

International Diversification at Home and Abroad

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Abstract: We analyze foreign ownership of U.S. equities and find that foreigners' portfolios are weighted towards U.S. firms that are large, liquid, and internationally oriented. We also examine domestic institutional investors' portfolios and find that they, too, exhibit a preference for large and internationally diversified firms. The preference of both domestic institutions and foreigners for internationally diversified firms has two implications. First, the value of corporate international diversification is recognized by these two important groups of investors, which suggests that diversification is value enhancing. Second, while the home bias phenomenon indicates that positions in foreign equities are quite small, the propensity of U.S. institutional investors to hold the equity of well-diversified U.S. firms is evidence of substantial international diversification at home. Accounting for such 'indirect' international holdings greatly reduces the observed home bias in equity portfolios; U.S. investors' claims on foreign equities rise to over 30 percent, much greater than the direct holdings of 13 percent. An analysis of the performance of foreign and institutional portfolios produces no clear winner, as performance varies over time and across measures.

JEL Classification: G11, G15, G3

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1. Introduction

Foreign investors acquired record amounts of U.S. equities at the end of the 20th century. The \$113 billion in foreign acquisitions in 1999 were almost double the previous record but were then far surpassed by the \$192 billion in purchases in 2000.¹ The unprecedented cross-border flows into U.S. securities greatly increased foreigners' presence in U.S. equity markets (Figure 1), but little is known about the composition and performance of foreign investors' positions in U.S. equities. In this paper we use a unique data set on foreigners' holdings of U.S. equities to analyze the preferences foreigners reveal in their U.S. positions and, controlling for those preferences, whether foreign ownership predicts returns. Because the representative foreign investor is likely an institution, we also compare foreign preferences and performance with those of domestic institutional investors.

We find, not surprisingly, that foreigners reveal preferences for large, liquid, and internationally oriented firms, suggesting a significant departure from the market portfolio. More interestingly, we find that the domestic institutions reveal similar preferences, particularly for domestic firms that themselves are diversified internationally.

The implications of this institutional investor preference for internationally diversified firms contribute to two literatures. The question of whether it is advantageous for a firm to expand internationally spawned an entire literature on foreign direct investment that goes back at least to Kindelberger (1969), Caves (1971), and Dunning (1973). From the corporate finance perspective, the three-decade-long debate on whether corporate international diversification is value enhancing is still going strong. The similarities between the surveys on the state of the corporate international diversification literature in Fatemi (1984) and Bodnar, Tang, and

¹ Interactive access to the Bureau of Economic Analysis (BEA) financial flows data is available at www.bea.gov/bea/di/home/bop.htm (U.S. International Transactions Data, Table 7b).

Weintrop (2003) are striking. Fatemi (1984) discusses eight papers published between 1975 and 1981 that addressed the issue with increasing degrees of sophistication, each trying to ameliorate the measurement problems of preceding studies, and each one contradicting another. Bodnar, Tang, and Weintrop (2003) – which provides evidence that international diversification is associated with a valuation premium, in contrast with the Denis, Denis, and Yost (2002) evidence of a significant discount to diversification – discusses eleven papers that followed Fatemi (1984). Again, over time the degree of sophistication increased, past measurement problems were avoided, and the corporate international diversification literature was still unable to definitively answer the most basic question it has asked: Is international diversification value enhancing?

We add to the corporate international diversification literature by providing direct evidence that investors recognize the value of foreign operations, a precondition for international diversification to be valuable (Agmon and Lessard (1977)). Investing in multinationals is one way to achieve international portfolio diversification, as multinationals represent claims on profit streams that originate all over the world. Corporate international diversification should be value enhancing – as long as agency problems are not too severe – because global firms can better exploit firm-specific assets, are better hedged against country-specific shocks, and can arbitrage laws and restrictions that vary across countries. If there is no value to corporate international diversification, investors should not be more willing to hold internationally diversified firms than purely domestic ones. We show that even after controlling for many firm characteristics such as size and liquidity, the more international a firm is, the greater is the propensity to hold that firm, not only by foreign investors but also by U.S. institutions, the largest group of domestic

investors. Many determinants of the composition of investors' portfolios can be driven by temporary fads, but this result is stable over time, suggesting that the value of corporate international diversification is recognized by two broad groups of important investors. Our results rely not on returns or valuation, but on the actual choices of these investors.

Our study also has important implications for the literature on portfolio choice, which has puzzled over the limited extent of international diversification for decades. Although it is widely accepted that international diversification should bring higher risk-adjusted returns (Grubel (1968) and Levy and Sarnat (1970)), existing evidence indicates that investors forego the potential diversification benefits of international investing.² We add to the home bias literature in two ways. First, we show that the significance of some characteristics in foreigners' portfolios carry through to domestic institutions' portfolios as well. In particular, size and foreign presence are just as important, if not more important, to domestic institutional investors as they are to foreigners. Our corporate international diversification measure is the percent of the firm's sales that originates from foreign operations. That foreigners show a preference for U.S. firms with sizeable foreign operations could be construed as a familiarity effect as in Huberman (2001) and Coval and Moskowitz (1999). However, the set of countries that invest in U.S. stocks and the set in which U.S. firms have operations do not overlap perfectly: Whereas only about 6 percent of foreigners' U.S. equity positions are held by investors from emerging markets, a much larger share of U.S. firms' foreign operations are in emerging markets – 31

² The home bias was initially attributed to the substantial direct barriers to international investment, such as capital controls and high transaction costs, that were once prevalent. As the direct barriers were dismantled and the home bias nonetheless persisted, explanations shifted to the role of indirect barriers such as information asymmetries. See the surveys of Karolyi and Stulz (2002) and Lewis (1999).

