

## What Determines the Domestic Bias and Foreign Bias? Evidence from Mutual Fund Equity Allocations Worldwide

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### ABSTRACT

We examine how mutual funds from 26 developed and developing countries allocate their investment between domestic and foreign equity markets and what factors determine their asset allocations worldwide. We find robust evidence that these funds, in aggregate, allocate a disproportionately larger fraction of investment to domestic stocks. Results indicate that the stock market development and familiarity variables have significant, but asymmetric, effects on the domestic bias (domestic investors overweighting the local markets) and foreign bias (foreign investors under or overweighting the overseas markets), and that economic development, capital controls, and withholding tax variables have significant effects only on the foreign bias.

INCREASED ACCESS TO FINANCIAL MARKETS ACROSS the globe has provided expanding opportunities for investors to diversify their investments across many markets. It is widely recognized that cross-border diversification of equity portfolios offers potential gains to investors (Grubel (1968), Levy and Sarnat (1970), Solnik (1974), Grauer and Hakansson (1987), Eldor, Pines, and Schwartz (1988), DeSantis and Gerard (1997), among others). Substantial research has shown, however, that investors do not exploit such diversification opportunities, as they allocate a relatively large fraction of their wealth to domestic equities, a phenomenon commonly called the “home bias”—representing one of the unresolved puzzles in the international finance literature.<sup>1</sup> Earlier studies in the literature mainly provide theoretical explanations for the existence of this home bias in the equity markets. Examples of these explanations include that there are barriers to international investment (Errunza and

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<sup>1</sup> See Lewis (1999) and Karolyi and Stulz (2003) for excellent surveys of the home bias literature.

Losq (1985)), there are departures from purchasing power parity (Cooper and Kaplanis (1994)), and there is hedging of human capital or other nontraded assets (Baxter and Jermann (1997), Stockman and Dellas (1989), Obstfeld and Rogoff (1998), Wheatley (2001)). Recent empirical studies show that the home bias in the equity market is not only international, but also regional (Coval and Moskowitz (1999), Grinblatt and Keloharju (2001)).

A major obstacle to research on the home bias has been the lack of cross-border holdings data. In many studies, foreign holdings are estimated using accumulated capital flows and valuation adjustments (e.g., see Cooper and Kaplanis (1994), Tesar and Werner (1995), Bekaert and Harvey (2000)). However, Warnock and Cleaver (2001) show that estimates of country-level holdings from flow data can be wildly off the mark because the underlying flow data are not designed to estimate holdings. Some other studies use the comprehensive surveys of U.S. residents' holdings of foreign securities conducted by the U.S. government (Ahearne, Grier, and Warnock (2004)), or data on foreign ownership in Japanese firms (Kang and Stulz (1997)). Nevertheless, most of these studies are from the perspective of U.S. investors, and they leave open the question of whether investors in other countries exhibit the same degree of home bias. A common explanation for the home bias is that U.S. investors are informationally disadvantaged in markets with poor information disclosure. Since the United States and other developed markets have higher standards of information disclosure, the informational asymmetry between domestic and foreign investors in these markets is less severe, so that foreign investors might not underweight their holdings in these developed markets. It is therefore important to examine if investors in other markets, especially developing markets, exhibit a smaller degree of home bias.

This paper makes two important contributions to the existing literature. First, we study the cross-border investment behavior of investors from various countries that include both developed and developing countries. We employ a rich and interesting data set from Thomson Financial Securities (TFS) that contains detailed mutual fund equity holdings from 26 developed and developing countries, with a breakdown of the market value of equity holdings across 48 countries for the years 1999 and 2000. The data also provide valuable information on how mutual funds in different countries allocate their portfolios between domestic and nondomestic stocks. This includes the allocations of stocks held by more than 20,000 mutual funds in 26 countries across 48 equity markets worldwide. Our extensive analysis of these data allows us to provide more robust evidence on whether the equity home bias is specific to only the few developed countries documented in the existing studies, or is widespread across developed and developing countries.

It is imperative to recognize that our data set contains only stockholdings of mutual funds from each country for a period of 2 years. Ideally, our analysis would be more precise if we were to analyze stockholdings of both individual investors and many different types of institutional investors, including mutual fund investors. Several studies have provided much evidence that mutual funds

engage in similar trading strategies as those of other institutional investors.<sup>2</sup> Furthermore, mutual fund managers play a relatively significant role as financial intermediaries in capital markets. Their main responsibility is to manage assets on behalf of their clients, who primarily are individual investors. Hence, their portfolio holdings ought to reveal the fund manager's preferences for domestic versus foreign equities as well as preferences of individual investors, whose money they manage. It is therefore reasonable to assume that mutual funds are representative institutional investors of a country. Notwithstanding this assumption, prior to our work, no study has such similar information available that allows them to conduct a comprehensive and thorough analysis of the home-bias issue.

Second, we are able to distinguish the domestic and foreign components of home bias. The domestic bias reflects the extent to which mutual fund investors overweight home markets in their mutual fund holdings, while the foreign bias reflects the extent to which investors underweight or overweight foreign markets. For the purpose of illustration, we use a hypothetical three-country example, with each country's market capitalization forming a third of the world's market capitalization. Country A's local investors, in aggregate, put 50% of their wealth in the domestic market and the remaining 50% equally in countries B and C. A's domestic investors display a domestic bias, but have an equal foreign bias toward the equity markets in countries B and C. Country B's domestic investors, on the other hand, invest 50% of their aggregate wealth in their own market, 8.3% in A, and 41.7% in C. Like A's domestic investors, B's local investors exhibit a domestic bias. Unlike A's, B's local investors underweight country A (more foreign bias) but overweight country C (less foreign bias). Finally, C's domestic investors invest 33.3% of their wealth in the domestic market, 41.7% in country A, and 25.0% in country B. C's domestic investors exhibit no domestic bias but only foreign bias, overweighting A, and underweighting B.

The domestic and foreign biases, as implied by an international equilibrium setting, arise from various barriers to cross-border investments. Effects of such barriers to cross-border investments form deadweight costs for foreign investors investing in local equities and for domestic investors investing in foreign equities. If foreign investors face a greater deadweight cost in entering the local market than domestic investors face, foreign investors will hold less of the local equities than will domestic investors. As a result, a higher degree of foreign bias (less investment by foreigners) will be accompanied by a higher degree of domestic bias (more investment by domestic investors). Thus, our distinction between the two types of biases permits us not only to analyze how each bias

<sup>2</sup> For example, Gompers and Metrick (2001) find that U.S. institutional investors, in general, show similar preferences for stocks that are larger and more liquid, and He, Ng, and Wang (2004) find that banks, life insurance companies, mutual funds, and investment advisors are inclined to engage in similar trading strategies. Dahlquist and Robertsson (2003) find similar evidence using Swedish data. Using data from 11 developed countries, Covrig, Lau, and Ng (2004) show that foreign and domestic institutional managers exhibit similar stock preferences as well.

varies across countries, but also to examine whether the investment barriers have similar or different impacts on the two biases.

We propose a set of predetermined variables, drawn from the existing literature, as sources of domestic and foreign biases. Given the numerous variables that are associated with the explanations of the home bias offered in the literature, we classify them into: (i) economic development, (ii) capital control, (iii) stock market development, (iv) familiarity, (v) investor protection, and (vi) other variables. We expect some of these predetermined variables to exhibit symmetric, while others asymmetric, effects on the domestic and foreign biases. We therefore investigate how each category of variables affects the weightings of a particular market's equities in the mutual fund holdings of domestic and foreign investors.

Our analysis, based on the 2-year data on the equity holdings of mutual funds from 26 different countries, shows that equity home bias is ubiquitous. All 26 countries exhibit domestic bias: the share of mutual fund holdings in the mutual fund's domestic market is much larger than the world-market capitalization weight of the country. Interestingly, the domestic bias varies substantially across the countries. Greece, for example, has the highest percentage of average mutual fund holdings in its domestic market (93.5%), as compared to its mean world market capitalization weight of 0.46%, whereas Ireland has the lowest with 6.14%, as opposed to its mean world market capitalization weight of 0.19%. It should be noted that Ireland is a major center for offshore mutual funds, and this explains why its percentage allocation to the local market is extremely low. If we exclude Ireland, Austria has the lowest percentage of mutual fund holdings in its domestic market (6.77%), as opposed to its world market capitalization weight of 0.09%.

Our results show that the six different categories of predetermined variables have varying significant effects on the domestic and foreign biases. Only the stock market development and familiarity variables play an important role in the domestic bias. These two factors also have significant but asymmetric effects on the foreign bias. When a host country is more remote from the rest of the world and has a different language, domestic investors will invest more in that country's market, while foreign investors will invest less. Furthermore, when a host market is more developed, larger in market capitalization, and has lower transaction costs, foreign investors will invest more and domestic investors will invest less in the market. These findings suggest that when a country is more developed or less remote from the rest of the world, this reduces deadweight costs for foreign investors investing in local equities, resulting in smaller domestic and foreign biases. The results further indicate that factors such as economic development, capital control, and withholding taxes also have significant, albeit smaller, influences on the investment decisions of foreign investors and not on those of domestic investors. The overall results are robust to countries with closely held firms and to the place of incorporation of funds.

The remainder of this paper is organized as follows. Section I provides a theoretical framework that forms the basis of our empirical analysis. Section II describes the mutual fund holdings data and measures of domestic and foreign

biases. This section also offers some preliminary statistics on the two measures of biases. Section III discusses the variables that are likely to influence such biases. Section IV presents the empirical analyses and results. Section V concludes the paper.

## I. Theoretical Framework

Cooper and Kaplanis (1986) offer a theoretical framework that is excellent for our analysis of domestic and foreign biases. Their model assumes that a representative investor in country  $i$  maximizes the expected return of his or her wealth for a given level of variance:

$$\text{Max}(w_i' R - w_i' c_i), \quad (1)$$

subject to

$$\begin{aligned} w_i' V w_i &= v \\ w_i' I &= 1, \end{aligned}$$

where  $w_i$  is a column vector containing the portfolio weights, the  $j$ th element of which is  $w_{ij}$ ,  $w_{ij}$  is the proportion of individual  $i$ 's total wealth invested in risky securities of country  $j$ ,  $R$  is a column vector of pre-tax expected returns,  $c_i$  is a column vector, the  $j$ th element of which is  $c_{ij}$ ,  $c_{ij}$  is the deadweight cost to investor  $i$  of holding securities in country  $j$ ,  $V$  is the variance/covariance matrix of the gross (pre-cost, pre-tax) returns of the risky securities,  $v$  is the given constant variance, and  $I$  is a unity column vector.

The Lagrangean of the above maximization problem is

$$L = (w_i' R - w_i' c_i) - (h/2)(w_i' V w_i - v) - k_i(w_i' I - 1), \quad (2)$$

where  $h$  and  $k_i$  are Lagrange multipliers. Setting the derivative of the objective function with respect to  $w_i$  to zero, we get

$$R - c_i - h V w_i - k_i I = 0. \quad (3)$$

Therefore, the optimal portfolio for investor  $i$  is

$$w_i = (V^{-1}/h)(R - c_i - k_i I), \quad (4)$$

where

$$k_i = [I' V^{-1} R - I' V^{-1} c_i - h] / I' V^{-1} I.$$

Given the individual portfolio holdings, we can now aggregate to get the world capital market equilibrium. The market clearing condition is

$$\sum P_i w_i = w^*, \quad (5)$$

where  $P_i$  is the proportion of world wealth owned by country  $i$ ,  $w^*$  is a column vector, the  $i$ th element of which is  $w_i^*$ , and  $w_i^*$  is the proportion of the world market capitalization in country  $i$ 's market.

