -0.0035 | 0.0018 | | 1.5E-06 | 3.3E-05 | | -1.9E-05 | 0.0002 | | -0.0007 | 0.0028 | |

**Table 6** (*Continued*)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Information asymmetry proxies** | | | | | | | | | | | |
| *LNDISTANCE* | 0.0520 | 0.0293 | *** | 0.0327 | 0.0253 | | 0.0267 | 0.0222 | | 0.0329 | 0.0287 | |
| *TRADEDEP* | 0.4416 | 0.1816 | *** | 0.1651 | 0.1583 | | 0.1966 | 0.1450 | | 0.3368 | 0.1831 | |
| *TIMESYNC* | 0.0342 | 0.0473 | | 0.0042 | 0.0403 | | -0.0113 | 0.0367 | | -0.0263 | 0.0478 | * |
| *ENGLISH* | -0.0655 | 0.0413 | | 0.0712 | 0.0400 | * | 0.0476 | 0.0353 | | 0.0280 | 0.0446 | |
| *FLOWS_TO_US* | 9.0E-06 | 4.5E-06 | *** | 1.6E-06 | 3.8E-06 | | 1.9E-06 | 3.7E-06 | | -1.1E-06 | 4.3E-06 | |
| *FLOWS_TO_US$_{t-1}$* | -5.4E-06 | 4.7E-06 | | -6.7E-07 | 4.0E-06 | | 4.0E-06 | 3.8E-06 | | -5.6E-06 | 4.6E-06 | |
| *FLOWS_TO_US$_{t-2}$* | -2.7E-06 | 4.5E-06 | | 3.2E-07 | 3.7E-06 | | -3.5E-06 | 3.6E-06 | | -3.8E-06 | 4.4E-06 | |
| *FLOWS_TO_US$_{t-3}$* | 1.0E-05 | 4.4E-06 | *** | 2.1E-06 | 3.7E-06 | | -6.2E-06 | 3.6E-06 | * | 1.4E-06 | 4.2E-06 | |
| *FLOWS_TO_US$_{t-4}$* | -1.0E-05 | 4.5E-06 | *** | -1.3E-06 | 3.7E-06 | | -3.8E-07 | 3.7E-06 | | -4.5E-06 | 4.3E-06 | |
| **Foreigners' home market and anchoring variables** | | | | | | | | | | | |
| *LNMUTUALFUND* | -0.0037 | 0.0147 | | -0.0268 | 0.0149 | * | -0.0402 | 0.0133 | *** | -0.0409 | 0.0168 | *** |
| *HMKTRET_F_D* | -0.1155 | 0.6980 | | -1.3366 | 0.5675 | ** | 0.0921 | 0.5317 | | -2.3250 | 0.6967 | *** |
| *EM_COMM_F_D* | -0.0010 | 0.0021 | | -0.0031 | 0.0019 | | -0.0038 | 0.0017 | ** | -0.0128 | 0.0023 | *** |
| *EM_FEES_F_D* | -0.0006 | 0.0009 | | -0.0022 | 0.0008 | *** | -0.0010 | 0.0008 | | -0.0023 | 0.0010 | ** |
| *EM_MKT_IMPACT_F_D* | -0.0001 | 0.0014 | | -0.0015 | 0.0012 | | -0.0010 | 0.0011 | | -0.0028 | 0.0015 | * |
| *LNMKTCAP_F_D* | 0.0383 | 0.0252 | | 0.0603 | 0.0235 | ** | 0.0599 | 0.0215 | *** | 0.0177 | 0.0280 | |
| *MKTCAPGDP_F_D* | -0.0251 | 0.0326 | | -0.0794 | 0.0303 | *** | -0.0807 | 0.0295 | *** | -0.0722 | 0.0408 | * |
| *CM_GOV_F_D* | 0.0062 | 0.0092 | | -0.0067 | 0.0085 | | 0.0022 | 0.0074 | | 0.0055 | 0.0095 | |
| *ECONFREE_F_D* | -0.0061 | 0.0536 | | 0.0966 | 0.0515 | * | 0.0066 | 0.0444 | | 0.0097 | 0.0586 | |
| *SP_LC_LT_F_D* | -0.0728 | 0.0361 | *** | -0.0188 | 0.0337 | | -0.0530 | 0.0287 | * | -0.0707 | 0.0388 | * |
| *TAX_RATE_F_D* | -0.4112 | 0.3536 | | -1.1095 | 0.3224 | *** | -0.8967 | 0.2964 | *** | -1.1283 | 0.3969 | *** |
| *REALGDP_F_D* | -0.0146 | 0.0057 | *** | -0.0015 | 0.0050 | | 0.0003 | 0.0046 | | 0.0078 | 0.0061 | |
| *AdjR2* | 0.0068 | | | 0.0045 | | | 0.0077 | | | 0.0263 | | |
| *N* | 25,373 | | | 10,658 | | | 9,934 | | | 7,530 | | |