percent according to BEA data. Thus, it is plausible that the preference of foreigners for international firms owes not to a familiarity effect but to a desire to diversify in non-U.S. markets through U.S. multinationals; German investors' propensity to hold U.S. multinationals could owe to a desire for exposure to South America. Second, our work shows that the home bias is much smaller than previously reported. While we do not have the optimal measure of the degree of foreign exposure U.S. investors gain through their holdings of U.S. multinationals – the ideal measure, as noted by Agmon and Lessard (1977), would be the proportion of market value represented by a firm's non-U.S. operations and sales – we do have a reasonable indicator. The proportion of a firm's sales that originates from foreign operations is a measure of the proportion of its income stream that originates abroad and, hence, a sufficient proxy for the share of its market value that derives from foreign activity. Thus, we weight U.S. investors' holdings of U.S. stocks by each firm's proportion of foreign sales to measure the "indirect" foreign holdings of U.S. investors. These indirect holdings totaled \$3,531 billion in 2000, far exceeding the \$2,065 billion in direct holdings of foreign equities and putting the U.S. portfolio far closer to the level implied by standard models of optimal portfolio choice than previously measured. Rather than holdings of only 13 percent of non-U.S. float, U.S. investors have claims on over 30 percent of the available foreign market capitalization.

There are a number of precursors to our study. Foreigners' positions in a single country have been analyzed by Dahlquist and Robertsson (2001) and Kang and Stulz (1997). Both found evidence that foreigners prefer large, liquid, and internationally oriented firms. Our results on foreigners' preferences confirm that preferences revealed by foreign investments in Sweden and Japan are also important in the United States, the largest equity market in the world, but suggest

a different interpretation. Dahlquist and Robertsson note that for a sample of 173 Swedish firms foreigners and domestic institutions share a preference for size, but that only foreigners prefer internationally oriented firms. Our data set of over 5,000 U.S. equities yields starkly contrasting results; while we confirm their finding of foreign and institutional preferences for large firms, we also find that the preference for internationally oriented firms is just as strong for domestic institutions as it is for foreigners. For domestic institutions, one would not want to argue that this preference owes to a familiarity effect. Along this line of thinking, foreigners' preference for U.S. firms that are internationally diversified could owe to an motive for exposure to non-U.S. countries, especially because a disproportionate share of U.S. firms' foreign operations are in emerging markets. A second set of studies, such as French and Poterba (1991) and Tesar and Werner (1995), document evidence of the small weight of foreign stocks in investors' portfolios. By including indirect holdings, our restatement of the size of foreign equity portfolios indicates a need for a reevaluation of international portfolio choice. Finally, Errunza, Hogan, and Hung (1999) and Rowland and Tesar (2001) find that U.S. investors *could* obtain substantial international diversification by holding U.S. multinationals. We show that they do.

The paper proceeds as follows. The next section describes the data sets on foreign and U.S. institutional holdings of U.S. equities and discusses factors that might affect the extent of their ownership. Evidence on the determinants of foreign ownership and an evaluation of the performance of foreign portfolios is provided in Section 3, followed by a comparison with the preferences of domestic institutional investors in Section 4. Section 5 shows that "indirect" holdings of foreign equities greatly exceed direct holdings and discusses the implications for the home bias literature. Section 6 concludes.

2. Security-Level Equity Holdings

2.1 Data

Data on foreigners' holdings of U.S. stocks are from comprehensive benchmark surveys conducted by the U.S. Treasury Department and the Federal Reserve Board as of December 1994 and March 2000.³ The data are confidential and are collected from two types of reporters: issuers of securities and, because issuers typically do not have information on the ultimate owner of their securities, U.S. custodians that manage the safekeeping of U.S. securities for foreigners. Custodians—primarily banks but also some broker-dealers—are the main source of information, reporting 87 percent of the market value of foreign holdings of U.S. long-term securities measured on the 2000 survey; all U.S. custodians that held at least \$20 million in U.S. securities for foreigners were required to submit survey data. Reporting on the survey is mandatory, and penalties may be imposed for noncompliance. Since every single U.S. firm and individual is not surveyed, some undercounting exists, but the amount of undercounting is believed to be quite small, since most U.S. securities are in the possession of U.S. custodians for safekeeping, and all significant U.S. custodians were included in the surveys.

The surveys provide high quality, security-level data, but they are less than ideal for two reasons. First, the data collection technique does not permit knowledge of the type of foreign investor, other than if the investor is a government or a private entity. Since governments do not typically hold other country's equities, we can assume the foreign holdings in our sample are those of private investors. Moreover, it is likely that the representative foreign investor is an

³ Results from the latest survey, as well as a detailed description of the methodology, are in Treasury Department et al. (2002), available at www.treas.gov/tic/fpis.html. For a primer on the surveys, see Grier, Lee, and Warnock (2001).

institution, but there is no concrete evidence supporting this. Second, the country attribution of foreign investment in U.S. securities is far from perfect, precluding an analysis of, say, Germans' investment patterns in U.S. equities. The distortion in country attribution in the survey is caused by instances in which multiple custodians are involved in the safekeeping of a security. For example, a resident of Germany may buy a U.S. security and place this security in the custody of a Swiss bank. To facilitate settlement and custody operations, the Swiss bank will then normally employ a U.S.-resident custodian bank to act as its foreign subcustodian for this security. When portfolio surveys are conducted, the legal authority to collect information extends only to U.S.-resident entities. The U.S. resident bank acting as the subcustodian of the Swiss bank will report this security on the survey, and since this U.S. bank will typically know only that it is holding this security on behalf of a Swiss bank, it will report this security as Swiss held. A prime example of this problem is Luxembourg, where a major operations center of one of the world's largest central securities depositories is located, causing the surveys to attribute a significant amount of holdings to Luxembourg that are actually holdings of residents of other countries. Because of this custodial center bias, we do not use information on the residence of the foreign investor in our study.