Using equations (4) and (5) and defining  $z$  as the global minimum-variance portfolio ( $=V^{-1}I/(I'V^{-1}I)$ ), we can obtain

$$hV(w_i - w^*) = (\Sigma P_i c_i - c_i) - z'(\Sigma P_i c_i - c_i)I. \quad (6)$$

If there is no barrier for any investor to access both the domestic and the foreign markets such that the deadweight costs ( $c_{ij}$ ) are equal to zero for all  $i$  and  $j$ , then the right-hand side of (6) is zero and each investor holds the world market portfolio.

If deadweight costs are not equal to zero, then the portfolio holdings of each investor will deviate from the world market portfolio. To examine the deviation, we consider a simple case when the covariance matrix,  $V$ , is diagonal with all variances equal to  $s^2$ . The deviations of the portfolio weight of investor  $i$  in country  $j$  from the world market portfolio are given by

$$hs^2(w_{ii} - w_i^*) = -c_{ii} + b_i + a_i - d, \quad i = j \quad (7)$$

$$hs^2(w_{ij} - w_j^*) = -c_{ij} + b_j + a_i - d, \quad i \neq j \quad (8)$$

where

$$\begin{aligned} a_i &= z'c_i, \\ b_j &= \Sigma P_k c_{kj}, \\ d &= z'\Sigma P_i c_i. \end{aligned}$$

The value  $a_i$  can be interpreted as the weighted average marginal deadweight cost for investor  $i$ ,  $b_j$  as the weighted average marginal deadweight cost for investors investing in country  $j$ , and  $d$  as the world-weighted average marginal deadweight cost. Equation (7) measures the extent to which the mutual fund holdings of investor  $i$  in the domestic market deviate from those of the world market portfolio, whereas equation (8) measures the extent to which the mutual fund holdings of investor  $i$  in foreign market  $j$  deviate from those of the world-market portfolio. For convenience, we refer to the former as domestic bias ( $DBIAS_i$ ) and the latter as foreign bias ( $FBIAS_{ij}$ ).

From equation (7), if the deadweight cost for investor  $i$  investing in her own country  $i$  ( $c_{ii}$ ) is substantially less than the weighted average deadweight cost for world investors ( $b_i$ ), she will overweight domestic country ( $DBIAS_i > 0$ ). Investor  $i$  will also overweight her domestic country if the weighted average deadweight cost she faces ( $a_i$ ) is large enough that she is discouraged from investing in foreign countries. Equation (7) further shows that a country would not experience domestic bias if the deadweight costs for domestic ( $c_{ii}$ ) and foreign investors ( $b_i$ ) investing in country  $i$  were symmetric. In other words, if the transaction cost in country  $i$  is higher than that in country  $j$ , and if the transaction cost applies symmetrically to domestic and foreign investors in both markets, then we would not expect the degree of domestic bias to differ between the two countries.

Equation (8) indicates that the difference between the deadweight cost for investor  $i$  investing in country  $j$  ( $c_{ij}$ ) and the weighted average deadweight cost for world investors ( $b_j$ ) affects how much investor  $i$  invests in country  $j$ . If  $c_{ij}$  is significantly larger than  $b_j$ , investor  $i$  underweights country  $j$  ( $FBIAS_{ij} < 0$ ). Furthermore, the higher the deadweight cost,  $c_{ij}$ , the larger is the foreign bias for investor  $i$  investing in country  $j$  (a more negative  $FBIAS_{ij}$ ).

## II. Data and Preliminary Statistics

### A. Data

The key data set for the current study consists of mutual fund holdings data from 26 countries in 1999 and 2000, with a breakdown of the market value of equity holdings across 48 countries. The data are obtained from TFS, which was created by the merger of The Investext Group, Securities Data Company, and CDA/Spectrum. According to TFS, the mutual fund holdings information around the world is gathered from agents of the local authorities,<sup>3</sup> and directly from mutual funds. All the information is available at the fund level.

The TFS database contains information on the equity holdings of 21,711 mutual funds from 37 countries in 1999 and of 26,145 funds from 39 countries in 2000. In our study, we use only 20,821 and 24,589 mutual funds from 26 countries in 1999 and 2000, respectively. To simplify our further discussion, we refer to the 26 countries as “host” countries. These 26 host countries account for about 93% of the total market capitalization in our sample. The remaining countries are all emerging markets, and their funds are invested entirely in local markets. When we include the emerging markets as host countries, our results on the domestic bias are much stronger than those reported here. This is because the predetermined variables that we employ play a more vital role in these emerging markets than in the 26 developed markets. To make our results consistent with the foreign-bias results, we focus only on the mutual fund holdings of the 26 host countries.

The database contains three data files: (i) the Fund Master File, containing the fund number, fund name, management company name, country code, and report date; (ii) the Security Master File, containing the security number, security name, country code, security price, and shares outstanding; and (iii) the Portfolio Holdings File, reporting the fund number, security number, number of shares held by the fund, and net changes in shares held since prior report dates. The country code of a fund is based on the country of incorporation. Thus, some of the funds might in fact be feeder funds, and this could pose a problem when we need to classify them into domestic versus foreign funds, in order to determine the degree of domestic bias that a mutual fund displays. We address this issue later in this study. We note that the report dates vary across different funds. About one-third of the mutual funds report holdings at least twice a

<sup>3</sup> For example, CDA/Spectrum, acting on behalf of the U.S. Securities Exchange Commission, collects quarterly 13f institutional holdings and semi-annually mutual funds holdings information.

year, and about half only twice a year. To compute equity holdings, we use the holdings that are reported on various dates between July and December of 1999 and 2000, because more than 75% of the funds report holdings in December. Finally, the funds are both closed-end and open-end mutual funds or unit trusts. For the purpose of this study, we include funds of all types, but only the equity portion of those that are not 100% invested in stocks. The reason for the latter is that TFS does not provide any information on the cash and bond holdings of a fund. According to company representatives, TFS gathers information on the equity holdings of almost all of the various funds from each of the countries in their database, but might exclude some of the newly established funds. The “missing” new funds that were established in 1999 are subsequently included in their 2000 database.

We therefore checked the coverage of funds by TFS with the summary statistics on mutual funds provided by the Investment Company Institute (ICI). The TFS information includes only funds that own at least one equity share, while ICI reports all types of mutual funds, including equity funds, money market funds, and fixed income funds but excluding closed-end funds. As a result, there is a large variation in the number of funds and the size of the mutual fund market between the two sets of data. For example, in 1999, the number of funds reported by TFS and ICI data are, respectively, 1,369 and 6,511 for France; 1935 and 1,618 for the United Kingdom; and 4,095 and 895 for Germany. The larger number of funds in the TFS sample versus that in ICI is due to the fact that the TFS sample includes both open- and closed-end funds, while the ICI data set covers only open-end funds. We further checked that the United Kingdom has more than 500 closed-end funds, so this could potentially explain the differences between the two data sources. We also verified with S&P Micropal fund data and found that the number of German funds contained in their data set is consistent with the number contained in the TFS database.

The TFS data set certainly affords us an excellent opportunity to study mutual fund equity allocations worldwide, but unfortunately it does not give information on the investment style of each fund. One way to determine the investment style is to look at the name of the fund. On average, however, of less than 1% of the funds from each country (though 14% of the U.S. funds), the name reveals the investment styles. We therefore propose a simple approach to determine each fund's investment style. While our approach is not perfect, it ought to give us some idea on the distribution of the investment styles of all the funds in our sample. To begin, we classify funds into domestic and international funds. Domestic funds are those with more than 80% of their total net asset value invested in domestic stocks. Otherwise, the funds are classified as international funds. Next, we determine the investment style of each fund as follows.

For each market, we sort all the stocks based on their market capitalization (firm size) and book-to-market equity, separately, to determine the median value of each characteristic. Data on firm size and book-to-market equity are obtained from either Worldscope or Global Vantage. We then assign a dummy variable of one to all stocks whose firm size or book-to-market equity is greater



than the median value and zero otherwise. For each fund, we calculate its value-weighted average dummy firm size or its value-weighted average dummy book-to-market equity of its stockholdings. Based on the value-weighted average dummy firm size, we sort funds into three groups: large, mid-cap, and small funds. Similarly, based on the value-weighted average dummy book-to-market equity, we sort funds into two groups: value and growth funds. Table I shows the distribution of the fund investment styles across the 26 host countries. Not surprisingly, the majority of both the domestic and international funds are large or growth funds. Consistent with earlier studies in the literature, mutual funds tend to invest more in larger firms. After comparing the domestic and international funds, we notice that, in almost all of the 26 countries, the majority of the international funds focus on growth, whereas in only 14 countries the majority of domestic funds are growth funds. All these patterns suggest that international funds generally prefer to invest in large firms.

### B. Statistics on Mutual Fund Holdings

For each of the 26 host countries, we calculate the percentage allocation of mutual fund holdings in 48 countries as follows:

$$w_{ij} = \frac{MV_{ij}}{\sum_{j=1}^{48} MV_{ij}}, \quad (9)$$

where  $w_{ij}$  is the share of country  $j$  in mutual fund holdings for host country  $i$  and  $MV_{ij}$  is the market value of mutual fund holdings of country  $j$  for host country  $i$ . We also compute the weight of country  $j$  in the world market portfolio, which is defined as the portfolio of the 48 countries included in the sample

$$w_j^* = \frac{MV_j^*}{\sum_{i=1}^{48} MV_i^*}, \quad (10)$$

where  $w_j^*$  is the share of country  $j$  in the world market portfolio and  $MV_j^*$  is the market capitalization of country  $j$ . We compute  $w_{ij}$  in 1999 and 2000 separately and then take a simple average of the two values.

Table II presents the distribution of 26 host countries' average equity mutual fund allocations (in percentage) across 48 national markets in the world. It also contains the average number of mutual funds in each of the 26 countries (second row) and the mean total market value of fund holdings (third row) for the 2 years in the sample. On average, the United States has the largest number of mutual funds (6,144), followed by Germany (4,493) and the United Kingdom (2,021). Correspondingly, the overall market capitalization of each of their countries' funds is about US\$ 3 trillion, US\$ 380 million, and US\$ 605 million, respectively. Even though the number of funds in the United States

**Table I**  
**Distribution of Fund Investment Styles across 26 Host Countries**

This table contains the distribution of investment styles of funds across the following 26 countries in 1999: the United States (US), the United Kingdom (UK), Canada (CA), Germany (GM), Italy (IT), Sweden (SW), France (FR), Switzerland (SZ), Austria (AU), Belgium (BE), Denmark (DA), Ireland (EL), Finland (FI), Greece (GR), Luxembourg (LU), Norway (NO), Portugal (PO), Spain (SP), the Netherlands (NL), Japan (JA), Australia (AS), Singapore (SN), Hong Kong (HK), New Zealand (NZ), Taiwan (TW), and South Africa (SF). Domestic funds are those with more than 80% of their total net asset value invested in domestic stocks. Otherwise, the funds are classified as international funds. The investment styles of funds are determined as follows. For each market, we sort all the stocks based on their market capitalization (firm size) and book-to-market equity (BM), separately, to determine the median value of each characteristic. We then assign a dummy variable of one to all stocks whose firm size or BM is greater than the median value and zero otherwise. For each fund, we calculate its value-weighted average dummy firm size or its value-weighted average dummy BM of its stockholdings. Based on the value-weighted average dummy firm size, we sort funds into three groups: large, mid-cap, and small funds. Similarly, based on the value-weighted average dummy BM, we sort funds into two groups: value and growth funds.