**Table 6.** (*Continued*)

**Panel B: Full sample (ex FOC) - Sells**

| | Sample Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | Large | | | Medium | | | Small | | |
| | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | |
| **Trade characteristics** | | | | | | | | | | | | |
| *LNSIZE* | 0.0147 | 0.0067 | *** | 0.0484 | 0.0102 | *** | 0.0023 | 0.0083 | | -0.0092 | 0.0093 | |
| *BTM* | 0.0172 | 0.0135 | | 0.0142 | 0.0178 | | 0.0175 | 0.0176 | | -0.0049 | 0.0199 | |
| *EXCHCOMPRET* | -0.6426 | 0.7749 | | -0.4589 | 1.0788 | | -0.0346 | 0.9668 | | 0.5898 | 1.0344 | |
| *CTC5* | -0.0005 | 0.0009 | | -0.0025 | 0.0011 | ** | -0.0028 | 0.0009 | *** | 0.0011 | 0.0012 | |
| *CTO* | 0.0014 | 0.0034 | | -0.0025 | 0.0041 | | -0.0096 | 0.0040 | ** | 0.0243 | 0.0048 | *** |
| *OTC* | 0.0416 | 0.0029 | *** | 0.0396 | 0.0038 | *** | 0.0052 | 0.0031 | * | -0.0057 | 0.0037 | |
| *AVGBAS* | -0.0121 | 0.0052 | ** | -0.0021 | 0.0083 | | -0.0402 | 0.0066 | *** | -0.0056 | 0.0066 | |
| *AVGSIG* | 0.0206 | 0.0055 | *** | 0.0112 | 0.0081 | | 0.0505 | 0.0071 | *** | 0.0076 | 0.0075 | |
| *AVGTURN* | 0.0019 | 0.0034 | | 0.0041 | 0.0059 | | 0.0086 | 0.0053 | | 0.0026 | 0.0035 | |
| *AVGDF* | -0.0008 | 0.0002 | *** | | | | | | | | | |
| *VIX* | 0.0020 | 0.0016 | | 0.0032 | 0.0025 | | 0.0009 | 0.0019 | | -0.0040 | 0.0019 | ** |
| *TRADE_DIFF* | 3.2E-05 | 0.0001 | | -2.0E-06 | 0.0001 | | 0.0010 | 0.0008 | | -0.0009 | 0.0041 | |
| **Information asymmetry proxies** | | | | | | | | | | | | |
| *LNDISTANCE* | 0.0045 | 0.0265 | | 0.0866 | 0.0410 | ** | -0.0071 | 0.0307 | | -0.0876 | 0.0333 | *** |
| *TRADE_DEP* | 0.1504 | 0.1648 | | 0.5142 | 0.2591 | ** | -0.0620 | 0.2024 | | -0.4019 | 0.2190 | * |
| *TIMESYNC* | 0.0675 | 0.0435 | | 0.1658 | 0.0652 | *** | 0.0802 | 0.0506 | | -0.1776 | 0.0541 | *** |
| *ENGLISH* | -0.0265 | 0.0369 | | 0.0666 | 0.0608 | | -0.0398 | 0.0456 | | -0.0789 | 0.0482 | |
| *FLOWS_TO_US* | 4.3E-06 | 4.2E-06 | | 1.2E-05 | 5.9E-06 | ** | 1.0E-05 | 5.1E-06 | ** | -1.1E-06 | 5.4E-06 | |
| $FLOWS\_TO\_US_{t-1}$ | 5.6E-07 | 4.3E-06 | | 5.3E-08 | 6.3E-06 | | -1.4E-06 | 5.4E-06 | | -4.2E-06 | 5.5E-06 | |
| $FLOWS\_TO\_US_{t-2}$ | 1.2E-06 | 4.1E-06 | | 6.0E-06 | 6.0E-06 | | -1.0E-05 | 5.2E-06 | ** | -2.3E-06 | 5.4E-06 | |
| $FLOWS\_TO\_US_{t-3}$ | -3.0E-06 | 4.0E-06 | | -3.5E-06 | 5.6E-06 | | -2.2E-06 | 4.9E-06 | | -6.7E-06 | 5.0E-06 | |
| $FLOWS\_TO\_US_{t-4}$ | -1.5E-06 | 4.1E-06 | | 3.2E-06 | 6.1E-06 | | 3.9E-06 | 5.0E-06 | | -2.4E-06 | 5.0E-06 | |

**Table 6** (*Continued*)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Foreigners' home market and anchoring variables** | | | | | | | | | | |
| *LNMUTUALFUND* | -0.0170 | 0.0137 | | -0.0195 | 0.0238 | | 0.0014 | 0.0185 | -0.0282 | 0.0202 | |
| *HMKTRET_F_D* | 0.6140 | 0.6255 | | 0.5104 | 0.8486 | | 1.3477 | 0.7285 | -0.3843 | 0.7902 | |
| *EM_COMM_F_D* | 0.0050 | 0.0020 | *** | 0.0043 | 0.0030 | | 0.0089 | 0.0025 | 0.0044 | 0.0029 | |
| *EM_FEES_F_D* | 0.0003 | 0.0008 | | -0.0018 | 0.0014 | | 0.0017 | 0.0011 | 0.0026 | 0.0012 | *** |
| *EM_MKT_IMPACT_F_D* | -0.0009 | 0.0012 | | -0.0047 | 0.0019 | *** | -0.0007 | 0.0016 | 0.0000 | 0.0018 | |
| *LNMKTCAP_F_D* | 0.0295 | 0.0233 | | 0.0510 | 0.0373 | | 0.0044 | 0.0284 | -0.0128 | 0.0324 | |
| *MKTCAPGDP_F_D* | 0.0127 | 0.0302 | | -0.0138 | 0.0463 | | 0.0498 | 0.0386 | 0.0972 | 0.0476 | ** |
| *CM_GOV_F_D* | -0.0001 | 0.0083 | | -0.0009 | 0.0133 | | -0.0214 | 0.0101 | ** | 0.0248 | 0.0107 | ** |
| *ECON_FREE_F_D* | 0.0434 | 0.0458 | | 0.2504 | 0.0730 | *** | 0.0325 | 0.0553 | -0.0186 | 0.0598 | |
| *SP_LC_LT_F_D* | 0.0387 | 0.0298 | | 0.0223 | 0.0459 | | 0.0541 | 0.0361 | 0.0662 | 0.0384 | * |
| *TAX_RATE_F_D* | -0.2887 | 0.3265 | | -1.2657 | 0.5121 | ** | 0.5897 | 0.3931 | 0.6497 | 0.4567 | |
| *REALGDP_F_D* | 0.0013 | 0.0053 | | -0.0057 | 0.0080 | | -0.0012 | 0.0065 | -0.0061 | 0.0072 | |
| *AdjR2* | 0.0113 | | | 0.0159 | | | 0.0077 | | 0.0263 | | |
| *N* | 22,853 | | | 11,818 | | | 9,934 | | 7,530 | | |