Data on the holdings of domestic institutional investors – banks, insurance companies, mutual funds, pensions, and investment advisors – are from the Spectrum database and have been analyzed by Gompers and Metrick (2001), among others. The Spectrum data are compiled from SEC 13-F filings, which institutions with greater than \$100 million of securities under discretionary management are required to submit. The 13-F filings are quarterly; we use data on the two quarters that correspond with our survey data of foreigners' holdings, fourth quarter

1994 and first quarter 2000. See Gompers and Metrick (2001) for a complete discussion of the 13-F data.

To be included in our study, we require a firm to be listed on NYSE, Amex, or Nasdaq and have market capitalization data in CRSP as of a survey date. That leaves us with 6,888 firms for 2000 and 5,748 firms for 1994. To guard against errors in market capitalization data, we further require that the market capitalization from CRSP differs by no more than 20 percent than data provided through the benchmark survey, when available. That eliminated 601 firms in 2000 and 447 in 1994.⁴ Foreign and institutional ownership that in sum exceeds 100 percent of the outstanding shares indicates a data error; on this criterion, we eliminate 240 firms in 2000 and 206 in 1994. These filters leave us with our working sample of 5,587 firms in 2000 and 5,041 in 1994. In multivariate regressions, for explanatory variables we use data from CompuStat, which reduces our sample slightly more; our largest sample in multivariate regressions is 5,461 in 2000 and 4,773 in 1994, comparable to the 5,199 firms in the end-1996 sample in Gompers and Metrick (2001). We also run some regressions with data on foreign sales from Worldscope. We use Worldscope for foreign sales data because it has greater coverage for this variable than Compustat's Geography file, but it still reduces our sample by 800 firms in 2000 and 1,947 firms in 1994.⁵

⁴ To assist in the editing of the benchmark surveys, vendor data on prices, shares outstanding, and market capitalization are purchased. Not every record contains this information, however, so we cannot make this comparison with CRSP for every security.

⁵ Our results do not hinge on whether we treat firms that have no foreign sales data as having zero foreign sales, or discarding them as we do in our regression analysis.

2.2 Foreign and Institutional Demand for Equities – Candidate Determinants

In analyzing foreign and institutional ownership, we select possible determinants of ownership from the empirical literature on the equity holdings of domestic institutions and foreigners. Kang and Stulz (1997), who analyze foreigners' holdings of Japanese equities, and Dahlquist and Robertsson (2001), who study foreigners' holdings of Swedish equities, provide a short list of factors that foreigners might prefer. The studies of Falkenstein (1996) and Gompers and Metrick (2001) provide a clear indication of the determinants of the composition of domestic institutions' investments in U.S. equities.

Liquidity and size are characteristics sought after by institutions, who typically turn over their portfolios often (Schwartz and Shapiro, 1992) and are themselves large relative to the size of many stocks. Foreigners, it has often been argued, prefer large stocks because information about them is more readily available. Not surprisingly, Gompers and Metrick (2001) find that both size and turnover are strongly positively related to institutional ownership, and size is a important factor in every study of foreign portfolios. The evidence on foreigners' preference for high turnover firms is a bit more mixed, with Dahlquist and Robertsson (2001) showing that foreigners prefer high turnover Swedish stocks, but Edison and Warnock (forthcoming) providing evidence that turnover is important in some emerging markets but not others. In our empirical work, we include *size* (log market capitalization) and *turnover* (value of trading over the previous twelve months as a percentage of market capitalization). We also include an *S&P 500* dummy, because there might be an index effect above and beyond the effects of size and liquidity if institutions or foreigners attempt to mimic the index.

Investors' preferences for characteristics such as systematic risk, volatility, growth or value, dividend yields, and past return performance are largely a matter of style. Some institutions cannot hold stocks that do not pay dividends and firms that pay a higher yield might be considered safer, so one could argue that for prudential regulatory reasons institutions might favor firms that pay a higher *dividend yield* (dividends per share over the year-end market price) (Del Guercio (1996)). An opposing effect is that firms with better growth prospects should pay lower dividends as they plow revenues back into the firm. Substantial demand for such high growth firms would result in a negative relationship between dividend yields and ownership, as found in Gompers and Metrick and Dahlquist and Robertsson. Another prudence proxy is the volatility of past returns, which we measure as the *residual variance* of a market model estimated using daily returns over a one-year period. From a prudence standpoint, institutional ownership should be greater in firms with lower volatility. But investors may seek high-risk high-reward stocks. Gompers and Metrick and Falkenstein (1996) find a positive (but sporadic) impact of volatility on U.S. institutions' domestic holdings, while Dahlquist and Robertsson find no evidence of a consistent relationship. *Book-to-market*, calculated as the book value per share over the year-end market price, can be viewed as a pure style variable; a tendency to hold low (high) book-to-market values indicates a preference for "growth" ("value") stocks; past evidence suggests that U.S. institutions favor domestic value stocks, but foreigners in Japan and Sweden reveal a preference for growth stocks. *Beta*, which we calculate from the same market model as residual variance, measures the systematic risk of a stock; while Kang and Stulz note that in the presence of proportional barriers to investment foreigners should hold high beta stocks, such barriers probably do not pertain to the U.S. market. Our *momentum* variable, which

we calculate as cumulative monthly returns over the preceding one-year period, provides an indication of whether investors can be characterized as momentum traders. Past evidence of momentum trading by foreigners seems to be sample specific. Whereas Kang and Stulz, Falkenstein (1996), and Grinblatt and Keloharju (2000) find evidence of momentum investing, Gompers and Metrick show strong evidence that institutions do not chase past returns. We also include a measure of long-term financial health, *leverage*, calculated as the ratio of total debt to total assets. Firms with higher leverage are more financially vulnerable and, thus, might attract less investment.