Country	Number of Funds	Domestic Funds				International Funds			
		Large/Mid	Small	Value	Growth	Large/Mid	Small	Value	Growth
US	6,444	4,205	935	1,693	3,447	1,145	159	376	928
UK	1,935	432	179	336	275	1,153	171	482	842
CA	1,264	771	274	552	493	197	22	72	147
GM	4,095	453	49	240	262	3,543	50	1,557	2,036
IT	320	71	24	59	36	211	14	103	122
SW	308	19	10	9	20	247	32	73	206
FR	1,369	467	170	264	373	645	87	241	491
SZ	321	24	26	31	19	254	17	116	155
AU	117	17	4	8	13	89	7	40	56
BE	314	47	14	25	36	225	28	122	131
DA	119	14	10	11	13	83	12	40	55
EL	142	14	5	10	9	107	16	46	77
FI	58	21	6	12	15	23	8	13	18
GR	34	16	4	12	8	13	1	5	9
LU	777	0	0	0	0	671	106	402	375
NO	148	33	5	17	21	102	8	35	75
PO	168	85	14	47	52	67	2	31	38
SP	1,547	575	61	347	289	894	17	405	506
NL	157	22	14	20	16	107	14	36	85
JA	203	61	29	65	25	111	2	32	81
AS	120	64	22	38	48	29	5	8	22
SN	166	16	3	8	11	140	7	40	107
HK	289	52	4	25	31	208	25	54	179
NZ	44	16	8	13	11	18	2	9	11
TW	181	144	4	62	86	33	0	14	19
SF	181	68	18	55	31	93	2	40	55

is about three times larger than that in the United Kingdom and 1.4 times larger than that in Germany, the size of the U.S. funds is at least five and eight times, respectively, larger than the funds in the United Kingdom and Germany. The size of U.S. mutual funds reflects both the rising stock market value and

Table II  
Equity Mutual Fund Allocations

This table contains the distribution of 26 host countries' average mutual fund allocations (in percent) across 48 national markets for the period 1999 and 2000. The second row contains the average number of mutual funds and the third row shows the average total market value of fund holdings. The second column lists a country's average stock market capitalization weight in the world market portfolio.

Panel A: First 13 Countries														
	Market Capital Weight	US	UK	CA	GM	IT	SW	FR	SZ	AU	BE	DA	EL	FI
No. of mutual funds		6,144	2,021	1,351	4,493	441	377	1,400	399	169	366	137	156	75
Market value of mutual fund holdings (\$billion)		3056.5	604.6	131.1	379.5	94.9	62.7	146.1	82.3	8.8	34.8	7.4	16.4	3.5
US	46.85	85.66	24.99	61.85	12.91	19.78	15.58	18.47	33.41	26.00	23.96	17.77	39.85	5.97
UK	8.13	2.69	43.06	2.11	9.63	8.67	8.67	4.19	8.26	8.83	8.07	8.64	12.90	20.60
CA	2.44	0.23	0.40	26.99	0.25	0.15	0.25	0.34	0.80	0.39	0.47	0.32	0.15	0.18
GM	3.99	1.05	3.23	1.03	33.49	6.05	2.32	3.49	6.91	18.79	6.84	6.73	5.32	3.34
IT	2.22	0.48	1.75	0.36	3.58	35.37	0.86	1.92	2.30	2.07	3.27	3.42	6.43	0.99
SW	1.03	0.41	1.37	0.30	1.79	1.13	46.74	0.53	1.05	1.09	1.28	4.28	0.88	6.59
FR	4.32	1.46	5.60	1.23	12.70	6.02	2.79	55.27	6.55	7.05	9.93	6.48	5.35	3.78
SZ	2.21	0.67	2.35	0.53	4.67	3.01	3.34	1.40	21.03	4.69	3.19	3.59	3.61	1.92
AU	0.09	0.02	0.06	0.03	0.16	0.02	0.03	0.03	0.10	6.77	0.17	0.23	0.03	0.03
BE	0.55	0.04	0.23	0.02	0.28	0.10	0.04	0.49	0.21	0.21	24.73	0.24	0.01	0.13
DA	0.31	0.08	0.30	0.10	0.16	0.11	0.88	0.08	0.24	0.04	0.42	18.41	0.24	1.97
EL	0.19	0.07	0.46	0.13	0.24	0.13	0.33	0.15	0.14	0.25	0.24	0.20	6.14	0.18
FI	0.95	0.48	1.15	0.25	3.74	2.02	9.55	0.96	1.50	1.53	2.27	3.60	1.24	45.70
GR	0.46	0.03	0.11	0.01	0.04	0.19	0.03	0.05	0.12	0.02	0.20	0.38	0.23	0.00
LU	0.10	0.04	0.13	0.00	0.07	0.05	0.08	0.01	0.09	0.11	0.38	0.01	0.10	1.60
NO	0.19	0.08	0.19	0.05	0.09	0.05	0.58	0.07	0.16	0.21	0.17	0.63	0.07	1.20
PO	0.19	0.04	0.15	0.04	0.22	0.26	0.03	0.12	0.23	0.10	0.32	0.32	0.09	0.17
SP	1.39	0.34	1.32	0.26	2.93	1.50	0.89	1.32	1.67	1.09	2.27	1.80	1.55	0.89
NL	1.97	0.84	2.55	0.55	6.86	3.05	1.54	4.06	3.41	4.18	6.47	3.41	3.41	1.84
JA	11.29	2.97	5.68	3.04	4.99	9.19	3.42	5.74	7.63	12.82	3.55	11.86	7.21	2.01

(continued)

Table II—Continued

Panel A: First 13 Countries														
	Market Capital Weight	US	UK	CA	GM	IT	SW	FR	SZ	AU	BE	DA	EL	FI
AS	1.18	0.34	0.65	0.29	0.23	0.60	0.21	0.14	0.46	0.53	0.09	0.41	0.83	0.13
SN	0.51	0.19	0.41	0.17	0.18	0.30	0.21	0.12	0.25	0.56	0.17	1.31	0.56	0.08
HK	1.82	0.42	0.91	0.30	0.32	1.00	0.42	0.27	0.42	0.54	0.32	2.29	0.73	0.11
NZ	0.07	0.03	0.05	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.00	0.06	0.05	0.02
TW	0.91	0.16	0.32	0.01	0.06	0.10	0.19	0.06	0.37	0.06	0.09	0.24	0.13	0.00
SF	0.69	0.11	0.26	0.06	0.02	0.08	0.02	0.05	0.20	0.05	0.21	0.05	0.08	0.00
INDIA	0.49	0.11	0.27	0.06	0.05	0.03	0.02	0.02	0.46	0.01	0.02	0.10	0.12	0.00
KOREA	0.66	0.24	0.52	0.05	0.13	0.29	0.20	0.18	0.27	0.13	0.16	0.48	0.49	0.03
MALAYSIA	0.39	0.05	0.13	0.02	0.05	0.12	0.05	0.05	0.19	0.18	0.06	0.23	0.10	0.01
THAILAND	0.13	0.03	0.10	0.02	0.03	0.07	0.08	0.04	0.08	0.31	0.04	0.52	0.06	0.00
INDONESIA	0.13	0.02	0.06	0.01	0.01	0.03	0.02	0.02	0.07	0.16	0.02	0.04	0.04	0.00
PHILIPPINES	0.15	0.03	0.05	0.01	0.01	0.02	0.02	0.01	0.08	0.03	0.03	0.07	0.08	0.00
MEXICO	0.41	0.13	0.26	0.03	0.02	0.07	0.04	0.04	0.19	0.02	0.11	0.46	0.15	0.00
BRAZIL	0.67	0.31	0.28	0.05	0.02	0.17	0.03	0.07	0.38	0.02	0.12	0.60	0.13	0.00
ARGENTNA	0.37	0.01	0.02	0.01	0.00	0.04	0.00	0.05	0.05	0.00	0.02	0.01	0.02	0.00
CHILE	0.19	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
COLOMBIA	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERU	0.04	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.00
VENEZUELA	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUSSIA	0.16	0.02	0.05	0.01	0.01	0.01	0.20	0.01	0.03	0.07	0.02	0.01	0.07	0.48
HUNGARY	0.04	0.01	0.05	0.00	0.02	0.01	0.09	0.02	0.11	0.45	0.05	0.20	0.53	0.00
CZECH	0.03	0.01	0.03	0.00	0.01	0.02	0.05	0.01	0.05	0.18	0.04	0.17	0.20	0.00
POLAND	0.09	0.02	0.08	0.00	0.03	0.04	0.12	0.02	0.09	0.43	0.08	0.36	0.46	0.00
PAKISTAN	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
TURKEY	0.26	0.03	0.13	0.00	0.01	0.07	0.01	0.03	0.25	0.02	0.04	0.02	0.21	0.00
ISRAEL	0.19	0.03	0.11	0.00	0.00	0.04	0.02	0.05	0.11	0.01	0.02	0.01	0.04	0.02
EGYPT	0.09	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00
CHINA	1.37	0.02	0.05	0.01	0.02	0.03	0.02	0.02	0.04	0.02	0.05	0.06	0.11	0.02

Panel B: Next 13 Countries														
	Market Capital Weight	GR	LU	NO	PO	SP	NL	JA	AS	SN	HK	NZ	TW	SF
Equity Mutual Fund Allocations of 26 Countries														
No of mutual funds	66	1,117	204	165	1,897	206	361	164	226	312	38	211	218	
Market value of mutual fund holdings (\$billion)	3.7	38.6	8.8	4.0	45.4	55.6	55.7	26.3	10.7	25.7	0.4	9.7	8.9	
US	46.85	3.20	23.10	18.13	9.99	14.13	27.44	18.66	16.84	4.72	2.27	3.51	0.28	13.07
UK	8.13	0.14	7.05	5.90	9.44	6.91	11.02	2.29	3.94	3.84	5.99	5.81	3.39	8.43
CA	2.44	0.09	0.35	0.24	0.04	0.10	0.99	0.30	0.69	0.20	0.11	0.07	0.05	0.89
GM	3.99	0.14	9.77	1.43	5.93	7.46	6.06	0.34	1.51	0.32	0.14	0.47	1.75	0.72
IT	2.22	0.04	3.74	0.78	3.08	2.47	1.52	0.13	0.70	0.20	0.06	0.00	0.55	0.31
SW	1.03	0.03	2.02	6.98	1.53	1.18	1.67	0.11	0.65	0.17	0.06	0.15	0.27	0.29
FR	4.32	0.11	9.44	2.33	7.69	11.04	6.59	0.43	3.70	2.12	0.26	0.48	2.33	1.34
SZ	2.21	0.06	4.92	1.27	2.61	2.36	3.80	0.19	1.29	3.99	0.11	0.07	0.92	3.02
AU	0.09	0.00	0.06	0.15	0.04	0.05	0.08	0.00	0.01	0.01	0.43	0.00	0.00	0.02
BE	0.55	0.01	1.41	0.19	0.36	0.20	0.17	0.02	0.04	0.01	0.01	0.00	0.10	0.05
DA	0.31	0.05	0.28	2.01	0.12	0.05	0.30	0.02	0.10	0.12	0.01	0.30	0.00	0.06
EL	0.19	0.00	0.32	0.04	0.21	0.22	0.45	0.07	0.54	1.81	0.04	0.00	0.00	0.49
FI	0.95	0.03	2.50	5.94	2.15	3.10	2.38	0.17	0.59	1.35	0.11	0.10	2.06	0.52
GR	0.46	93.46	0.13	0.07	0.09	0.07	0.14	0.01	0.00	0.07	0.03	0.00	0.00	0.00
LU	0.10	0.01	15.08	0.97	0.11	0.56	0.08	0.00	0.02	0.28	0.10	0.00	0.00	0.57
NO	0.19	0.00	0.15	48.81	0.06	0.02	0.62	0.01	0.01	0.05	0.00	0.00	0.06	0.03
PO	0.19	0.00	0.52	0.09	45.61	0.66	0.33	0.02	0.02	0.01	0.01	0.17	0.00	0.01
SP	1.39	0.03	2.67	0.30	5.23	35.96	1.74	0.11	0.88	0.13	0.05	0.50	0.40	0.29
NL	1.97	0.10	6.72	0.88	3.72	4.88	19.49	0.18	1.07	0.23	0.12	0.33	1.01	0.72
JA	11.29	2.39	5.72	2.41	1.01	7.79	10.22	71.82	3.49	9.64	10.30	0.57	22.30	1.67
AS	1.18	0.01	0.18	0.13	0.08	0.05	0.74	0.47	60.50	7.09	4.63	14.36	0.32	0.26
SN	0.51	0.01	0.24	0.10	0.06	0.01	0.64	0.46	0.34	18.25	7.68	0.34	0.45	0.36