**Table 7. Determinants of differences in equity trade prices – Common stocks**

This table reports the results of pooled regressions of price ratio differences between domestic institutional investors and foreign investors trading in NYSE and NASDAQ equities. Panels A and B summarize the results for buy and sell trades, respectively. The explanatory variables are as defined in Table 4. Standard errors are consistent with White's (1980) heteroskedasticity adjustment. ***, **, and * represent statistical significance at the 1%, 5% and 10% levels, respectively.

**Panel A: Common stocks - Buys**

| | Sample Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | Large | | | Medium | | | Small | | |
| Variables | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | |
| **Trade characteristics** | | | | | | | | | | | | |
| *LNSIZE* | 0.0009 | 0.0173 | | 0.0249 | 0.0192 | | 0.0106 | 0.0157 | | 0.0540 | 0.0220 | ** |
| *BTM* | 0.0936 | 0.0620 | | 0.0698 | 0.0778 | | 0.1482 | 0.0589 | *** | 0.3228 | 0.0953 | *** |
| *EXCHCOMPRET* | -5.7669 | 1.7559 | *** | -0.9304 | 2.0300 | | -2.0470 | 1.6399 | | -0.8415 | 2.2895 | |
| *CTC5* | 0.0004 | 0.0022 | | 0.0021 | 0.0022 | | 0.0048 | 0.0020 | ** | -0.0037 | 0.0031 | |
| *CTO* | 0.0289 | 0.0076 | *** | 0.0451 | 0.0073 | *** | 0.0165 | 0.0064 | ** | 0.0837 | 0.0088 | *** |
| *OTC* | 0.0449 | 0.0059 | *** | -0.0011 | 0.0064 | | -0.0235 | 0.0057 | *** | 0.0305 | 0.0080 | *** |
| *AVGBAS* | -0.0150 | 0.0281 | | 0.0150 | 0.0338 | | 0.0267 | 0.0246 | | 0.0370 | 0.0414 | |
| *AVGSIG* | -0.0158 | 0.0131 | | 0.0095 | 0.0149 | | -0.0408 | 0.0122 | *** | -0.0149 | 0.0176 | |
| *AVGTURN* | 0.0420 | 0.0185 | ** | -0.0121 | 0.0210 | | 0.0363 | 0.0167 | ** | 0.0098 | 0.0263 | |
| *AVGDF* | 0.0012 | 0.0004 | *** | | | | | | | | | |
| *VIX* | -0.0118 | 0.0042 | *** | -0.0067 | 0.0052 | | -0.0020 | 0.0040 | | -0.0123 | 0.0053 | ** |
| *TRADE_DIFF* | 0.0878 | 0.0163 | *** | -0.0038 | 0.0135 | | -0.0286 | 0.0624 | | -0.0517 | 0.6390 | |