Finally, we include one variable from Worldscope, *Foreign Sales*, the percent of a firm's sales that are derived from foreign operations. We expect foreigners to exhibit a strong preference for firms with higher foreign sales, because the existing literature has argued that international firms are more known to foreign investors (for example, Dahlquist and Robertsson and Kang and Stulz). For domestic institutional investors, the ongoing debate on the value of corporate international diversification suggests that the effect of a large amount of foreign sales could be positive or negative.

Summary statistics for all of the variables used in this study are presented in Table 1.

3. The Determinants and Performance of Foreign Portfolios

We define ownership as holdings divided by market capitalization as of the dates of the two benchmark surveys, end-March 2000 and end-December 1994. $ForOwn_i$ is the dollar amount of foreigners' holdings of firm i 's equity divided by firm i 's market capitalization.

Table 2 provides the cross-sectional correlations between all of the variables in our study. The first column of Table 2 shows that foreign ownership is positively related to size, liquidity, and foreign sales, among other characteristics. One should not read too much into these bivariate relationships, though. Size, for example, is highly correlated with beta, so it is not clear if the relationship between beta and foreign ownership is just picking up a size preference.

In our multivariate regressions we include industry dummies to capture any industry-specific preferences by foreigners and institutions. Table 3 shows ownership in the Campbell (1996) industry groups. Foreign ownership is highest in Basic Industry and Services. Overall, as the bottom line shows, foreigners held on average 5 percent of each of the 5,461 firms in 2000, compared to 33 percent ownership for domestic institutions.

Table 4 shows our multivariate regressions of foreign ownership for our samples in 2000 (columns 1 and 2) and 1994 (columns 3 and 4). The regressions in columns 1 and 3 represent are largest samples (5,461 in 2000 and 4,773 in 1994); the regressions in columns 2 and 4 are identical but, owing to the inclusion of *Foreign Sales*, have 800 fewer firms in 2000 and 1,947 fewer firms in 1994. Some factors are important in one year but not the other. For example, controlling for other characteristics, foreigners preferred equities included in the S&P 500 and those with low betas in 2000, but not in 1994. And their 1994 portfolios were weighted toward stocks that performed relatively poorly in the previous year, but there is no such evidence in 2000. A few characteristics, however, are important across both dates. In both 1994 and 2000, foreigners preferred firms large, liquid, internationally diversified firms that paid low dividends, confirming past analyses of foreigners' holdings in Sweden and Japan.

Did foreigners' preferences serve them well? If we assume a buy-and-hold strategy for a one-year period, foreigners' returns were negative 21.7 percent from end-March 2000 to end-March 2001, slightly better than the market returns of negative 22.4 percent. Similarly, in the twelve-month period following end-1994, foreign portfolios performed about the same as the overall market (positive 35.5 percent to positive 35.7 percent). If foreigners' portfolio weights differ much from market weights, it is not indicated by performance.

Table 5 attempts to put a finer point on foreigners' performance. We follow Gompers and Metrick (2001) and regress one-year ahead cumulative returns on all of the explanatory variables from previous regressions and foreign ownership. This effectively controls for many characteristics that explain returns across stocks. If foreign portfolios performed well given their preferences, the coefficient on ownership will be positive and significant. The results here are mixed. In 1994, the extent of foreign ownership had no bearing on future returns, but in 2000 stocks with greater foreign ownership performed worse. Controlling for the fact that, for example, low yield growth stocks fared worse after the March 2000 peak (and recall that foreigners showed a strong preference for such stocks), stocks with greater foreign ownership performed worse.

4. A Comparison of Foreign and Domestic Institutional Portfolios

Table 6 presents multivariate regression results of $InstOwn_i$, the dollar amount of domestic institutions' holdings of firm i 's equity divided by firm i 's market capitalization, for the March 2000 and December 1994 samples. As with foreigners' portfolios, some characteristics that are important in one sample are not significant in the other. For example, domestic

institutions show a preference for liquidity and low yields in 1994 but not in 2000, and for low leverage, low volatility, and value in 2000 but not in 1994. But the preference for two characteristics – size and international diversification – is evident in both years.

Table 7 compares the effects of each characteristic on foreign and institutional ownership. The dependent variable is the difference between foreign and institutional ownership, $ForOwn_i - InstOwn_i$. Because the samples are as in Tables 4 and 6, the coefficients are the differences between the coefficients in those tables, but with standard errors that enable a test of the significance of the difference.⁶ The relative effects of many of our variables on institutional and foreign ownership vary between samples. For example, turnover had a greater effect on foreign ownership in 2000, but a greater effect on institutional ownership in 1994. On the other hand some results are consistent across years. Controlling for other characteristics, S&P 500 inclusion is more important to foreigners than domestic institutions. Size is more important to domestic institutions. And foreign sales is equally important to both sets of investors.⁷

The fact that domestic institutions and foreigners both have a strong preference for stocks that are internationally diversified calls into question simple information stories for the home bias and provides evidence that the value of corporate international diversification is recognized

⁶ A comparison of the performance of foreign and institutional portfolios indicates that the one-year-ahead returns from a buy-and-hold strategy were similar, with Sharpe ratios in 2000 of -0.285 for foreigners' portfolios and -0.292 for U.S. institutions and in 1994 of 1.384 (foreigners) and 1.517 (institutions). Controlling for various firm characteristics that affect average returns across stocks, as in Table 5, stocks with greater domestic institutional holdings performed better in 2000 but worse in 1994.