(continued)

Table II—Continued

Panel B: Next 13 Countries														
	Market Capital Weight	GR	LU	NO	PO	SP	NL	JA	AS	SN	HK	NZ	TW	SF
Equity Mutual Fund Allocations of 26 Countries														
HK	1.82	0.00	0.78	0.20	0.16	0.03	1.40	1.23	0.93	17.23	26.44	1.89	0.59	0.26
NZ	0.07	0.00	0.03	0.01	0.00	0.00	0.01	0.10	0.57	0.34	0.09	74.93	0.00	0.01
TW	0.91	0.00	0.30	0.01	0.07	0.01	0.19	0.40	0.12	5.51	6.53	0.24	60.88	0.00
SF	0.69	0.00	0.32	0.01	0.02	0.01	0.18	0.29	0.04	0.05	2.46	0.15	0.00	66.58
INDIA	0.49	0.00	0.16	0.00	0.00	0.10	0.15	0.17	0.40	3.51	4.31	0.16	0.00	0.00
KOREA	0.66	0.00	0.27	0.18	0.20	0.03	0.27	1.06	0.22	6.51	8.48	0.07	1.36	0.01
MALAYSIA	0.39	0.00	0.11	0.02	0.08	0.00	0.08	0.09	0.23	4.34	2.44	0.21	0.23	0.00
THAILAND	0.13	0.00	0.46	0.04	0.03	0.00	0.09	0.55	0.07	3.83	4.02	0.01	0.60	0.01
INDONESIA	0.13	0.00	0.04	0.02	0.00	0.00	0.04	0.05	0.17	1.80	1.99	0.02	0.00	0.00
PHILIPPINES	0.15	0.00	0.04	0.02	0.01	0.00	0.03	0.04	0.04	1.22	0.75	0.08	0.00	0.00
MEXICO	0.41	0.00	0.15	0.00	0.08	0.19	0.21	0.03	0.02	0.11	1.77	0.00	0.11	0.00
BRAZIL	0.67	0.00	0.23	0.01	0.16	0.17	0.32	0.04	0.05	0.05	2.68	0.00	0.00	0.02
ARGENTNA	0.37	0.00	0.01	0.00	0.00	0.03	0.02	0.00	0.00	0.02	0.48	0.00	0.00	0.00
CHILE	0.19	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
COLOMBIA	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00
PERU	0.04	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
VENEZUELA	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RUSSIA	0.16	0.00	0.01	0.12	0.00	0.00	0.02	0.00	0.00	0.00	0.31	0.00	0.00	0.00
HUNGARY	0.04	0.00	0.06	0.10	0.00	0.01	0.09	0.00	0.01	0.01	0.67	0.00	0.00	0.00
CZECH	0.03	0.00	0.01	0.03	0.00	0.00	0.07	0.00	0.00	0.01	0.46	0.00	0.00	0.00
POLAND	0.09	0.00	0.13	0.06	0.01	0.00	0.17	0.00	0.00	0.01	0.54	0.00	0.00	0.00
PAKISTAN	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.03	0.01	0.14	0.00	0.00	0.00
TURKEY	0.26	0.04	0.10	0.00	0.01	0.03	0.09	0.01	0.02	0.04	0.77	0.00	0.00	0.00
ISRAEL	0.19	0.03	0.21	0.01	0.00	0.01	0.06	0.00	0.00	0.02	0.33	0.00	0.00	0.00
EGYPT	0.09	0.00	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.09	0.00	0.00	0.00
CHINA	1.37	0.00	0.10	0.00	0.01	0.00	0.03	0.10	0.12	0.75	1.59	0.02	0.00	0.00

the tremendous growth in its mutual funds industry in the later part of the 1990s.

To highlight the extent of the domestic bias, we shade all cells in the table that contain the share of mutual fund holdings in the domestic market of the 26 countries and also present the average world market capitalization weight of each country (Column 2). It is immediately obvious that the domestic bias exists in every country. Across all 26 countries, the share of mutual fund holdings in the domestic market is much larger than the world market capitalization weight of the country. Greece, for example, has the highest percentage of mutual fund holdings in the domestic market (93.5%), compared to its world market capitalization weight of 0.46%. The United States has the second highest percentage in the domestic market (85.7%), although its deviation from the world market capitalization weight (46.9%) is much smaller than that of Greece. Ireland has the lowest percentage of mutual fund holdings in the domestic market (6.14%), but it is still above its world market capitalization weight (0.19%). The low percentage of domestic investments for the latter is consistent with the fact that Ireland is a major center for offshore mutual funds, providing important incentives to fund operators in the form of reduced taxes. Therefore, many mutual funds domiciled in Ireland are bought by investors outside Ireland. If we exclude Ireland, Austria has the lowest percentage of mutual fund holdings in its domestic market (6.77%), as opposed to its world market capitalization weight of 0.09%.

There is also prevalent evidence that investors do underweight foreign markets in their mutual fund portfolios. The figures in the nonshaded cells in the table represent the percentage allocations of mutual fund holdings in different foreign markets; they are generally much smaller than the world market capitalization weights of the corresponding foreign markets. There are, however, some exceptions. Interestingly, the exceptions appear to occur among countries on the same continent or in the same region. For example, Canadian investors overweight the U.S. market in their mutual fund portfolios (i.e., 61.9% vs. 46.9%), Taiwanese investors overweight the Japanese market (i.e., 22.3% vs. 11.3%), New Zealand investors overweight the Australian market (i.e., 14.4% vs. 1.2%), and Hong Kong investors overweight the Singapore market (i.e., 7.7% vs. 0.5%). This table provides preliminary evidence that geographical proximity plays a vital role in determining the extent to which investors overweight foreign markets.

### C. Statistics on Domestic Bias and Foreign Bias

In this study, we compute measures of the domestic and foreign biases for every country, based on the country's equity mutual fund allocations. As defined earlier, the domestic bias for a specific host country  $j$  ( $DBIAS_j$ ) is the extent to which the mutual fund holdings in the domestic market of country  $j$  deviate from the holdings of country  $j$  in the world market portfolio. The value  $DBIAS_j$  is therefore defined as the log ratio of the share of country  $j$ 's mutual fund holdings in the domestic market ( $w_{jj}$ ) to the world market capitalization

**Table III**  
**Domestic Bias of Domestic Investors and Average Foreign Bias  
of Foreign Investors**

The table shows the distribution of the domestic bias of domestic investors and the average foreign bias of foreign investors in a host country, across the 26 host countries. The home bias for country  $j$  reflects the deviation of the share of country  $j$  in its mutual fund holdings ( $w_{jj}$ ) from the world market capitalization weight of country  $j$  ( $w_j^*$ ), and is measured by  $\log(w_{jj}/w_j^*)$ , while the foreign bias reflects that of country  $j$  in mutual fund holdings for each host country  $i$  ( $i \neq j$ ) ( $w_{ij}$ ) from the world market capitalization weight of country  $j$  ( $w_j^*$ ), which is given by  $\log(w_{ij}/w_j^*)$ . We calculate the average foreign bias of foreign investors in a host country  $j$  by averaging  $FBIAS_j$  across all remaining countries. The table shows the average values for the sample period of 1999 and 2000.

	Domestic Bias	Average Foreign Bias
US	0.61	-1.43
UK	1.67	-0.41
CA	2.41	-2.53
GM	2.12	-0.65
IT	2.77	-1.20
SW	3.81	-0.41
FR	2.55	-0.44
SZ	2.26	-0.60
AU	4.28	-1.79
BE	3.77	-2.26
DA	4.07	-1.30
EL	3.06	-0.97
FI	3.86	0.06
GR	5.35	-3.40
LU	4.87	-1.61
NO	5.55	-1.71
PO	5.48	-1.56
SP	3.22	-0.72
NL	2.27	-0.35
JA	1.86	-0.97
AS	3.94	-1.23
SN	3.55	-0.85
HK	2.66	-1.54
NZ	7.00	-2.38
TW	4.21	-3.07
SF	4.57	-3.54

weight of country  $j$  ( $w_j^*$ ). If country  $j$  exhibits a domestic bias, then it has a positive  $DBIAS_j$ . On the other hand, the foreign bias shows the extent to which domestic investors underweight or overweight foreign markets in their mutual fund holdings. Similar to the domestic-bias measure, a foreign-bias measure ( $FBIAS_{ij}$ ) is defined as the log ratio of  $w_{ij}$  to  $w_j^*$ .

In the preceding subsection, we established that the home bias is prevalent across all countries. Intuitively, when domestic investors overinvest in their local market, foreign investors must on average underinvest in the market. As a matter of interest, we show in Table III how the average foreign bias is distributed across the 26 host countries. The average foreign bias of foreign



investors in a host country  $j$  is calculated by averaging  $FBIAS_{ij}$  across all countries.

In general, we observe a significant cross-sectional variation in both the domestic-bias measure and average foreign-bias measure. The former varies from 0.62 (the United States) to 6.93 (New Zealand), and the latter ranges between  $-0.13$  (Finland) and  $-3.32$  (Greece). While this result confirms the well-documented evidence that the home bias is robust, how this bias varies across countries and the factors that explain this cross-sectional variation are, unfortunately, lacking. We address this issue in subsequent sections of the paper.

### III. Plausible Sources of Domestic Bias and Foreign Bias

In this section, we introduce some explanatory variables and discuss how they affect international portfolio holdings. Drawn mainly from the existing literature, the explanatory variables are categorized into the following groups: (i) economic development; (ii) capital control; (iii) stock market development; (iv) familiarity; (v) investor protection; and (vi) others. We calculate the descriptive statistics of all these explanatory variables for the period 1999 and 2000. We find the cross-sectional variation of these measures across our sample of countries to be generally stable over the 2 years. Thus, for the purpose of reporting and discussion, we focus only on the 1999 data, as presented in Table IV.

#### A. Economic Development

We conjecture that the percentage of mutual fund holdings in a particular country is related to the economic development of that country. We construct several measures of economic development. The first four measures are gross domestic product (GDP) per capita in U.S. dollars ( $GDPC$ ); the real growth rate in the gross domestic product ( $RGDP$ ); the average of exports and imports scaled by GDP ( $TRADE$ ); and foreign direct stock investment inward, scaled by GDP ( $DI$ ). Data on these four variables are obtained from the World Competitiveness Report 2000 produced by the World Economic Forum. The last variable is the country credit rating ( $CREDIT$ ), which is based on a scale of 0–100 as assessed by the Institutional Investor Magazine.

