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

An analysis by country of origin"

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Motivation and research questions

- Motivation:
  - Transaction costs reduce gross investment returns. When foreign investors are at a disadvantage (on average) in economic terms to locals this will likely impede local equity investment, decrease liquidity and increase the cost of capital to local firms.
- Research Questions:
  - Do foreign investors suffer from a ‘foreignness’ disadvantage on realised prices when trading equities outside their market?
  - What explains the difference in implicit transaction costs incurred by foreign institutional investors relative to those of domestic institutional investors?

Agenda

- Contribution
- Literature Review
- Data and Methods
- Univariate Results
- Multivariate Results
- Conclusions

Contribution

- Compare trading performance (implicit transaction costs) of domestic and foreign institution investors in the U.S.
  - Across trade sizes
  - Across types of equity securities
  - Across different trading venues
  - Attempt to offer explanations other than trade related reasons for the foreigner-local performance difference
- In the international finance literature:
  - Provide implicit transaction cost evidence towards, puzzle for reason of ‘gap’ in return differentials in favour of U.S. (Gourinchas & Rey, 2006).
  - Show ‘gap’ not due entirely to ‘tax shifting’ (Krugman, 2006).

Literature on foreign versus domestic traders

- Foreign disadvantage:
  - Choe, Kho, & Stulz, (CKS) 2005, 1999 – Korea data; Bonser-Neal, Linnan, and Neal, (1999) and Dvorak (2005) – Indonesian data;
  - Eleswarapu & Venkataraman (2002) show non-US factors influence trading cost of cross-listed stock.
  - Kang & Stulz (1997), Brennan & Cao (1997) locals' gain due to information asymmetry.
- Contrary findings – Foreigners are better traders:
  - Grinblatt and Keloharju, (2000) - Finland
  - Seasholes, 2000 – Japan

Main hypotheses on causes of foreigner disadvantage

- Local trading environment
  - Trade, stock and market characteristics (CKS and others)
  - Locals extracting rents for prior investments in trading infrastructure?
- Information asymmetry
  - Geography still relevant in finance (Coval and Moskowitz (1999))
  - Relationship between bilateral trade and cross-border flows now well established (Obstfeld and Rogoff (2000))
- Institutional background matters
  - Anchoring and heuristics [Slovic & Lichtenstein (1971); Tversky & Kahneman (1974); Kahneman & Tversky (1979)].
  - In theory agents' culture and prior institutional backgrounds influence economic outcomes (North (1990, 1991), Knack and Keefer (1995, 1997) Zak and Knack (2001), Guiso, Sapienza and Zengales (2006))
  - However, limited empirical application in finance. One banking exception (Grosse & Golberg (1991))

Data and sources

- *Research period*: 1 July 1999 to 30 September 2004 (Total of 1,320 trade days – excludes 9/11 trading)
- *Trade level data*: U.S (Domestic) Transactions Cost Data (from Abel-Noser)
- *Time series data*: DataStream (MSCI), CRSP, Compustat, SIRCA (Reuters)
- *Country of origin data*: Transactions Cost Data (from Elkins-McSherry); Economic Freedom Index, Capital Market Governance, Trade Imports and Exports & GDP, S&P etc.
- *Other U.S. data*: Chicago Board Options Exchange Volatility Index (VIX)

Price ratios ($B^d_{i,j}/A^d_i$) based on VWAP measures

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

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

Price ratios (Cont.)

- P_i^{dt}, *is* price and V_i^{dt}, is volume of stock *i* on day *d* (week) for trade *t* respectively.
- We compute the price ratio, ($B^d_{i,j}/A^d_i$) for all purchases (sales) by institutional investor of type *j* for stock *i* on a given day *d;*
  - Price ratio>1 for buys = Investor type buys above average price
  - Price ratio<1 for sells = Investor type sells above average price
  - Difference in price ratios for respective investor types = relative disadvantage of one against the other
- Then take the mean difference of Domestic from Foreign (column headed 'D-F x 100').
- Split total (*ALL*) sample by trade value: *SMALL* <US$20,000; *MEDIUM* between US$20,000 and US$150,000; *LARGE* > US$150,000
- Split full sample by trade venue

Univariate results: Equally weighted (from Table 2)

	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
Daily_All Sell (40,863)	1	0.0093	0.9996	0.0101	**0.0408**	5.74	0
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	0.0096	0.9997	0.0091	0.0369	3.52	0
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
Daily_Small Buy (16,694)	1.0001	0.0101	1.0001	0.0108	-0.0051	-0.52	0.6
Daily_Small Sell (12,840)	1.007	0.7738	0.9999	0.0121	0.7070	1.03	0.3

Univariate results summary: foreign disadvantage

- Foreign investors on average buy high and sell low
  - Roundtrip foreign disadvantage of approximately 7.4 (6.3) basis points
  - Regardless of trade size, trade venue, stock type, or trade duration
  - 'Flag of Convenience' countries tax haven or offshore financial centre status may confound findings
  - Weekly equally weighted results larger than daily. For example, the total sample foreign disadvantage for buys (sells) is 19.1 (20.5) bps. Disadvantage for worked trades.
  - Exclude tax havens and AMEX (too few observations) in subsequent analyses.
  - Exclude weekly analyses to be conservative and for brevity.

Regression determinants

- Stock, momentum-, and trade-related variables
  - *LNSIZE* = natural log market value of equity on the previous day
  - *BTM* = book-to-market ratio on the previous day
  - *EXCHRET* representing U.S. stock exchanges NYSE, and NASDAQ, is composite. index returns for the day (%) applicable to each mode of trade exchange mechanism.
  - *CTC5* = previous 5-day return (%) (previous 6th day close to previous close)
  - *CTO* = overnight return (%) (previous close to opening price)
  - *OTC* = day-time return (%) (opening to close price) (see CKS, Choe et al, 1999)
  - *AVGBAS* = average of previous 30 daily bid-ask spreads (> 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]

Regression determinants (Contd.)