⁷ The results are similar if we assume zero Foreign Sales for all firms with no data on foreign sales.

by two important groups of investors. If the asymmetry of simple information, usually proxied by size and the extent of foreign sales, is an important reason for the home bias, it is surprising to see that domestic institutions value these traits at least as much as foreigners. Because the foreign operations of U.S. firms are disproportionately in emerging markets, one could argue that foreigners' propensity to hold internationally diversified firms owes to the fact that these firms are themselves likely diversified in other markets. If the value of corporate international diversification is not recognized, *Foreign Sales* should not be just as important to domestic institutions as it is to foreigners. One of the most striking results from our multivariate regressions is that investors, be they domestic or foreign, prefer to hold internationally diversified firms.

5. Corporate International Diversification and the Home Bias

The fact that domestic institutions tend to favor internationally diversified stocks raises the question of how much international diversification is obtained through these holdings. We define *indirect* U.S. holdings of foreign equities as the market capitalization of a firm held by all U.S. investors (that is, the market capitalization not held by foreigners) weighted by the percent of the firm's sales that originate from foreign operations. For the 800 firms in our sample that do not have foreign sales data in Worldscope and for all firms not in our sample, we assume zero foreign sales, so our measure of indirect foreign holdings is in this sense a lower bound. Weighting U.S. holdings of U.S.-based international firms by the degree of internationalization gives indirect holdings of \$3,531 billion in March 2000 (Table 8). This far exceeds direct U.S. holdings of foreign equities (\$2,065 billion), the amount that is typically used in statements

about the under-diversified nature of investors' portfolio. Of course, some of the \$2,065 billion in U.S. investors' direct holdings owe to foreign firms' operations in the United States and should be subtracted from our measure of foreign holdings; an upper bound estimate is \$731 billion, reducing U.S. investors' direct holdings to (a lower bound estimate of) \$1,334 billion.⁸ The \$5,596 billion in indirect and direct portfolio holdings represents 31 percent of non-U.S. float, rather than the 13 percent if only direct holdings of foreign equities were included.⁹ Given that U.S. investors represent about 50 percent of global investors, including indirect foreign exposure greatly reduces the home bias phenomenon. Home bias is much less severe than previously reported and that the extent of international diversification that U.S. investors gain through their holdings of U.S. multinationals far exceeds their direct holdings of foreign equities. This, in turn, suggests that holdings patterns indicate that the value of corporate international diversification is indeed recognized.

6. Conclusion

We analyzed foreigners' U.S. equity portfolios and found that foreigners prefer large, liquid, internationally oriented firms, consistent with previous studies. We also found that

⁸ The upper bound estimate of \$731 billion is derived as follows. Data from Ammer, Holland, Smith, and Warnock (2003) indicate that U.S. holdings of foreign equities weighted by foreign sales anywhere (not just in the United States) totaled about \$360 billion in 1997, or 35 percent of overall foreign holdings. If *all* of those sales were in the United States and the 35 percent rule still applied in 2000, \$731 billion would be an appropriate estimate of the amount of U.S. investors' direct foreign holdings that owed to operations in the United States. Of course, not all of foreign firms' foreign sales originate in the United States, so \$731 billion is an upper bound.

⁹ As a check of the reasonableness of our estimate of \$3,531 billion in indirect foreign holdings, note that it is similar to the Bureau of Economic Analysis estimate of the market value of U.S. firms' foreign operations (\$2,817 billion).

foreigners' portfolios perform about as well as the overall market; controlling for characteristics that explain average returns across stocks, stocks with greater foreign ownership performed poorly in 2000 but not in 1995. Interestingly, we find that domestic institutions also have strong preferences for large, internationally diversified firms. Both groups of investors' preference for internationally diversified firms suggests that institutional investors, both domestic and foreign, recognize the value of corporate international diversification and that U.S. investors obtain substantial international diversification through their holdings of U.S. multinationals. The amount of these indirect foreign holdings greatly exceeds direct holdings of foreign equities, implying that the international diversification of U.S. investors has been substantially underestimated.

References

- Agmon, T., and D. Lessard, 1977. Investor recognition of corporate international diversification. *Journal of Finance*, 32: 1049-1055.
- Ammer, J., S. Holland, D. Smith, and F. Warnock, 2003. Expanding the shareholder base: the role of international cross-listings. mimeo, Federal Reserve Board.
- Bodnar, G., C. Tang, and J. Weintrop, 2003. The value of corporate international diversification. working paper, The Johns Hopkins University.
- Britten-Jones, M., 1999. The sampling error in estimates of mean-variance efficient portfolio weights. *Journal of Finance*, 54: 655-671.
- Campbell, J., 1996. Understanding risk and return. *Journal of Political Economy*, 104: 298-345.
- Caves, R., 1971. International corporations: the industrial economics of foreign investment. *Econometrica*, 38: 1-27.
- Coval, J., and T. Moskowitz, 1999. Home bias at home: local equity preference in domestic portfolios. *Journal of Finance*, 54(6): 1-39.
- Dahlquist, M., and G. Robertsson, 2001. Direct foreign ownership, institutional investors, and firm characteristics. *Journal of Financial Economics*, 59:413-440.
- Del Guercio, D., 1996. The distorting effect of the prudent-man laws on institutional equity investments. *Journal of Financial Economics*, 40: 31-62.
- Denis, D., D. Denis, and K. Yost, 2002. Global diversification, industrial diversification, and firm value. *Journal of Finance*, 57: 1951-1979.
- Dunning, J., 1973. The determinants of international production. *Oxford Economic Papers*.
- Edison, H. J., and F. Warnock, forthcoming. U.S. investors' emerging market equity portfolios: a security-level analysis. *Review of Economics and Statistics*.
- Errunza, V., K. Hogan, and M. Hung, 1999. Can the gains from international diversification be achieved without trading abroad? *Journal of Finance*, 54: 2075-2107.
- Falkenstein, E., 1996. Preferences for stock characteristics as revealed by mutual fund portfolio holdings. *Journal of Finance* 51(1): 111-135.
- Fatemi, A., 1984. Shareholder benefits from corporate international diversification. *Journal of Finance*, 39: 1325-1344.