**Table 7.** (*Continued*)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Information asymmetry proxies** | | | | | | | | | | |
| *LNDISTANCE* | -0.1462 | 0.1536 | | -0.4232 | 0.9790 | -0.0054 | 0.1759 | | -0.0974 | 0.2209 | |
| *TRADE_DEP* | 0.0851 | 0.5851 | | -0.1235 | 0.6524 | -0.2676 | 0.5118 | | -0.1312 | 0.7186 | |
| *TIMESYNC* | 0.0423 | 0.3029 | | -0.2924 | 0.8556 | -0.9681 | 0.4237 | ** | -0.7909 | 0.6991 | |
| *ENGLISH* | -0.6698 | 0.4772 | | -0.8862 | 2.5640 | 0.6932 | 0.6749 | | 0.3132 | 1.0721 | |
| *FLOWS_TO_US* | 2.3E-05 | 1.1E-05 | ** | 1.0E-05 | 1.2E-05 | 2.2E-06 | 9.5E-06 | | 1.3E-06 | 1.1E-05 | |
| $FLOWS\_TO\_US_{t-1}$ | -9.3E-06 | 1.1E-05 | | 1.3E-06 | 1.1E-05 | -2.9E-07 | 8.9E-06 | | -8.2E-06 | 1.1E-05 | |
| $FLOWS\_TO\_US_{t-2}$ | -6.8E-06 | 1.0E-05 | | -2.0E-06 | 1.0E-05 | 1.5E-06 | 8.5E-06 | | -1.4E-05 | 1.0E-05 | |
| $FLOWS\_TO\_US_{t-3}$ | 2.0E-05 | 1.1E-05 | *** | -3.6E-06 | 1.1E-05 | -1.1E-05 | 9.2E-06 | | -7.4E-06 | 1.2E-05 | |
| $FLOWS\_TO\_US_{t-4}$ | -1.3E-05 | 1.1E-05 | | 1.4E-06 | 1.1E-05 | -1.2E-06 | 8.8E-06 | | -1.0E-05 | 1.1E-05 | |
| **Foreigners' home market and anchoring variables** | | | | | | | | | | |
| *LNMUTUALFUND* | 0.0034 | 0.1346 | | 0.0285 | 0.2766 | -0.3066 | 0.1742 | * | -0.2367 | 0.2196 | |
| *HMKTRET_F_D* | -1.6987 | 1.7690 | | -1.6672 | 2.0379 | 2.7752 | 1.7134 | | -4.2845 | 2.3773 | * |
| *EM_COMM_F_D* | -0.0032 | 0.0061 | | -0.0098 | 0.0089 | -0.0057 | 0.0067 | | -0.0308 | 0.0089 | *** |
| *EM_FEES_F_D* | 0.0033 | 0.0064 | | 0.0145 | 0.0475 | -0.0092 | 0.0095 | | 0.0005 | 0.0116 | |
| *EM_MKT_IMPACT_F_D* | 0.0020 | 0.0039 | | -0.0017 | 0.0059 | 0.0057 | 0.0041 | | -0.0066 | 0.0059 | |
| *LNMKTCAP_F_D* | -0.0424 | 0.0943 | | 0.0764 | 0.2494 | 0.4627 | 0.1692 | *** | 0.0539 | 0.2324 | |
| *MKTCAPGDP_F_D* | 0.0947 | 0.1061 | | -0.0577 | 0.1514 | -0.0971 | 0.1093 | | -0.0548 | 0.1562 | |
| *CM_GOV_F_D* | 0.1014 | 0.0864 | | -0.0369 | 0.3297 | -0.1514 | 0.1747 | | -0.0848 | 0.3131 | |
| *ECON_FREE_F_D* | -0.4067 | 0.2800 | | -0.1860 | 0.4700 | 0.1721 | 0.2710 | | -0.2456 | 0.3466 | |
| *SP_LC_LT_F_D* | -0.0819 | 0.1671 | | -0.3521 | 0.7377 | 0.1412 | 0.2979 | | 0.0068 | 0.3636 | |
| *TAX_RATE_F_D* | 0.7342 | 1.1465 | | -0.7818 | 1.4929 | -0.8480 | 1.0971 | | -0.2749 | 1.4911 | |
| *REALGDP_F_D* | -0.0117 | 0.0173 | | 0.0189 | 0.0238 | 0.0127 | 0.0182 | | 0.0178 | 0.0264 | |
| *AdjR2* | 0.0160 | | | 0.073 | | 0.0242 | | | 0.0527 | | |
| *N* | 8,882 | | | 3,332 | | 3,252 | | | 2,603 | | |

**Table 7.** (*Continued*)

**Panel B: Common stocks - Sells**

| | Sample Size | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | Large | | | Medium | | | Small | | |
| | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | |
| **Trade characteristics** | | | | | | | | | | | | |
| *LNSIZE* | 0.0071 | 0.0161 | | 0.0014 | 0.0252 | | -0.0101 | 0.0165 | | -0.0279 | 0.0155 | * |
| *BTM* | 0.0323 | 0.0688 | | -0.0394 | 0.1100 | | -0.0952 | 0.0718 | | -0.0831 | 0.0602 | |
| *EXCHCOMPRET* | -1.7740 | 1.5904 | | 0.0354 | 2.3832 | | 1.9452 | 1.7043 | | 1.4406 | 1.5568 | |
| *CTC5* | 0.0035 | 0.0020 | * | -0.0005 | 0.0027 | | -0.0004 | 0.0021 | | -0.0041 | 0.0018 | ** |
| *CTO* | 0.0048 | 0.0065 | | -0.0091 | 0.0077 | | -0.0191 | 0.0062 | *** | 0.0304 | 0.0057 | *** |
| *OTC* | 0.0418 | 0.0052 | *** | 0.0240 | 0.0068 | *** | -0.0211 | 0.0047 | *** | -0.0105 | 0.0052 | ** |
| *AVGBAS* | 0.0225 | 0.0259 | | 0.0062 | 0.0383 | | -0.0329 | 0.0285 | | 0.0136 | 0.0268 | |
| *AVGSIG* | 0.0114 | 0.0112 | | 0.0103 | 0.0170 | | 0.0176 | 0.0121 | | 0.0000 | 0.0105 | |
| *AVGTURN* | -0.0173 | 0.0131 | | -0.0125 | 0.0184 | | 0.0080 | 0.0122 | | -0.0620 | 0.0183 | *** |
| *AVGDF* | -0.0011 | 0.0003 | *** | | | | | | | | | |
| *VIX* | 0.0107 | 0.0039 | *** | 0.0080 | 0.0065 | | 0.0049 | 0.0041 | | -0.0021 | 0.0034 | |
| *TRADEDIFF* | -0.0191 | 0.0234 | | 0.0020 | 0.0283 | | 0.0184 | 0.1144 | | -0.4019 | 0.4716 | |
| **Information asymmetry proxies** | | | | | | | | | | | | |
| *LNDISTANCE* | 0.0284 | 0.1118 | | -0.1075 | 0.2099 | | 0.1684 | 0.1142 | | 0.0339 | 0.1139 | |
| *TRADEDEP* | -0.7854 | 0.5441 | | -0.7517 | 0.8116 | | 0.0670 | 0.5500 | | -0.2271 | 0.4879 | |
| *TIMESYNC* | -0.3360 | 0.2924 | | -0.7661 | 0.6070 | | 0.8216 | 0.3518 | ** | -1.6445 | 0.5450 | *** |
| *ENGLISH* | 0.5960 | 0.4376 | | 0.7843 | 0.8996 | | -0.9778 | 0.4952 | ** | 1.5221 | 0.5830 | *** |
| *FLOWS_TO_US* | -2.1E-06 | 9.7E-06 | | 8.9E-06 | 1.5E-05 | | 1.2E-06 | 9.2E-06 | | -1.1E-07 | 8.5E-06 | |
| $FLOWS\_TO\_US_{t-1}$ | -2.2E-06 | 1.0E-05 | | -1.1E-05 | 1.5E-05 | | -1.7E-06 | 9.9E-06 | | -1.4E-05 | 8.2E-06 | * |
| $FLOWS\_TO\_US_{t-2}$ | 1.6E-05 | 9.4E-06 | * | 1.8E-05 | 1.3E-05 | | -7.6E-06 | 9.9E-06 | | 8.0E-06 | 8.3E-06 | |
| $FLOWS\_TO\_US_{t-3}$ | 4.1E-06 | 9.6E-06 | | 4.1E-08 | 1.4E-05 | | 9.8E-07 | 9.4E-06 | | 6.5E-07 | 7.4E-06 | |
| $FLOWS\_TO\_US_{t-4}$ | -2.2E-06 | 9.3E-06 | | 4.1E-06 | 1.5E-05 | | 1.6E-05 | 8.9E-06 | * | 3.4E-06 | 7.7E-06 | |