Table IV shows a significant cross-sectional variation in the five measures of economic development across countries, implying that the different measures capture different aspects of economic development in each country. While the top countries in terms of  $GDPC$  are all developed markets (Luxembourg (US\$ 44,424), Switzerland (US\$ 36,071), Japan (US\$ 34,459), and the United States (US\$ 33,846)), the top countries in terms of  $RGDP$  are all emerging markets (China (7.1%), Korea (6.9%), India (5.8%), and Poland (5.7%)). The countries with the highest foreign direct stock investment inward scaled by GDP are Singapore (1.01), Belgium (0.67), and New Zealand (0.64), while the countries with the largest trade volume as a percentage of GDP ( $TRADE$ ) are Singapore (149.6%), Hong Kong (129.0%), and Malaysia (106.7%).

**Table IV**  
**Summary Statistics for the Explanatory Variables in 1999**

For each country, the six sets of explanatory variables employed are (i) Economic development variables, including gross domestic product (GDP) per capita, real GDP growth, trade volume as a percentage of GDP, foreign direct investment as a percentage of GDP, and country credit rating; (ii) Capital control variables, including capital flow restrictions; (iii) Stock market development variables, including stock market capitalization as a percentage of GDP, market turnover, transaction costs, and emerging market dummy variables; (iv) Familiarity variables, including average common language dummy variable, and average distance in kilometers; (v) Investor protection variables, including rule of law index, accounting standard index, minority investor protection index, risk of expropriation index, efficiency of judicial system index, and legal system dummy variable; (vi) Other variables, including past 1- and 5-year return performances, average return correlation, and average withholding tax.

	Panel A										
	Economic Development					Capital Control	Stock Market Development				Familiarity
	GDP Per Capita (\$)	Real GDP Growth (%)	Trade Volume (% of GDP)	Foreign Direct Investment (% of GDP)	Country Credit Rating	Capital Flow Restrictions	Stock Market Capitalization (% of GDP)	Turnover	Transaction Costs	Emerging Market Dummy	Common Language Dummy (Average)
US	33,846	3.8	11.9	0.09	90.9	10	1.80	113.4	29.2	0	0.21
UK	24,168	1.9	27.5	0.23	90.2	10	2.07	48.2	34.1	0	0.21
CA	20,890	3.7	40.9	0.22	83.5	10	1.25	60.9	46.8	0	0.25
GM	25,508	1.0	28.1	0.11	92.0	10	0.68	122.6	30.6	0	0.04
IT	20,014	1.3	24.8	0.09	81.3	10	0.63	74.3	41.0	0	0.00
SW	26,630	3.9	40.5	0.23	81.2	10	1.58	70.5	33.0	0	0.00
FR	24,058	2.7	25.5	0.12	91.4	5	1.04	63.3	35.7	0	0.06
SZ	36,071	1.7	38.6	0.23	93.0	10	2.70	89.7	38.6	0	0.11
AU	25,452	2.0	45.7	0.12	89.4	8	0.16	54.3	53.2	0	0.04
BE	23,871	2.2	73.9	0.67	84.9	10	0.76	25.3	27.1	0	0.06
DA	32,675	1.3	35.5	0.18	85.1	10	0.61	58.4	40.8	0	0.00
EL	24,353	8.6	92.7	0.26	83.4	8	0.47	87.2	93.7	0	0.21
FI	24,430	3.7	35.5	0.12	83.6	8	2.77	48.8	45.2	0	0.00
GR	11,407	3.3	15.2	0.18	59.1	8	1.70	102.7	105.1	1	0.00
ISRAEL	16,167	2.3	36.6	0.09	55.8	2	0.65	28.2	N.A.	1	0.00
LU	44,424	5.1	86.7	N.A.	90.3	N.A.	1.92	N.A.	43.2	0	0.06
NO	34,269	0.6	35.8	0.16	87.7	8	0.42	82.6	41.5	0	0.00

PO	10,322	3.1	37.0	0.21	78.4	8	0.66	64.5	35.7	1	0.02
SP	15,124	3.7	27.3	0.20	81.7	8	0.72	174.2	39.2	0	0.15
NL	24,299	3.4	61.5	0.44	91.2	10	1.81	106.2	24.5	0	0.00
JA	34,459	0.6	11.0	0.01	86.5	8	1.04	49.9	19.4	0	0.00
AS	20,441	4.3	21.0	0.27	75.8	8	1.10	40.1	54.7	0	0.21
SN	21,814	5.3	149.6	1.01	81.9	10	2.34	58.5	51.5	0	0.28
HK	23,019	2.9	129.0	0.61	61.3	10	3.84	82.4	47.3	0	0.26
NZ	13,944	2.7	31.0	0.64	74.0	8	0.53	41.5	36.9	0	0.21
INDIA	446	5.7	14.5	0.03	44.2	0	0.42	63.7	113.3	1	0.21
KOREA	8,682	6.6	45.4	0.05	56.8	5	0.76	267.2	73.2	1	0.00
MALAYSIA	3,596	5.4	106.7	0.52	51.7	5	1.84	56.6	91.7	1	0.02
THAILAND	2,027	4.1	54.1	0.16	48.3	5	0.47	63.4	65.0	1	0.00
TW	13,111	5.6	47.5	0.07	75.3	5	1.30	374.1	55.1	1	0.06
INDONESIA	741	0.0	49.0	0.40	27.1	0	0.42	57.8	107.3	1	0.00
PHILIPPINES	996	2.4	60.2	0.13	45.9	5	0.63	41.3	126.2	1	0.21
MEXICO	4,964	3.1	32.2	0.13	48.2	5	0.32	33.7	51.5	1	0.15
BRAZIL	3,697	0.8	8.9	0.26	36.5	0	0.38	65.5	50.6	1	0.02
ARGENTNA	7,816	-4.1	10.4	0.16	42.4	10	0.29	30.8	58.0	1	0.15
CHILE	4,346	-1.5	28.5	0.47	61.0	5	1.05	11.1	107.4	1	0.15
COLOMBIA	2,233	-3.5	17.1	0.15	44.1	5	0.12	8.0	195.1	1	0.15
PERU	2,097	-2.4	18.3	N.A.	37.3	8	N.A.	22.2	71.6	1	0.15
VENEZUELA	4,238	-4.5	20.4	0.18	33.8	5	0.07	20.8	239.5	1	0.15
RUSSIA	1,245	3.2	30.1	0.07	19.3	N.A.	0.40	N.A.	N.A.	1	0.00
HUNGARY	4,915	4.1	60.3	0.37	57.3	N.A.	0.33	N.A.	66.3	1	0.00
CZECH	5,167	0.8	60.8	0.25	59.1	N.A.	0.22	N.A.	69.7	1	0.00
POLAND	3,759	5.7	28.9	0.15	57.5	N.A.	0.20	N.A.	N.A.	1	0.00
PAKISTAN	489	N.A.	N.A.	N.A.	N.A.	2	N.A.	223.1	N.A.	1	0.00
SF	3,046	2.1	25.6	0.14	45.6	2	2.00	26.4	55.8	1	0.21
TURKEY	2,867	-4.8	25.9	0.04	38.9	2	0.61	120.4	47.0	1	0.00
EGYPT	1,392	1.1	N.A.	N.A.	44.2	5	N.A.	52.1	N.A.	1	0.00
CHINA	782	7.1	19.6	0.26	56.4	N.A.	0.33	N.A.	N.A.	1	0.06

(continued)

Table IV—Continued

	Panel B										
	Familiarity	Investor Protection						Other Variables			
	Distance (Kilometers) (Average)	Rule of Law	Accounting	Minority	Expropriation	Efficiency	Legal System Dummy	Lag 1-Year Return	Lag 5-Year Return	Return Correlation (Average)	Withholding Tax (%) (Average)
US	8,535	10.0	71	5	9.98	10.0	1	18.3	21.5	0.51	11.4
UK	5,727	8.57	78	4	9.71	10.0	1	21.9	14.8	0.53	10.6
CA	8,562	10.0	74	4	9.67	9.25	1	35.5	15.6	0.55	12.1
GM	5,547	9.23	62	1	9.90	9.00	0	12.8	14.5	0.51	11.6
IT	5,636	8.33	62	0	9.35	6.75	0	2.4	19.3	0.42	12.4
SW	5,650	10.0	83	2	9.40	10.0	0	51.2	23.9	0.50	11.8
FR	5,688	8.98	69	2	9.65	8.00	0	26.9	20.6	0.48	10.5
SZ	5,591	10.0	68	1	9.98	10.0	0	−4.3	10.0	0.42	11.2
AU	5,528	10.0	54	2	9.69	9.50	0	−8.3	−3.1	0.42	10.4
BE	5,614	10.0	61	0	9.63	9.50	0	−24.9	10.5	0.31	12.1
DA	5,563	10.0	62	3	9.67	10.0	0	7.7	14.3	0.45	11.7
EL	5,910	7.80	74	3	9.67	8.75	1	−13.8	14.3	0.43	13.5
FI	5,712	10.0	77	2	9.67	10.0	0	64.7	52.8	0.39	11.5
GR	5,848	6.18	55	1	7.12	7.00	0	50.5	33.8	0.31	15.8
ISRAEL	5,456	4.82	64	3	8.25	10.0	1	62.8	24.7	0.27	19.3
LU	5,586	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	28.1	22.3	0.39	14.1
NO	5,688	10.0	74	3	9.88	10.0	0	34.0	7.0	0.50	13.1
PO	6,386	7.80	36	2	8.90	5.50	0	−8.8	15.6	0.38	15.9
SP	6,129	7.80	64	2	9.52	6.25	0	−1.2	17.8	0.47	12.9

NL	5,610	10.0	64	2	9.98	10.0	0	24.4	24.2	0.50	11.8
JA	8,574	8.98	65	3	9.67	10.0	0	62.3	2.9	0.33	12.6
AS	13,102	10.0	75	4	9.27	10.0	1	20.3	7.2	0.48	13.4
SN	9,498	8.57	78	3	9.30	10.0	1	64.1	-1.2	0.44	14.3
HK	8,812	8.22	69	4	8.29	10.0	1	51.6	5.6	0.46	19.2
NZ	14,300	10.0	70	4	9.69	10.0	1	9.7	-5.0	0.47	14.2
INDIA	7,236	4.17	57	2	7.75	8.00	1	67.8	17.1	0.27	18.5
KOREA	8,020	5.35	62	2	8.31	6.00	0	113.3	3.5	0.39	17.2
MALAYSIA	9,083	6.78	76	3	7.95	9.00	1	73.4	-28.3	0.17	18.5
THAILAND	8,405	6.25	64	3	7.42	3.25	1	25.5	-44.3	0.37	16.2
TW	8,780	8.52	65	3	9.12	6.75	0	44.7	10.2	0.36	18.6
INDONESIA	9,917	3.98	65	2	7.16	2.50	0	52.7	-39.2	0.35	21.4
PHILIPPINES	9,102	2.73	65	4	5.22	4.75	0	12.9	-19.2	0.43	22.1
MEXICO	10,100	5.35	60	0	6.07	6.00	0	54.1	8.5	0.52	16.9
BRAZIL	10,489	6.32	54	3	7.62	5.75	0	48.8	-3.2	0.49	17.4
ARGENTNA	12,059	5.35	45	4	5.91	6.00	0	23.8	3.4	0.49	17.8
CHILE	12,405	7.02	52	3	7.5	7.25	0	28.4	-9.0	0.41	22.6
COLOMBIA	10,267	2.08	50	1	6.95	7.25	0	-6.9	-7.6	0.11	21.9
PERU	11,462	2.50	38	2	5.54	6.75	0	24.9	1.0	0.23	18.8
VENEZUELA	9,527	6.37	40	1	6.89	6.50	0	6.4	3.2	0.28	17.3
RUSSIA	4,993	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	89.2	-38.8	0.22	13.2
HUNGARY	4,332	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	24.5	34.1	0.48	15.5
CZECH	4,187	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	25.5	5.8	0.32	18.3
POLAND	4,289	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	25.5	3.3	0.47	11.3
PAKISTAN	6,495	3.03	61	4	5.62	5.00	1	49.1	5.6	0.24	16.3
SF	9,610	4.42	70	4	6.88	6.00	1	45.1	-7.1	0.53	13.5
TURKEY	4,966	5.18	51	2	7	4.00	0	121.6	20.4	0.41	18.7
EGYPT	5,452	4.17	24	2	6.3	6.50	0	43.7	13.6	0.16	24.4
CHINA	8,130	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	14.2	22.2	0.07	13.2

A country's level of advancement in economic development ought to affect its ability to draw foreign investment to the country. Whether such advancements have similar or different effects on domestic and foreign biases depends on how domestic and foreign investors evaluate this factor for investment purposes. If a country's advancement in economic development could help lower the deadweight cost for foreign investors much more than for domestic investors, more foreign investors would be attracted to invest in the country and, as a result, fewer domestic investors would hold local equities. On the other hand, if a country's advancement in economic development could lower the deadweight cost for both domestic and foreign investors symmetrically, none of the economic-development measures would have any different impacts on foreign and domestic biases.