- French, K., and J. Poterba, 1991. Investor diversification and international equity markets. *American Economic Review*, Papers and Proceedings, 222-226.
- Gompers, P., and A. Metrick, 2001. Institutional investors and equity prices. *Quarterly Journal of Economics* 116(1): 229-259.
- Griever, W., G. Lee, and F. Warnock, 2001. The U.S. system for measuring cross-border investment in securities: a primer with a discussion of recent developments. *Federal Reserve Bulletin*, 87(10): 633-650.
- Grinblatt, M., and M. Keloharju, 2000. The investment behavior and performance of various investor types: a study of Finland's unique data set. *Journal of Financial Economics* 55: 43-67.
- Grubel, H., 1968. Internationally diversified portfolios. *American Economic Review*.
- Huberman, G., 2001. Familiarity breeds investment. *Review of Financial Studies*, 14(3):659-680.
- Kang, J., and R. Stulz, 1997. Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan. *Journal of Financial Economics*, 46:3-28.
- Karolyi, G.A., and R. Stulz, 2002. Are financial assets priced locally or globally? NBER Working Paper #8994.
- Kindelberger, C.P., 1969. *American Business Abroad: Six Lectures of Direct Investment*. Yale University Press, New Haven CT.
- Levy, H., and M. Sarnat, 1970. International diversification of investment portfolios. *American Economic Review*, 668-675.
- Lewis, K., 1999. Trying to explain the home bias in equities and consumption. *Journal of Economic Literature*, 37:571-608.
- Rowland, P., and L. Tesar, 2001. Multinationals and the gains from international diversification. working paper, University of Michigan.
- Schwartz, R., and J. Shapiro, 1992. The challenge of institutionalization of the equity markets. in A. Saunders (ed.) *Recent Developments in Finance*. New York Salomon Center, New York.
- Tesar, L., and I. Werner, 1995. Home bias and high turnover. *Journal of International Money and Finance*, 14: 467-493.
- Thomas, C., F. Warnock, and J. Wongswan, 2003. The performance of international bond and equity portfolios. mimeo, Federal Reserve Board.

Treasury Department and Federal Reserve Board, 2000. United States Holdings of Foreign Long-Term Securities as of December 31, 1997 and December 31, 1999.

Table 1. Basic Summary Statistics

Variable	Mean	Std.Dev.	Min	Max
ForOwn	0.053	0.062	0	0.79
InstOwn	0.332	0.251	0	0.97
Size	5.34	2.03	0.67	13.2
Turnover	1.61	2.08	0.01	44.1
S&P 500	0.079	0.270	0	1
Beta	0.478	0.565	-2.3	3.53
Volatility	0.002	0.006	0	0.12
Book-to-Market	0.885	1.45	-0.85	7.62
Yield	0.009	0.017	0	0.08
Leverage	2.80	13.9	-355	569
Momentum	0.676	2.14	-0.93	58.7
Foreign Sales	12.3	20.3	0	100

Data are for 2000; statistics for 1994 are available upon request. The sample size for all variables is 5,461, with the exception of Foreign Sales (N = 4,661). ForOwn and InstOwn are foreign holdings and U.S. institutional holdings, respectively, divided by market capitalization. Size is the log of market capitalization. Turnover is the average of twelve months of shares traded divided by beginning of month shares outstanding. S&P is equal to one if the stock is in the S&P500 index, zero otherwise. Beta and Volatility are the systematic risk and residual variance from a market model calculated with daily data for a one-year period (1999). Book-to-market and dividend yield are winsorized at the 1st and 99th percentiles. Leverage is total liabilities divided by total assets.. Momentum is the cumulative returns over the preceding year. Foreign Sales is the percent of the firm's sales that are abroad.

Table 2. Cross-Sectional Correlations

	ForOwn	InstOwn	Size	Turnover	S&P	Beta	Vol	BM	Yield	Lev	Momentum
InstOwn	0.1337										
	<i>0.0000</i>										
Size	0.1967	0.6216									
	<i>0.0000</i>	<i>0.0000</i>									
Turnover	0.3103	0.0319	0.1886								
	<i>0.0000</i>	<i>0.0170</i>	<i>0.0000</i>								
S&P	0.1248	0.3291	0.5432	-0.0306							
	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0221</i>							
Beta	0.1843	0.2147	0.4513	0.4697	0.1807						
	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>						
Vol	0.0907	-0.2597	-0.1820	0.2986	-0.0968	0.0765					
	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>					
BM	-0.0822	-0.1530	-0.2882	-0.0942	-0.1007	-0.1565	0.0054				
	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.6879</i>				
Yield	-0.1527	0.0325	0.0633	-0.2264	0.1200	-0.1467	-0.1431	0.1609			
	<i>0.0000</i>	<i>0.0151</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>			
Lev	-0.0528	-0.0489	-0.0306	-0.0595	0.0147	-0.0458	-0.0407	0.0277	0.0841		
	<i>0.0001</i>	<i>0.0003</i>	<i>0.0227</i>	<i>0.0000</i>	<i>0.2742</i>	<i>0.0006</i>	<i>0.0024</i>	<i>0.0395</i>	<i>0.0000</i>		
Momentum	0.1409	0.0030	0.1673	0.3204	-0.0396	0.1603	0.1871	-0.1491	-0.1506	-0.0718	
	<i>0.0000</i>	<i>0.8259</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0033</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	
Foreign Sales	0.2075	0.2598	0.2884	0.0929	0.1754	0.1417	-0.0346	-0.0890	-0.0863	-0.0667	0.1235
	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0169</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>	<i>0.0000</i>

The table shows the March 2000 cross-sectional correlation between ownership and firm characteristics and for all pairs of these characteristics. P-values for the correlation coefficients are italics.