**Table 7.** (*Continued)*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Foreigners' home market and anchoring variables** | | | | | | | | | |
| *LNMUTUALFUND* | -0.0487 | 0.1269 | -0.0583 | 0.3055 | 0.1103 | 0.1816 | | 0.0981 | 0.1634 | |
| *HMKTRET_F_D* | 1.8460 | 1.6300 | 4.2835 | 2.6048 | 3.0780 | 1.6966 | * | -0.2734 | 1.5305 | |
| *EM_COMM_F_D* | 0.0032 | 0.0057 | -0.0049 | 0.0111 | 0.0300 | 0.0076 | *** | 0.0012 | 0.0067 | |
| *EM_FEES_F_D* | -0.0090 | 0.0061 | -0.0044 | 0.0117 | -0.0038 | 0.0070 | | -0.0005 | 0.0073 | |
| *EM_MKT_IMPACT_F_D* | -0.0007 | 0.0035 | -0.0047 | 0.0067 | 0.0002 | 0.0045 | | -0.0068 | 0.0040 | *** |
| *LNMKTCAP_F_D* | 0.0381 | 0.1004 | 0.0889 | 0.2736 | -0.0447 | 0.1767 | | -0.3789 | 0.1760 | ** |
| *MKTCAPGDP_F_D* | -0.0646 | 0.0921 | 0.0180 | 0.1756 | 0.0351 | 0.1101 | | -0.0923 | 0.1113 | |
| *CM_GOV_F_D* | -0.0316 | 0.0797 | -0.2412 | 0.2071 | 0.4494 | 0.1214 | *** | -0.4583 | 0.1956 | ** |
| *ECONFREE_F_D* | 0.1346 | 0.2553 | 0.1409 | 0.4761 | -0.0257 | 0.2617 | | -0.6117 | 0.3312 | * |
| *SP_LC_LT_F_D* | 0.0479 | 0.1558 | 0.1672 | 0.4456 | -0.3928 | 0.2148 | * | 0.0096 | 0.5143 | |
| *TAX_RATE_F_D* | -0.2651 | 1.0311 | 1.0032 | 1.7754 | -0.3783 | 1.0929 | | 0.4364 | 0.9479 | |
| *REALGDP_F_D* | -0.0162 | 0.0173 | -0.0195 | 0.0296 | -0.0019 | 0.0203 | | -0.0075 | 0.0199 | |
| *AdjR2* | 0.0086 | | -0.0017 | | 0.0349 | | | 0.0337 | | |
| *N* | 7,969 | | 3,173 | | 3,551 | | | 1,985 | | |

**Table 8. Determinants of differences in equity trade prices - American Depositary Receipts**

This table reports the results of pooled regressions of price ratio differences between domestic institutional investors and foreign investors trading in NYSE and NASDAQ equities. Panels A and B summarize the results for buy and sell trades, respectively. The explanatory variables are as defined in Table 4. Standard errors are consistent with White's (1980) heteroskedasticity adjustment. ***, **, and * represent statistical significance at the 1%, 5% and 10% levels, respectively.