### *B. Capital Control*

Although capital control has been greatly reduced in many countries, some countries still place restrictions on foreign equity investment and international capital flow. Conceivably, capital control can still affect cross-border investment. The Economic Freedom Network constructs an index that measures the restrictions countries impose on capital flows (*RFLOW*) by assigning lower ratings to countries with more restrictions on foreign capital transactions. When domestic investments by foreigners and foreign investments by local residents are unrestricted, a rating of 10 is assigned to such countries. When these investments are restricted only in a few industries (e.g., banking, defense, and telecommunications), countries are assigned a rating of 8. When these investments are permitted but regulatory restrictions slow the mobility of capital, countries are rated 5. When either domestic investments by foreigners or foreign investments by local residents require approval from government authorities, such countries receive a rating of 2. A 0 rating is assigned when both domestic investments by foreigners and foreign investments by locals require government approval. The *RFLOW* data are downloaded from the website <http://www.freetheworld.com>. In Table IV, *RFLOW* ranges from 0 for Indonesia and Brazil to 10 for 13 countries, including two from Asia (Hong Kong and Singapore).

When a country imposes capital control, this will either prohibit or discourage foreign investors from holding stocks in companies in that country. Therefore, the degree of foreign bias for a country will be higher (more negative *FBIAS*) when the country has higher capital control measures. We also expect a strong influence of capital control measures, especially *RFLOW*, on the domestic bias. When a country has a low score on *RFLOW*, domestic investors find it more difficult to invest overseas as it requires government approval. Consequently, they are forced to have a disproportionate amount of their investments in the domestic market, resulting in an even larger domestic bias (more positive *DBIAS*).

We have also considered two alternative measures of capital control: one constructed by Edison and Warnock (2003) and Ahearne et al. (2004), and another

by Kaminsky and Schmukler (2000). The first is a measure of the intensity of foreign ownership restrictions, constructed based on the International Finance Corporation's (IFC) emerging market indices, and equals one minus the ratio of the total market capitalization of a country's IFC investible and global index stocks. The investible index comprises all stocks in the global index that are deemed by the IFC to be available to foreign investors. Since the IFC only constructs emerging market indices, we do not have observations on developed markets. Therefore, we decided not to use this measure in our analysis. The second measure was constructed by Kaminsky and Schmukler (2000).<sup>4</sup> We find that all countries except Malaysia and Indonesia are considered fully liberalized and have a value of 1 for the period of our study. As there is virtually no cross-sectional variation in this measure across countries, our analysis does not employ alternative measures either.

### C. Stock Market Development

Other things being equal, investors tend to invest in more developed stock markets because of higher liquidity and lower transaction costs in these markets. We construct several measures of stock market development.

The first variable is the relative size of the stock market of each country, measured by the stock market capitalization as a percentage of the country's GDP (*SIZE*). The value of *SIZE* ranges from 0.07% in Venezuela to 3.84% in Hong Kong. The next variable is the turnover ratio (*TURN*), defined as the ratio of the total value of stocks traded to the average market capitalization in a given country. To reduce any short-term fluctuation in turnover, we use the average turnover during the period 1997 through 1999 in our analysis. During this 3-year period, the average turnover ranges from 8% for Colombia to 374.1% for Taiwan. Data on *SIZE* and *TURN* of each country are collected from Standard and Poor's Emerging Stock Markets Factbook 2000.

The third variable is the transaction cost associated with trading foreign securities (*COST*). Our transaction cost estimates are from Elkins-Sherry Co., whose data are also studied by Domowitz, Glen, and Madhavan (2000). Elkins-McSherry provides trading cost analysis for pension funds, investment managers, and brokerage houses. Their estimates are based on commissions, fees, and market impact costs for the period September 1996 to December 1998. Although our sample period is 1999–2000, it is reasonable to assume that these transaction cost estimates typically do not change substantially and are still applicable to our analysis. We have transaction cost estimates for 42 out of 48 markets, ranging from 19.4 basis points for Japan to 239.5 basis points for Venezuela.

Finally, we also include a dummy variable (*DUMEMG*) that equals 1 for an emerging market and 0 otherwise.

<sup>4</sup> We thank Sergio Schmukler from the World Bank for providing us with the capital control series.

Similar to the discussion on economic-development measures, whether advancements of a country's stock market development have symmetric or asymmetric effects on domestic and foreign biases depend on how domestic and foreign investors view this factor for investment purposes. If such advancements help lower the deadweight cost for foreign investors much more than for domestic investors, foreign investors will have greater desires to invest more in the local equity market, resulting in domestic investors holding proportionately less local equities. On the other hand, if the advancements lower the deadweight cost for both domestic and foreign investors symmetrically, we expect none of the stock market development measures to have any different impact on the foreign and domestic biases.

#### *D. Familiarity*

One explanation for the home bias in investor holdings is that investors are less familiar with foreign markets. With less familiarity, investors face a greater information cost that discourages them from investing abroad. Kang and Stulz (1997) observe that U.S. investors tend to invest in larger and more internationally known manufacturing firms in Japan. The observation is consistent with the notion that investors are reluctant to hold securities of firms that they are not familiar with. Coval and Moskowitz (1999) find that, within the United States, mutual fund managers prefer investing in firms headquartered close to their home city. Grinblatt and Keloharju (2001) show that, in Finland, investors are more likely to trade stocks of firms that share the investor's same language and cultural background. For example, Finnish investors whose native language is Swedish are more likely to own stocks of companies in Finland that have annual reports in Swedish and Swedish-speaking CEOs than are investors whose native language is Finnish. There is also evidence that familiarity affects overseas listing decisions as well. Sarkissian and Schill (2004) find that geographic proximity of the foreign market, along with some other proxies for the degree of familiarity, play a dominant role in selecting overseas listing destinations.

We construct several familiarity variables for each pair of countries,  $i$  and  $j$ . For each country  $j$ , we calculate the average of each familiarity variable across all pairs. The first familiarity variable is common language. We hypothesize that mutual fund investors prefer to invest in foreign countries that share a common language with the home country. Data on language are obtained from the World Factbook 1999, which contains the major or official languages of countries from all over the world. The Factbook also reports the nonofficial language(s) that a significant proportion of the population also speaks. In our regression analysis of foreign bias of country  $i$  for country  $j$ , we construct a language dummy variable (*DUMLANG*) that equals 1 if countries  $i$  and  $j$  share a major language and 0 otherwise. As indicated in Table IV, countries such as the United States, the United Kingdom, Canada, India, and Australia share a common language (i.e., English), while countries such as Italy, Japan, Korea, and Indonesia have their own languages.



The second variable is geographical proximity. Data on geographical distances (*DISTANCE*) are obtained from [www.nber.org/~wei](http://www.nber.org/~wei), which calculates the bilateral distance between capital cities of countries.<sup>5</sup> Not surprisingly, European countries enjoy the closest proximity compared with the other countries, as almost a half of the number of countries in our sample are from Europe, and the average geographical distance ranges from 4,187 km for the Czech Republic to 5,910 km for Ireland. The most remote countries are Australia and New Zealand, with an average geographical distance of 13,000 km and 14,300 km from the other countries.

The third variable is the amount of bilateral trades (*TRADEB*), with values ranging from 0 to 1. A value of 0.1 for *TRADEB* between the United States (host) and United Kingdom means that 10% of the total U.S. trade (imports and exports) is with the United Kingdom. By chasing goods and services produced by foreign firms, the domestic investors obtain information about these companies. At a minimum, investors have more confidence in holding the stocks of foreign companies whose products are known to them.

Common language, geographic distance, and the amount of bilateral trades predict the likelihood of information flow between countries, measure the barriers that foreign investors face when accessing information overseas, and indicate the extent of informational asymmetry between foreign and domestic investors.<sup>6</sup> These variables obviously suggest that domestic and foreign investors face different deadweight costs. We hypothesize that mutual fund investors in country  $i$ , who are more familiar with country  $j$ , through sharing a common language, closer proximity, or having larger bilateral trades, will display less foreign bias toward mutual fund holdings in country  $j$  ( $FBIAS_{ij}$ ). We also expect the familiarity variables to affect the degree of domestic bias (*DBIAS*). If a country is more isolated from the rest of the world, high information costs will discourage home investors from investing overseas. In such a case, local investors would have to forego diversification benefits and invest an exceptionally higher fraction of their wealth in the home market instead.

### *E. Investor Protection*

Existing literature has established that financial markets are more developed in countries where investors' rights are more protected (see La Porta et al. (1997, 1998, 2000)). The implication is that investors are more reluctant to invest in countries with poorer investor rights. Table IV reports six measures of investor protection for 42 out of 48 countries, which are based on literatures of La Porta et al.

The first measure is the rule of law index (*LAW*), which assesses the law and order tradition in the country, as produced by the risk-rating agency,

<sup>5</sup> The data are used in Frankel and Wei (1998).

<sup>6</sup> We employ average values of *DUMLANG* and *DIST* in the regression analysis of domestic bias. The average value of *TRADEB* is not used as an explanatory variable in the regression analysis of home bias, because it is equal to 1/47 for each observation.

International Country Risk. The index has a scale of 0–10, with lower scores for countries without tradition for law and order. It ranges from 2.08 for Colombia to 10 for 12 countries, with 10 of these countries in North America and Europe.

The second measure is the accounting standard index (*ACC*), which defines the amount and transparency of the information available to investors. The index is created based on the examination and rating of companies' 1990 annual reports on the basis of their inclusion or omission of 90 items. These items fall into seven categories (general information, income statements, balance sheets, fund flows statements, accounting standards, stock data, and special items). For each country, at least three companies are included for constructing the index. Table IV shows that Sweden has the highest score (83), followed by the United Kingdom (78), and Singapore (78), and the countries such as Venezuela (40), Peru (38), and Egypt (24) have the lowest.

The third measure is the antidirector rights (*MINORITY*) measure; it indicates the degree of minority investor protection. The value varies from 0 to 5, with 0 indicating the lowest degree of protection and 5 the highest. Table IV shows that the United States has the highest score (5), while Italy, Belgium, and Mexico have the lowest (0).