Table 3. Ownership by Industry, 2000

Industry	N	Foreign Ownership	Institutional Ownership
Petroleum	167	5	42
FIRE	949	3	25
Consumer Durables	767	6	36
Basic Industry	470	8	37
Food/Tobacco	151	5	35
Construction	91	3	34
Capital Goods	654	6	34
Transportation	114	4	41
Utilities	308	5	37
Textiles/Trade	435	5	36
Services	988	7	32
Leisure	297	5	32
Unclassified	70	7	32
Total	5461	5	33

The table shows, for the industry groups defined in Campbell (1996), foreign and institutional ownership expressed as a percent of market capitalization.

Table 4. Determinants of Foreign Ownership

	2000		1994	
	(1)	(2)	(3)	(4)
Size	0.0038 (0.000)	0.0028 (0.000)	0.0074 (0.000)	0.0069 (0.000)
Turnover	0.0079 (0.000)	0.0083 (0.000)	0.0058 (0.000)	0.0062 (0.000)
S&P	0.0190 (0.000)	0.0180 (0.000)	0.0016 (0.562)	-0.0001 (0.976)
Beta	-0.0032 (0.092)	-0.0033 (0.088)	0.0278 (0.092)	0.0032 (0.196)
Volatility	0.2080 (0.460)	-0.0764 (0.675)	0.1097 (0.034)	1.082 (0.169)
Book-to-Market	0.0007 (0.175)	0.0001 (0.782)	-0.0002 (0.708)	0.0131 (0.130)
Yield	-0.3146 (0.000)	-0.3039 (0.000)	-0.5001 (0.000)	-0.4062 (0.000)
Leverage	-0.0000 (0.423)	0.0000 (0.929)	0.0000 (0.567)	0.0001 (0.413)
Momentum	0.0001 (0.738)	-0.0000 (0.971)	-0.131 (0.000)	-0.0143 (0.000)
Foreign Sales		0.0003 (0.000)		0.0004 (0.000)
No. of Observations	5461	4661	4773	2826
Adjusted R ²	0.519	0.528	0.475	0.527

Table 4 presents regression results where the dependent variable is the share of security i held by foreigners. Holdings data are as of March 2000 (columns 1 and 2) and December 1994 (columns 3 and 4). Reported are parameter estimates, with p-values computed from robust standard errors in parentheses. Industry dummies corresponding to the Campbell (1996) grouping are included.

Table 5. Foreign Ownership and Future Returns

	1994	2000
Foreign Ownership	0.3904 (0.296)	-0.3371 (0.009)
Size	-0.0697 (0.000)	0.0267 (0.000)
Turnover	0.0083 (0.709)	-0.0469 (0.000)
S&P	0.2208 (0.000)	0.0862 (0.006)
Beta	0.0670 (0.081)	-0.1388 (0.000)
ResVar	17.32 (0.171)	-9.708 (0.000)
Book-to-Market	-0.0421 (0.002)	-0.0055 (0.405)
Yield	-0.4777 (0.566)	3.868 (0.000)
Leverage	0.0001 (0.922)	0.0006 (0.150)
Momentum	0.0766 (0.135)	-0.0453 (0.000)
Foreign Sales	0.0011 (0.261)	-0.0009 (0.045)
No. of Observations	2775	4103
Adjusted R ²	0.228	0.294

Table 5 presents regression results where the dependent variable is the one-year-ahead cumulative return.

Table 6. Determinants of U.S. Institutional Ownership

	2000		1994	
	(1)	(2)	(3)	(4)
Size	0.0875 (0.000)	0.0871 (0.000)	0.0859 (0.000)	0.0806 (0.000)
Turnover	-0.0009 (0.559)	-0.0010 (0.590)	0.0264 (0.000)	0.0290 (0.000)
S&P	-0.0462 (0.000)	-0.0522 (0.000)	-0.0431 (0.000)	-0.0461 (0.000)
Beta	-0.0319 (0.000)	-0.0323 (0.000)	0.0042 (0.295)	0.0461 (0.000)
Volatility	-5.441 (0.000)	-5.050 (0.000)	-0.1686 (0.356)	-1.454 (0.471)
Book-to-Market	0.0062 (0.002)	0.0067 (0.002)	0.0023 (0.229)	0.0039 (0.202)
Yield	0.0165 (0.917)	0.0288 (0.867)	-0.5455 (0.001)	-0.6312 (0.003)
Leverage	-0.0003 (0.032)	-0.0003 (0.060)	-0.0001 (0.475)	-0.0003 (0.287)
Momentum	-0.0115 (0.000)	-0.0132 (0.000)	-0.0083 (0.122)	-0.0146 (0.079)
Foreign Sales		0.0005 (0.001)		0.0005 (0.035)
No. of Observations	5461	4661	4773	2826
Adjusted R ²	0.803	0.803	0.808	0.824

Table 6 presents regression results where the dependent variable is the share of security i held by U.S. institutional investors. Holdings data are as of March 2000 (columns 1 and 2) and December 1994 (columns 3 and 4). Reported are parameter estimates, with p-values computed from robust standard errors in parentheses. Industry dummies corresponding to the Campbell (1996) grouping are included.