**Panel A: ADRs - Buys**

| | Sample Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | Large | | | Medium | | | Small | | |
| Variables | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | |
| **Trade characteristics** | | | | | | | | | | | | |
| *LNSIZE* | 0.0092 | 0.0079 | | 0.0280 | 0.0057 | *** | 0.0144 | 0.0063 | ** | 0.0089 | 0.0063 | |
| *BTM* | -0.0013 | 0.0151 | | -0.0004 | 0.0095 | | 0.0014 | 0.0113 | | 0.0162 | 0.0125 | |
| *EXCHRET* | 0.5372 | 0.9869 | | 0.2829 | 0.6205 | | 1.9674 | 0.7461 | *** | -1.0348 | 0.7094 | |
| *CTC5* | 0.0035 | 0.0014 | ** | 0.0023 | 0.0008 | *** | 0.0017 | 0.0010 | * | 0.0008 | 0.0010 | |
| *CTO* | 0.0032 | 0.0044 | | -0.0014 | 0.0028 | | -0.0046 | 0.0035 | | 0.0013 | 0.0035 | |
| *OTC* | 0.0261 | 0.0046 | *** | -0.0001 | 0.0029 | | -0.0143 | 0.0035 | *** | -0.0065 | 0.0034 | * |
| *AVGBAS* | 0.0003 | 0.0067 | | 0.0062 | 0.0044 | | -0.0070 | 0.0053 | | 0.0407 | 0.0047 | *** |
| *AVGSIG* | -0.0018 | 0.0076 | | -0.0012 | 0.0049 | | 0.0116 | 0.0060 | ** | -0.0476 | 0.0055 | *** |
| *AVGTURN* | -0.0065 | 0.0046 | | 0.0141 | 0.0041 | *** | -0.0197 | 0.0054 | *** | 0.0001 | 0.0031 | |
| *AVGDF* | 0.0003 | 0.0002 | | | | | | | | | | |
| *VIX* | 0.0007 | 0.0019 | | 0.0015 | 0.0013 | | 0.0008 | 0.0014 | | 0.0010 | 0.0013 | |
| *TRADEDIFF* | 6.8E-06 | 4.3E-05 | | 2.0E-06 | 2.1E-05 | | -7.8E-06 | 0.0002 | | -0.0008 | 0.0017 | |

**Table 8.** (*Continued*)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Information asymmetry proxies** | | | | | | | | | | | |
| *LNDISTANCE* | 0.0367 | 0.0400 | | 0.0292 | 0.0228 | | 0.0292 | 0.0258 | | 0.0687 | 0.0246 | |
| *TRADEDEP* | 0.1406 | 0.3550 | | 0.0194 | 0.2033 | | 0.1254 | 0.2370 | | 0.6200 | 0.2284 | |
| *TIMESYNC* | -0.0018 | 0.0526 | | -0.0048 | 0.0305 | | -0.0198 | 0.0358 | | 0.0419 | 0.0348 | *** |
| *ENGLISH* | -0.1049 | 0.0453 | ** | 0.0423 | 0.0289 | | 0.0123 | 0.0334 | | -0.0104 | 0.0323 | *** |
| *FLOWS_TO_US* | 2.7E-06 | 4.5E-06 | | -8.9E-07 | 2.8E-06 | | 2.5E-06 | 3.6E-06 | | -2.4E-06 | 3.1E-06 | |
| $FLOWS\_TO\_US_{t-1}$ | -2.6E-06 | 4.8E-06 | | -3.6E-07 | 3.1E-06 | | 7.0E-06 | 3.7E-06 | * | -3.2E-06 | 3.4E-06 | |
| $FLOWS\_TO\_US_{t-2}$ | -2.0E-06 | 4.6E-06 | | 1.4E-06 | 2.8E-06 | | -6.1E-06 | 3.6E-06 | * | -5.8E-07 | 3.4E-06 | |
| $FLOWS\_TO\_US_{t-3}$ | 5.0E-06 | 4.4E-06 | | 4.0E-06 | 2.8E-06 | | -4.1E-06 | 3.4E-06 | | 4.9E-06 | 3.0E-06 | |
| $FLOWS\_TO\_US_{t-4}$ | -6.6E-06 | 4.6E-06 | | -9.1E-07 | 2.9E-06 | | 1.4E-06 | 3.6E-06 | | -3.7E-07 | 3.2E-06 | |
| **Foreigners' home market and anchoring variables** | | | | | | | | | | | | |
| *LNMUTUALFUNDS* | -0.0187 | 0.0149 | | -0.0237 | 0.0107 | ** | -0.0375 | 0.0117 | *** | -0.0192 | 0.0115 | *** |
| *HMKTRET_F_D* | 0.7529 | 0.6909 | | -0.2795 | 0.4159 | | -0.0731 | 0.4812 | | 0.1952 | 0.4737 | |
| *EM_COMM_F_D* | 0.0003 | 0.0022 | | -0.0016 | 0.0014 | | -0.0015 | 0.0016 | | -0.0093 | 0.0016 | *** |
| *EM_FEES_F_D* | 0.0007 | 0.0010 | | -0.0014 | 0.0007 | ** | -0.0006 | 0.0008 | | -0.0015 | 0.0008 | * |
| *EM_MKT_IMPACT_F_D* | -0.0008 | 0.0015 | | -0.0020 | 0.0010 | ** | -0.0028 | 0.0011 | ** | -0.0014 | 0.0011 | |
| *LNMKTCAP_F_D* | 0.0690 | 0.0271 | ** | 0.0581 | 0.0177 | *** | 0.0655 | 0.0200 | *** | -0.0008 | 0.0198 | |
| *MKTCAPGDP_F_D* | -0.0440 | 0.0349 | | -0.0790 | 0.0228 | *** | -0.0895 | 0.0277 | *** | -0.0110 | 0.0296 | |
| *CM_GOV_F_D* | 0.0056 | 0.0088 | | -0.0110 | 0.0064 | * | -0.0008 | 0.0070 | | -0.0024 | 0.0069 | |
| *ECONFREE_F_D* | -0.0205 | 0.0492 | | 0.0973 | 0.0354 | *** | -0.0182 | 0.0382 | | 0.0024 | 0.0375 | |
| *SP_LC_LT_F_D* | -0.0938 | 0.0346 | *** | -0.0217 | 0.0231 | | -0.0633 | 0.0248 | ** | -0.0454 | 0.0264 | *** |
| *TAX_RATE_F_D* | -0.3589 | 0.4255 | | -1.0837 | 0.2884 | *** | -0.7638 | 0.3295 | ** | -0.3756 | 0.3297 | |
| *REALGDP_F_D* | -0.0129 | 0.0057 | ** | -0.0055 | 0.0037 | | -0.0037 | 0.0042 | | 0.0049 | 0.0041 | |
| *AdjR2* | 0.0039 | | | 0.0047 | | | 0.0080 | | | 0.0287 | | |
| *N* | 16,491 | | | 7,326 | | | 6,682 | | | 5,445 | | |