- Stock, momentum-, and trade-related variables (Contd.)
  - *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.
  - *AVGDF* = buy (or sell) trade value differences between domestic and foreign investor groups for a stock-day / total trade value for the stock-day (%)
  - *TRADEDIFF,* trade difficulty = the ratio of the shares included in the order at decision time to the average daily trading volume over the preceding five trading days (see Chakravarty et al, 2004)
  - *VIX* = CBOE Volatility Index (gauge of investor sentiment)

Regression determinants (Contd.)

- Information asymmetry proxies
  - *LNDISTANCE* = natural logarithm of kilometers between capital markets/cities.
  - *TRADE_DEP* = trade dependence 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.
  - *TIMESYNC* = Time zone overlap (1 = overlap, 0),
  - *ENGLISH* (1 = English, 0)
  - *FLOWS-TO-US* = with 4 lags. Net monthly portfolio flows (U.S. Dept of Treasury TIC data).

Regression determinants (Contd.)

- Home-market and anchoring proxies
  - *LNMUTUALFUNDS* = natural logarithm mutual fund total net assets.
  - *HMKTRET* = home market daily return *(F-D).*
  - *EM_MKT_IMPACT, EM_COMM, EM_FEES* = Elkins-McSherry quarterly implicit (market impact) and explicit transaction (commission, and fees & taxes) costs in basis points *(F-D)*.
  - *LNMKTCAP* = natural logarithm of exchange market capitalisation *(F-D).*
  - *CM_GOV* = Capital market governance (index ranging from 3 to 8, where higher values denote poor governance) *(F-D).*
  - *ECONFREE* = Index of the relative economic freedom of a country *(F-D).*
  - *SP_LC_LT* = Standard & Poor's local currency long-term rating between 1 and 5 *(F-D).*
  - *TAX_RATE* = Corporate tax rate *(F-D).*
  - *REALGDP* = Real gross nation product growth rate *(F-D).*

Interpreting regression results

- Buys:
  - Univariate tests show D-F is negative (-) (i.e. disadvantage to foreigners)

    → Positive (+) coefficient denotes *reduced* disadvantage

    → Negative (-) coefficient denotes *increased* disadvantage
- Sells
  - Univariate tests show D-F is positive (+) (i.e. disadvantage to foreigners)

    → Positive (+) coefficient denotes *increased* disadvantage

    → Negative (-) coefficient denotes *reduced* disadvantage

Regression results: full sample (Table 6)

- Trade characteristics and returns
  - For buys:
    - Lagged stock returns (*CTC5*, *OTC and CTO*) significant across most size samples - positive feedback trading strategies decrease the disadvantage experienced by foreign investors
    - As the turnover on the stock (*AVGTURN*) rises, the foreign disadvantage decreases.
    - Market return negatively related to the difference in price ratios.
    - Market volatility reduces foreign trader's disadvantage (<$150,000)
  - For sells
    - As momentum (*CTC5*) increases foreign disadvantage decreases
    - When intraday return, *OTC,* increases, foreign disadvantage rises

Regression results: full sample (Table 6) (Contd.)

- Information asymmetry variables
  - Generally we find that with increases in distance, trade dependence and net flows to U.S. the foreign disadvantage *decreases* for *buy* trades and *increases* for *sell* trades.
  - Possible reasons – familiarity results in clientele effects which result in demand shifts with implications for realized asset prices (Blackburn et al.(2006)).

Regression results: full sample (Table 6) (Contd.)

- Anchoring and home market characteristics
  - For buys:
    - When the home market reference variables *LNMUTUALFUND*, *HMKTRET*, *LNMRKCAP*, *MKTCAPGDP*, *SP_LC_LT*, *TAX_RATE*, and *REALGDP* increase by one unit the foreign disadvantage decreases.
    - Learning effects: 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.
  - For sells:
    - Significant home market variables concentrated on smaller trades.
    - Flight to quality with respect to governance related factors for smaller trades.

Regression results: common stocks (Table 7)

- Full sample results generally hold
- Significant coefficients concentrated on stock and market characteristics i.e. trading venue factors.

Regression results: ADRs only (Table 8)

- For buys
  - Some stock and trade characteristics help explain the disadvantage faced by foreigners – trading venue-related factors still relevant for ADRs
  - Only a few information asymmetry variables are significant; e.g.:
    - Shared language (*ENGLISH*) increases foreign disadvantage for ADR purchases
    - When time zones overlap (*TIMESYNC*) increases foreign disadvantage decreases e.g., ADR buy <$20,000.
  - Greater concentration of significant coefficients in home market characteristics.
  - Hint of overconfidence when foreigners buy?
- For sells
  - Significance of coefficients seemingly shifts to stock and trade characteristics as well as information asymmetry proxies at the expense of home market reference variables.
  - Hint of flight to quality when selling?

Conclusions

- Foreign Institutions who trade in the U.S. on average incur Implicit Transaction Cost Disadvantage when compared to comparable U.S. Institutions Trading – Economically and Statistically in most cases
- Equally weighted buy (sell) disadvantage of approximately 3.3 (4.1) basis points.
- 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.

Conclusions

- When applying stock and trade-specific determinants based on CKS to out-of sample U.S. data, our results are comparable in statistical and sign terms.
- Additional domestic determinants *VIX* and Trade Difficulty are statistically significant for some samples.
- Country of origin variables matter
  - Information asymmetry hypothesis
  - Anchoring characteristics