Table 7. The Difference between Foreign and U.S. Institutional Ownership

	2000		1994	
	(1)	(2)	(3)	(4)
Size	-0.0837 (0.000)	-0.0844 (0.000)	-0.0786 (0.000)	-0.0737 (0.000)
Turnover	0.0088 (0.000)	0.0093 (0.000)	-0.0206 (0.000)	-0.0227 (0.000)
S&P	0.0653 (0.000)	0.0702 (0.000)	0.0447 (0.000)	0.0460 (0.000)
Beta	0.0287 (0.000)	0.0290 (0.000)	-0.0014 (0.736)	-0.0012 (0.871)
Volatility	5.649 (0.000)	4.974 (0.000)	0.2784 (0.166)	2.535 (0.314)
Book-to-Market	-0.0055 (0.006)	-0.0065 (0.003)	-0.0025 (0.182)	-0.0026 (0.366)
Yield	-0.3311 (0.040)	-0.3327 (0.058)	0.0455 (0.788)	0.2250 (0.290)
Leverage	0.0003 (0.052)	0.0003 (0.050)	0.0002 (0.339)	0.0004 (0.168)
Momentum	0.0117 (0.000)	0.0132 (0.000)	-0.0048 (0.404)	0.0003 (0.970)
Foreign Sales		-0.0002 (0.266)		-0.0001 (0.618)
No. of Observations	5461	4661	4773	2826
Adjusted R ²	0.738	0.739	0.759	0.783

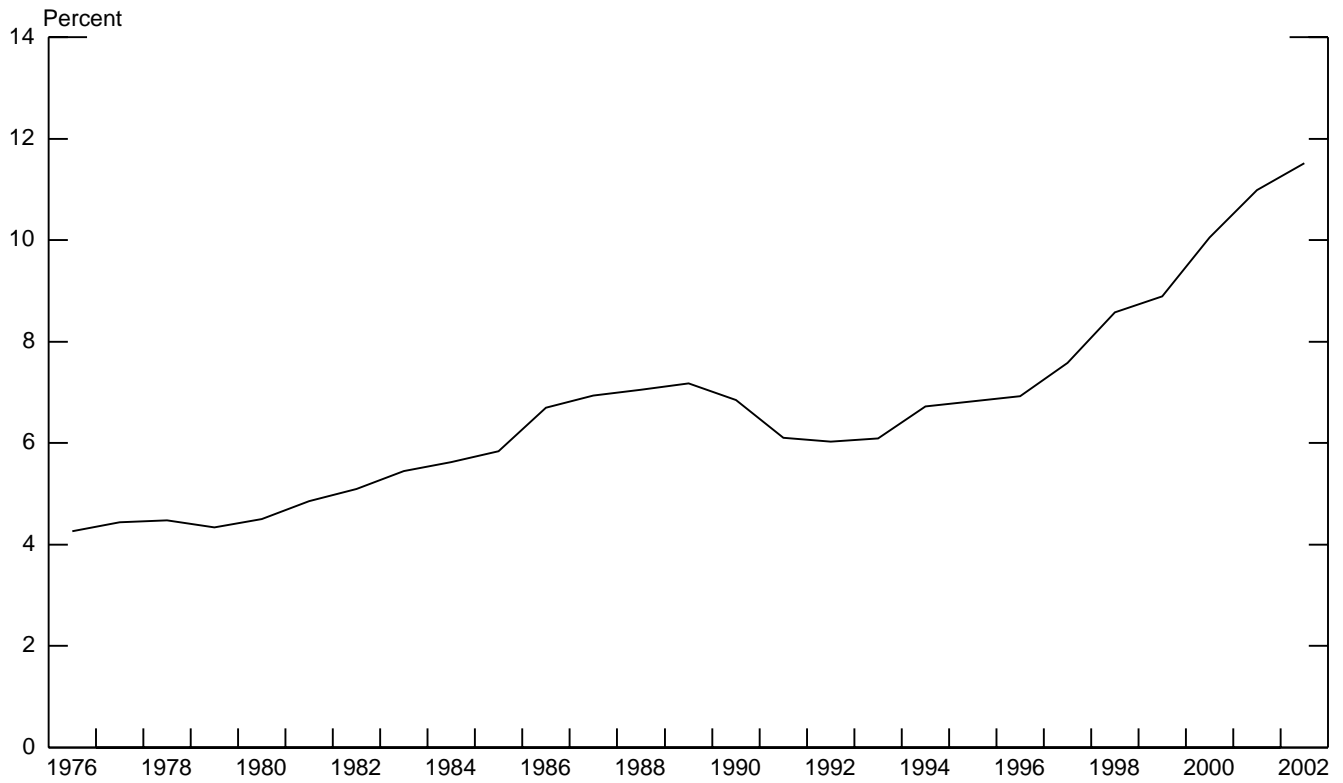
Table 7 presents regression results where the dependent variable is the difference between foreign and institutional ownership. Holdings data are as of March 2000 (columns 1 and 2) and December 1994 (columns 3 and 4). Reported are parameter estimates, with p-values computed from robust standard errors in parentheses. Industry dummies corresponding to the Campbell (1996) grouping are included.

Table 8. The International Diversification of U.S. Investors

Direct Holdings of Foreign Stocks	between \$1334 billion and \$2065 billion	
Indirect Holdings of Foreign Stocks	\$3531 billion	
Total		%ROW float
Direct Holdings only	\$2065 billion	13%
Direct (lower) and Indirect Holdings	\$4865 billion	31%

All data are as of March 2000. The larger estimate of direct portfolio holdings of foreign equities is as constructed by Thomas, Warnock, and Wongswan (2003). The smaller estimate of direct holdings subtracts (an upper bound of) the market capitalization of foreign holdings that might owe to U.S. operations. Indirect holdings are computed as U.S. holdings times the percent of sales that is generated by foreign operations, where U.S. holdings are that part of the market capitalization not held by foreigners. The two totals correspond to a low estimate that includes only direct holdings and an estimate formed by summing indirect holdings and the lower bound of direct holdings. ROW float is \$15.7 billion, which is the non-U.S. market capitalization (\$19.5 trillion) times a float adjustment.

Figure 1. Share of U.S. Equities Held by Foreign Investors



Source: Authors' calculations using market capitalization data from Federal Reserve Boards' Flow of Funds accounts and foreign holdings data from the Bureau of Economic Analysis presentation of the International Investment Position.