**Table 8.** (*Continued*)

**Panel B: ADRs - Sells**

| | Sample Size | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | Large | | | Medium | | | Small | | |
| | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | | Coeff. | Std. Error | |
| **Trade characteristics** | | | | | | | | | | | | |
| *LNSIZE* | 0.0290 | 0.0072 | *** | 0.0772 | 0.0116 | *** | 0.0148 | 0.0108 | | 0.0068 | 0.0134 | |
| *BTM* | 0.0253 | 0.0127 | ** | 0.0163 | 0.0174 | | 0.0202 | 0.0198 | | -0.0004 | 0.0254 | |
| *EXCHRET* | 0.5955 | 0.8400 | | -0.2304 | 1.1848 | | -1.9739 | 1.2070 | | 0.0817 | 1.3638 | |
| *CTC5* | -0.0023 | 0.0009 | *** | -0.0032 | 0.0012 | *** | -0.0035 | 0.0010 | *** | 0.0029 | 0.0016 | * |
| *CTO* | -0.0020 | 0.0037 | | 0.0024 | 0.0047 | | 0.0013 | 0.0053 | | 0.0207 | 0.0069 | *** |
| *OTC* | 0.0420 | 0.0034 | *** | 0.0544 | 0.0045 | *** | 0.0275 | 0.0042 | *** | -0.0043 | 0.0049 | |
| *AVGBAS* | -0.0258 | 0.0059 | *** | -0.0102 | 0.0096 | | -0.0494 | 0.0085 | *** | -0.0116 | 0.0093 | |
| *AVGSIG* | 0.0406 | 0.0068 | *** | 0.0277 | 0.0106 | *** | 0.0658 | 0.0099 | *** | 0.0189 | 0.0111 | * |
| *AVGTURN* | 0.0057 | 0.0031 | * | 0.0095 | 0.0058 | * | 0.0114 | 0.0060 | * | 0.0052 | 0.0039 | |
| *AVGDF* | -0.0006 | 0.0002 | *** | | | | | | | | | |
| *VIX* | -0.0028 | 0.0016 | * | 0.0012 | 0.0026 | | 0.0008 | 0.0022 | | -0.0063 | 0.0025 | ** |
| *TRADEDIFF* | 4.1E-05 | 5.0E-05 | | 2.4E-06 | 0.0001 | | 0.0011 | 0.0008 | | -0.0005 | 0.0044 | |
| **Information asymmetry proxies** | | | | | | | | | | | | |
| *LNDISTANCE* | 0.0176 | 0.0375 | | 0.1332 | 0.0520 | ** | 0.0788 | 0.0476 | *** | -0.0916 | 0.0575 | |
| *TRADEDEP* | 0.2625 | 0.3298 | | 0.7930 | 0.4471 | * | 0.9211 | 0.4275 | ** | -0.3736 | 0.5208 | |
| *TIMESYNC* | 0.0833 | 0.0486 | * | 0.1952 | 0.0692 | *** | 0.1811 | 0.0625 | *** | -0.1347 | 0.0750 | * |
| *ENGLISH* | -0.0524 | 0.0395 | | 0.0243 | 0.0613 | | 0.0332 | 0.0540 | | -0.0706 | 0.0622 | |
| $FLOWS\_TO\_US_{t}$ | 1.0E-05 | 4.2E-06 | ** | 1.5E-05 | 6.1E-06 | ** | 1.5E-05 | 6.3E-06 | ** | -7.6E-07 | 6.9E-06 | |
| $FLOWS\_TO\_US_{t-1}$ | 3.7E-06 | 4.3E-06 | | 5.8E-06 | 6.4E-06 | | -1.8E-06 | 6.5E-06 | | 9.9E-07 | 7.2E-06 | |
| $FLOWS\_TO\_US_{t-2}$ | -3.2E-06 | 4.2E-06 | | -1.1E-06 | 6.4E-06 | | -1.3E-05 | 6.1E-06 | ** | -5.9E-06 | 7.1E-06 | |
| $FLOWS\_TO\_US_{t-3}$ | -3.8E-06 | 3.9E-06 | | -3.2E-06 | 5.6E-06 | | -3.6E-06 | 5.8E-06 | | -7.3E-06 | 6.6E-06 | |
| $FLOWS\_TO\_US_{t-4}$ | -3.3E-06 | 4.2E-06 | | -3.2E-07 | 6.3E-06 | | -1.8E-06 | 6.1E-06 | | -4.2E-06 | 6.5E-06 | |