The fourth measure includes the risk of expropriation index (*EXPROP*), which is constructed by the International Country Risk agency. This measure provides an assessment of the risk of "outright confiscation" or "forced nationalization." The index has a scale from 0 to 10, with lower scores for greater risks. This index varies from 5.22 for the Philippines to 9.98 for the United States, Switzerland, and the Netherlands.

The fifth measure is the efficiency of the judicial system (*EFFICIENCY*), which is constructed by Business International Corporation. It provides an assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms." It ranges from 3.25 for Thailand to 10 for 14 countries, which are primarily developed countries. *EFFICIENCY* is highly correlated with *LAW*—countries with high *LAW* scores also obtain high *EFFICIENCY* scores. But there are some exceptions. For example, Israel has 10 for *EFFICIENCY*, but only 4.82 for *LAW*.

The sixth measure is a dummy variable that captures the type of legal system. Among all of the legal systems, the English common law system provides the best legal protection to shareholders, while the German and French civil law system afford the worst legal protections. We therefore create one dummy variable (*DUMLEGAL*) that equals 1 for common-law countries and 0 otherwise. As seen in Table IV, 14 countries in our sample are based on the English common law.

Overall, developed countries generally score better on different investor protection measures, while developing countries score worse. However, not all developed countries receive favorable investor-protection rules. Italy and France, for example, have mediocre scores in most of the investor-protection measures. We expect an increase in informational asymmetries between domestic and foreign investors in countries with less favorable investor-protection mechanisms. In such a case, the deadweight cost for foreign investors investing in these

countries becomes greater relative to that for domestic investors. Consequently, foreign investors will hold less of local equities, while domestic investors will hold more in markets with lower investor-protection measures.

#### *F. Other Variables*

In addition to the above variables, we include several other variables that have the potential of explaining either the domestic or foreign bias. The first two variables are the past 1-year return (*RET1*) and the past 5-year return (*RET5*). Previous studies (Froot, Scharfstein, and Stein (1992)) document that institutional investors are positive feedback traders, buying when the market rises and selling when the market falls. Bohn and Tesar (1996) also find that U.S. investors exhibit “return-chasing” behavior, with a tendency to underweight countries whose stock markets have performed poorly. On the other hand, as shown by Grinblatt and Keloharju (2001), while foreign investors in Finland are positive feedback traders, domestic investors in Finland tend to be contrarian traders. If mutual fund managers pursue such a strategy, we expect investors to reduce the investment weight in the domestic market and increase the investment weight in the foreign market, when the past returns of the respective stock market increase.

The third variable is the correlation between returns of two countries (*CORR*). For each pair of countries,  $i$  and  $j$ , where  $i$  is the home country of mutual fund investors and  $j$  is the country in the mutual fund holdings, we compute the correlation coefficient using country returns in U.S. dollars from Datastream from 1995 to 1999. The correlation coefficient is a proxy for the diversification potential between the two countries. When the correlation between countries  $i$  and  $j$  is small, investors in country  $i$  enjoy a larger diversification gain from investing in country  $j$ ; they have greater desire to increase their equity holdings in country  $j$ . Therefore, the degree of foreign bias of country  $i$  for  $j$  will be smaller (less negative  $FBIAS_{ij}$ ). For each host country  $i$ , we also compute the average correlation coefficient with the other 47 countries. The smaller the average correlation between country  $i$  and the rest of the world, the larger the percentage of funds that investors in country  $i$  invest overseas and the smaller the percentage they invest in the domestic market. Hence, the degree of domestic bias is lower (smaller  $DBIAS_i$ ).

It is apparent from Table IV that *CORR* and distance, *DIST*, are negatively correlated. This relationship might imply a potential impact of *CORR/DIST* on the domestic or foreign bias. As we have discussed earlier, a closer proximity between two countries helps reduce the information costs of foreign investors and hence attracts more foreign investment in the country. However, if the return correlation between the two countries is sufficiently high, it might deter foreign investors from investing in the country.

The fourth variable is withholding tax (*TAX*); the data are obtained from Corporate Taxes: Price Waterhouse, 1996. Although previous studies, such as the one by French and Poterba (1991), do not find a significant relationship between taxes on foreign investment and capital flow, we include the tax variable

to capture the potential influence of *TAX* on the foreign bias. We expect foreign investors to reduce their stock holdings in countries with higher withholding taxes. Thus, the foreign bias will be larger (more negative *FBIAS*). As Table IV shows, the average bilateral withholding tax rate is between 0% for several of tax haven countries and 35% for Chile.

#### IV. Empirical Analysis

In this section, we test the empirical implications of Cooper and Kaplanis' (1986) model by examining the role of predetermined economic factors in the domestic and foreign biases. Specifically, we determine which factors influence each type of bias.

In all our tests, we stack up all the observations on the domestic-bias measure (*DBIAS<sub>ij</sub>*) and regress them against each set of the previously described explanatory variables. We do the same for the foreign-bias measure (*FBIAS<sub>ij</sub>*). We perform the regression analyses for the sample observations in 1999 and 2000 separately. The two different years of samples produce almost identical qualitative results. The reasons are twofold. One, the weight of each country's mutual fund holdings in the local market relative to the country's weight of the world market capitalization is fairly stable across the 2 years. Two, many of the predetermined variables do not change between 1999 and 2000. Consequently, to conserve space, in all subsequent sections, we report results from regressing average values of the dependent variables (*DBIAS* or *FBIAS*) against the predetermined variables of 1999.

##### A. Results for Domestic Bias

Table V presents regression results of the domestic-bias measure on each of the six groups of variables.<sup>7</sup> The second column shows the predicted signs of the coefficients, while the third through eighth columns contain estimates of the explanatory variables from the six categories separately. The table reveals several interesting observations.

It is apparent that some categories of predetermined variables play more significant roles than others in explaining the cross-sectional variation of *DBIAS*. The results show that the stock market development variables have the maximum, while investor-protection variables have the minimum, explanatory power for *DBIAS*. Judging from the adjusted  $R^2$  values, the former explain 28% of the cross-sectional variation of *DBIAS*, whereas the latter explain only 6%. All the variables that are proxies for stock market development are significant, at least at the 10% level. We find that *DBIAS* is negatively related to the size of the market (*SIZE*) and positively related to the dummy variable for emerging markets (*DUMEMG*). The domestic investors in an emerging market

<sup>7</sup> We also performed the same analysis using the average foreign-bias measure as the dependent variable. Interestingly but not surprisingly, the results mirrored the ones using the domestic-bias measure.

Table V  
Regression Analysis of the Domestic Bias

The dependent variable is the domestic bias ( $DBIAS_j$ ), the log ratio of the share of country  $j$  in mutual fund holdings of country  $j$  to the world market capitalization weight of country  $j$ . There are six sets of explanatory variables: (i) Economic development variables, including log GDP per capita ( $GDPC$ ), real GDP growth ( $RGDP$ ), trade volume scaled by GDP ( $TRADE$ ), foreign direct investment scaled by GDP ( $DI$ ), and country credit rating ( $CREDIT$ ); (ii) Capital control variables, including capital flows restrictions ( $RFLOW$ ); (iii) Stock market development variables, including stock market capitalization scaled by GDP ( $SIZE$ ), log turnover ratio ( $TURN$ ), log transaction costs ( $COST$ ), and emerging market dummy variable ( $DUMEMG$ ); (iv) Familiarity variables, including average of common language dummy variables ( $DUMLANG$ ) and average of log geographical distances ( $DIST$ ); (v) Investor protection variables, including rule of law index ( $LAW$ ), accounting standard index ( $ACC$ ), minority investor protection index ( $MINORITY$ ), risk of expropriation index ( $EXPROP$ ), efficiency of judicial system index ( $EFFICIENCY$ ), and legal system dummy variable ( $LEGAL$ ); (vi) Other variables, including past 1-year return ( $RET1$ ), past 5-year return ( $RET5$ ), average of return correlations ( $CORR$ ), and withholding tax percentage ( $TAX$ ). The  $t$ -statistics are based on standard errors adjusted for heteroskedasticity using the White (1980) method.

	Predicted Sign	Economic Development Variables		Capital Control		Stock Market Development		Familiarity		Investor Protection Variables		Other Variables	
		Coeff.	$t$ -stat	Coeff.	$t$ -stat	Coeff.	$t$ -stat	Coeff.	$t$ -stat	Coeff.	$t$ -stat	Coeff.	$t$ -stat
<i>CONSTANT</i>		13.67	1.65	5.56	6.13	1.42	0.53	-19.15	-1.73	14.11	5.06	2.85	0.76
<i>GDPC</i>	-	-0.93	-0.85										
<i>RGDP</i>	-	-0.11	-0.68										
<i>TRADE</i>	-	0.40	0.81										
<i>DI</i>	-	-0.03	-0.78										
<i>CREDIT</i>	-	-0.03	-0.50										
<i>RFLOW</i>	-			-0.25	-2.45								
<i>SIZE</i>	-					-0.52	-1.99						
<i>TURN</i>	-					-0.41	-1.93						
<i>COST</i>	+					1.15	1.73						
<i>DUMEMG</i>	+					1.33	2.86						
<i>DUMLANG</i>	-							-7.18	-2.07				
<i>DIST</i>	+							2.65	2.07				
<i>LAW</i>	-									0.89	2.05		
<i>ACC</i>	-									-0.01	-0.55		
<i>MINORITY</i>	-									0.08	0.24		
<i>EXPROP</i>	-									-1.58	-3.82		
<i>EFFICIENCY</i>	-									-0.35	-1.30		
<i>DUMLEGAL</i>	-									-0.14	-0.12		
<i>RET1</i>	-											-0.66	-0.57
<i>RET5</i>	-											-0.96	-0.36
<i>CORR</i>	+											-4.49	-0.95
<i>TAX</i>	+											22.39	1.42
Adjusted $R^2$		0.09		0.08		0.28		0.11		0.06		0.08	
Fitted Vars.		0.73	1.61	0.18	1.21	0.87	2.66	0.95	2.28	-0.11	-0.26	-0.07	-0.18

or a market with small market capitalization seem to enjoy smaller deadweight costs when investing in local equities relative to foreign investors and therefore are induced to put more investment in the local market. On the other hand, larger stock markets are more visible, more recognized, and more developed globally, and hence they are able to attract more foreign investments. Moreover, domestic investors in these markets ought to be more investment-savvy than those in emerging markets. These factors possibly contribute to the smaller domestic and foreign biases in these markets.

Conversely, only two of the investor-protection variables, *LAW* and *EXPROP*, are statistically significant at the 5% level. While the coefficient on *LAW* is positive, the coefficient on *EXPROP* is negative. When a country strongly enforces its law, the confidence of domestic investors in the regulatory system is boosted and hence they are willing to invest more locally than overseas. Similarly, the greater expropriation risk should have less impact on the decisions of local investors than on those of foreign investors to invest in the local market. As a result, when the expropriation risk is small (larger *EXPROP*), relatively more foreign investments are attracted to the local market and hence we observe a lower *DBIAS*.

Furthermore, restrictions on capital flows (*RFLOW*) have a significant negative impact on *DBIAS*; the coefficient is  $-0.25$  with a  $t$ -ratio of  $-2.45$ . As we have explained in Section III, the lower the *RFLOW*, the greater the restrictions on foreign investors investing in local markets and on domestic investors investing in foreign markets. This finding provides two implications. First, because of greater restrictions imposed on domestic investors investing abroad, they turn to local markets. Second, the fewer restrictions imposed on the mobility of capital into and out of the country encourage greater flows of both the foreign capital into the domestic market and, at the same time, local capital into foreign markets. Overall, the evidence is consistent with the hypothesis that the higher deadweight costs for domestic investors investing overseas and foreign investors investing in local markets increase the measure for domestic bias.