**Table 8**. (*Continued*)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Foreigners' home market and anchoring variables** | | | | | | | | | | | | |
| *LNHMKTFUNDS* | -0.0026 | 0.0134 | | -0.0053 | 0.0219 | | 0.0110 | 0.0197 | | -0.0074 | 0.0238 | |
| *HMKTRET_F_D* | 0.4939 | 0.6074 | | -0.5240 | 0.8222 | | 0.2864 | 0.8247 | | -0.3966 | 0.9713 | |
| *EM_COMM_F_D* | 0.0078 | 0.0019 | *** | 0.0052 | 0.0029 | * | 0.0073 | 0.0028 | *** | 0.0044 | 0.0034 | |
| *EM_FEES_F_D* | 0.0008 | 0.0009 | | -0.0015 | 0.0015 | | 0.0001 | 0.0013 | | 0.0022 | 0.0016 | |
| *EM_MKT_IMPACT_F_D* | -0.0013 | 0.0012 | | -0.0052 | 0.0019 | *** | 0.0020 | 0.0019 | | 0.0021 | 0.0024 | |
| *LNMKTCAP_F_D* | 0.0308 | 0.0235 | | 0.0709 | 0.0371 | * | 0.0332 | 0.0327 | | 0.0043 | 0.0413 | |
| *MKTCAPGDP_F_D* | 0.0470 | 0.0310 | | -0.0065 | 0.0446 | | 0.0737 | 0.0442 | * | 0.1284 | 0.0623 | ** |
| *CM_GOV_F_D* | -0.0072 | 0.0079 | | -0.0196 | 0.0130 | | -0.0316 | 0.0114 | *** | 0.0097 | 0.0135 | |
| *ECONFREE_F_D* | 0.0777 | 0.0420 | * | 0.3158 | 0.0688 | *** | 0.0397 | 0.0603 | | 0.0208 | 0.0715 | |
| *SP_LC_LT_F_D* | 0.0329 | 0.0280 | | 0.0115 | 0.0427 | | 0.0418 | 0.0390 | | 0.0457 | 0.0454 | |
| *TAX_RATE_F_D* | -0.1094 | 0.3816 | | -1.5350 | 0.6021 | ** | 0.9150 | 0.5386 | * | 0.2737 | 0.7111 | |
| *REALGDP_F_D* | -0.0010 | 0.0051 | | -0.0104 | 0.0080 | | -0.0041 | 0.0074 | | -0.0092 | 0.0088 | |
| *AdjR2* | 0.0183 | | | 0.0358 | | | 0.0204 | | | 0.0053 | | |
| *N* | 14,884 | | | 6,739 | | | 5,950 | | | 4,209 | | |

# Appendix

**Table A1. Univariate statistics for domestic and foreign investors' equally-weighted weekly price ratios: July 1999-September 2004**

This table reports the prices incurred by domestic and foreign institutional investors trading stocks in the U.S. calculated using equations 1 and 2. The number of observations is shown in parentheses. Panels B-I are based on sub-samples of the full sample used in Panel A. The first four columns are the mean and standard deviations for domestic (D) and foreign (F), respectively. The difference between domestic and foreign investors' trade price ratios is given by D-F x100 where one percent corresponds to 100 basis points (bps). The t-value and p-value coefficients are based on difference in means t-tests.

| | Domestic Trades (D) | | Foreign Trades (F) | | | *H0*: D - F = 0 | |
|---|---|---|---|---|---|---|---|
| Sample/Market | Mean | Std. Dev. | Mean | Std. Dev. | **D-F x100** | *t* - value | *p*-value |
| **Panel A: Full sample** | | | | | | | |
| Weekly_All Buy (25,730) | 1.0007 | 0.0231 | 1.0026 | 0.0252 | -0.1910 | -8.94 | <.0001 |
| Weekly_All Sell (23,283) | 1.0000 | 0.0254 | 0.9980 | 0.0281 | 0.2051 | 8.02 | <.0001 |
| **Panel B: Common stock** | | | | | | | |
| Weekly_All Buy (12,103) | 1.0011 | 0.0237 | 1.0025 | 0.0276 | -0.1354 | -4.07 | <.0001 |
| Weekly_All Sell (11,034) | 0.9996 | 0.0232 | 0.9981 | 0.0302 | 0.1530 | | <.0001 |
| **Panel C: ADRs** | | | | | | | |
| Weekly_All Buy (13,627) | 1.0004 | 0.0225 | 1.0028 | 0.0229 | -0.2404 | -8.75 | <.0001 |
| Weekly _All Sell (12,249) | 1.0003 | 0.0273 | 0.9978 | 0.0261 | 0.2520 | 7.20 | <.0001 |
| **Panel D: NYSE Common stocks** | | | | | | | |
| Weekly_All Buy (7,531) | 1.0005 | 0.0181 | 1.0026 | 0.0235 | -0.2090 | -5.91 | <.0001 |
| Weekly_All Sell (6,786) | 0.9998 | 0.0166 | 0.9984 | 0.0253 | 0.1372 | 3.67 | <.0001 |
| **Panel E: NYSE ADRs** | | | | | | | |
| Weekly_All Buy (11,402) | 1.0000 | 0.0193 | 1.0027 | 0.0214 | -0.2628 | -9.86 | <.0001 |
| Weekly_All Sell (10,270) | 1.0002 | 0.0216 | 0.9978 | 0.0226 | 0.2493 | 8.02 | <.0001 |
| **Panel F: NASDAQ Common stocks** | | | | | | | |
| Weekly_All Buy (3,915) | 1.0015 | 0.0282 | 1.0022 | 0.0322 | -0.0636 | -0.89 | 0.3725 |
| Weekly_All Sell (3,655) | 0.9994 | 0.0308 | 0.9976 | 0.0348 | 0.1793 | 2.24 | 0.0249 |
| **Panel G: NASDAQ ADRs** | | | | | | | |
| Weekly_All Buy (2,168) | 1.0021 | 0.0348 | 1.0032 | 0.0289 | -0.1075 | -1.08 | 0.2799 |
| Weekly_All Sell (1,960) | 1.0010 | 0.0463 | 0.9981 | 0.0394 | 0.2894 | 2.01 | 0.0446 |