Common language (*DUMLANG*) and geographical proximity (*DIST*), which are proxies for familiarity, are both shown to have a statistically significant impact on domestic mutual funds' preference for local equities. *DUMLANG* is negatively, while *DIST* is positively, related to *DBIAS*. Therefore, countries that share a common language have a smaller domestic bias, while those that are farther away from the rest of the world are inclined to have a larger domestic bias. Thus, it is evident that investors tend to weight domestic rather than foreign equities more heavily when they are less familiar with foreign markets. This is consistent with the hypothesis that the domestic bias increases when the deadweight cost for domestic investors investing overseas increases.

In contrast, however, none of the other variables that measure a country's economic development is statistically significant at the 5% level. This finding suggests that the economic performance of a country plays virtually no role in the domestic investors' asset allocation of funds to the local market.

At this juncture, it is interesting to evaluate the incremental predictive power of each group of explanatory variables when all the variables are estimated jointly. However, as there are only 26 countries, it is not feasible to include all explanatory variables in a single regression. Instead, we employ an alternative approach. In this approach, we first obtain the fitted values of the above six different regressions and next regress the domestic-bias measure against all the fitted values jointly. The regression results, as indicated in the last row of Table V, show that only the coefficients associated with the fitted stock market development and familiarity variables remain statistically significant. Thus, these results reinforce the above evidence that stock market development and familiarity are the two important factors that explain the cross-sectional variation of the domestic bias.

It is important to emphasize that our regression results are not driven by the large United States' market-capitalization weight in the world market portfolio. We have re-estimated all the regression results of Table V by removing the United States from the sample, and the qualitative results remain materially unchanged. We have also verified the results in the remaining tables of this study under these conditions and found that our results are robust.<sup>8</sup>

### B. Results for Foreign Bias

Table VI presents regression results for the foreign-bias measure,  $FBIAS_{ij}$ . In contrast to Table V, we now include an additional independent variable,  $INV\_DBIAS_i$ , defined as  $(1 - DBIAS_i)$ , in all regressions. The additional variable controls for the automatic impact of the domestic bias on the foreign bias; if investors hold a disproportionate share of the mutual fund portfolio in their local market, then the remaining portion that they could invest in the other countries must be disproportionately low. As Table VI indicates, this effect is strongly evident: an increase in  $INV\_DBIAS_i$  leads to a significant decrease in  $FBIAS_{ij}$  in almost all specification models. The coefficients for  $INV\_DBIAS_i$  are mainly negative and statistically significant at conventional levels.

The regression results for  $FBIAS$  are not only strikingly different from those of  $DBIAS$ , but also more pronounced. In contrast to those for  $DBIAS$ , many of the explanatory variables for  $FBIAS$  are statistically significant. The adjusted  $R^2$  values from the  $FBIAS$  regressions are substantially larger than their counterparts reported in Table V. While the corresponding 2–24% increases in the adjusted  $R^2$  values are partly attributed to the strong correlation between  $FBIAS$  and  $INV\_DBIAS$ , they are also due to the predictive power of the variables for  $FBIAS$ . Therefore, we look at the order of its magnitude across the six regression specifications as an indication of the relative explanatory powers of the different groups of explanatory variables.

Among the six different categories of explanatory variables, both the stock market development and investor-protection variables exert the largest influence on the foreign bias, whereas the capital-control variables exert the least.

<sup>8</sup> These additional results can be easily obtained from the authors upon request.

Table VI  
Regression Analysis of the Foreign Bias

The dependent variable is the foreign bias ( $FBIAS_{ij}$ ), the log ratio of the share of country  $j$  in mutual fund holdings of host country  $i$  ( $i \neq j$ ) to the world market capitalization weight of country  $j$ . There are six sets of explanatory variables: (i) Economic development variables, including log GDP per capita ( $GDPC$ ), real GDP growth ( $RGDP$ ), trade volume scaled by GDP ( $TRADE$ ), foreign direct investment scaled by GDP ( $DI$ ), and country credit rating ( $CREDIT$ ); (ii) Capital control variable, including capital flows restrictions ( $RFLOW$ ); (iii) Stock market development variables, including stock market capitalization scaled by GDP ( $SIZE$ ), log turnover ratio ( $TURN$ ), log transaction costs ( $COST$ ), and emerging market dummy variable ( $DUMEMG$ ); (iv) Familiarity variables, including common language dummy variable for two countries ( $DUMLANG$ ), log geographical distance between two countries ( $DIST$ ), and bilateral trade volume between two countries ( $TRADEB$ ); (v) Investor protection variables, including rule of law index ( $LAW$ ), accounting standard index ( $ACC$ ), minority investor protection index ( $MINORITY$ ), risk of expropriation index ( $EXPROP$ ), efficiency of judicial system index ( $EFFICIENCY$ ), and legal system dummy variable ( $DUMLEGAL$ ); (vi) Other variables, including past 1-year return ( $RET1$ ), past 5-year return ( $RET5$ ), correlation between returns of two countries ( $CORR$ ) and withholding tax percentage ( $TAX$ ). The factor  $INV\_DBIAS$  equals one minus domestic bias for country  $i$ , and is to control for the automatic impact of home bias exhibited in country  $i$  on the foreign bias. The  $t$ -statistics are based on standard errors adjusted for heteroskedasticity using the White (1980) method.

	Predicted Sign	Economic Development Variables		Capital Control		Stock Market Development		Familiarity		Investor Protection Variables		Other Variables		All Variables	
		Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat	Coeff.	<i>t</i> -stat
CONSTANT		−9.49	<b>−9.95</b>	−4.72	<b>−20.28</b>	−0.02	−0.02	6.92	<b>10.38</b>	−12.4	<b>−15.8</b>	−5.03	<b>−16.7</b>	13.88	<b>4.73</b>
INV_DBIAS	−	−3.92	<b>−5.98</b>	−2.97	<b>−4.12</b>	−5.33	<b>−9.49</b>	0.88	0.76	−3.75	<b>−5.71</b>	−2.41	<b>−3.72</b>	−2.84	<b>−4.47</b>
GDPC	+	0.41	<b>2.75</b>											−0.84	<b>−3.28</b>
RGDP	+	0.23	<b>5.94</b>											0.33	<b>6.93</b>
TRADE	+	0.18	1.31											−0.83	<b>−4.65</b>
DI	+	0.05	<b>2.41</b>											0.00	0.05
CREDIT	+	0.03	<b>3.64</b>											0.03	1.55
RFLOW	+			0.33	<b>11.20</b>									0.20	<b>2.59</b>
SIZE	+					0.26	<b>2.89</b>							0.41	<b>3.39</b>
TURN	+					0.76	<b>6.09</b>							0.12	0.75
COST	−					−1.26	<b>−5.81</b>							−0.51	<b>−1.99</b>
DUMEMG	−					−1.42	<b>−5.81</b>							−1.86	<b>−3.91</b>
DUMLANG	+							1.62	<b>7.02</b>					0.95	<b>4.28</b>
DIST	−							−1.16	<b>−14.82</b>					−0.90	<b>−10.62</b>
TRADEB	+							5.32	<b>2.84</b>					−3.57	<b>−3.20</b>
LAW	+									0.16	<b>2.04</b>			0.14	1.29
ACC	+									0.07	<b>7.00</b>			−0.01	−0.47
MINORITY	+									−0.04	−0.43			0.10	1.05
EXPROP	+									0.80	<b>5.35</b>			0.19	0.75
EFFICIENCY	+									−0.23	<b>−3.68</b>			−0.31	<b>−3.49</b>
DUMLEGAL	+									−0.15	−0.59			−0.78	<b>−2.66</b>
RET1	+											0.92	<b>1.99</b>	1.84	<b>4.56</b>
RET5	+											1.99	<b>3.91</b>	−2.59	<b>−3.97</b>
CORR	−											5.90	<b>12.98</b>	1.25	<b>2.08</b>
TAX	−											−2.58	<b>−2.49</b>	−4.90	<b>−4.38</b>
Adjusted $R^2$		0.23		0.11		0.30		0.22		0.30		0.16		0.47	
Fitted Vars.		0.43	<b>4.89</b>	−0.13	<b>−3.09</b>	0.78	<b>9.03</b>	0.55	<b>5.50</b>	0.11	1.71	0.15	<b>1.98</b>		



All of the stock market development variables are statistically significant and bear the correct signs. Intuitively, foreign investors would have greater desires to invest more (less negative *FBIAS*) in countries with large stock market capitalization (*SIZE*), with high stock market turnover (*TURN*), with lower transaction costs (*COST*), and in nonemerging markets (*DUMEMG* = 0). In other words, mutual funds tend to invest in large, highly visible developed markets, which are more liquid and have lower trading costs. This result is also consistent with our earlier finding of a smaller domestic bias associated with larger stock market capitalization. Similarly, mutual funds also are more inclined to invest in countries that offer strong investor-protection rights. As indicated in Table VI, variables that are proxies for investor protection mainly have a significant effect on the allocation of foreign mutual fund holdings in a country. Except for those on *MINORITY* and *DUMLEGAL*, the coefficients on *LAW*, *ACC*, *EFFICIENCY*, and *EXPROP* are all statistically significant at conventional levels. It is a little puzzling that the efficiency of the judicial system has a significantly negative, as opposed to a positive, impact on *FBIAS*. In contrast, *LAW*, *ACC*, and *EXPROP* explain *FBIAS* in the direction consistent with our predictions. When making decisions whether or not to invest in a particular country, foreign investors factor in the country's laws, accounting standards, and the level of expropriation risk. Comparing the results of Tables V and VI, we see that foreign investors are more concerned about a country's ability to offer better investor-protection rights than are domestic investors. The greater the country's protection of investors' rights, the smaller its foreign bias.

Economic-development and familiarity variables also exhibit significant effects on *FBIAS*, but they are not as strong as those of stock market development and investor-protection variables. All three of the familiarity variables, while four of five economic-development variables, are statistically significant and have the predicted signs. As predicted, foreign investors tend to allocate more of their equity investment in a country with a higher GDP per capita (*GDPC*), a higher real growth rate of GDP (*RGDP*), a larger foreign direct-stock investment inward per capita (*DI*), and a higher country credit rating (*CREDIT*). Furthermore, they also tend to invest more of their money in countries that share a common language and are closer in geographical proximity; and mutual fund holdings in a foreign country are higher when there is a larger bilateral trade volume. The results therefore suggest that while familiarity influences the distribution of foreign and local mutual fund holdings, the advancement of a country's economic development only affects the foreign fund holdings.

As expected, capital control has a strong impact on the investment behavior of foreign investors. The coefficient on *RFLOW* is 0.33 with a *t*-ratio of 12.2, suggesting that countries with fewer restrictions on capital flow (higher *RFLOW*) experience greater foreign investments (higher *FBIAS*). Similarly, countries with lower withholding taxes promote more foreign investments.

When all the explanatory variables are estimated jointly, some of the coefficients are no longer statistically significant. While the stock market development and familiarity variables remain statistically significant, most of the

Table VII  
Regression Analysis of the Foreign and Home Bias Calculated Based on the World Float Portfolio

The dependent variable is foreign bias ( $FBIAS\_FLOAT_{ij}$ ) that equals  $\log(w_{ij}/w_j)$  or domestic bias ( $DBIAS\_FLOAT_j$ ) that equals  $\log(w_{ij}/w_j)$ , where  $w_{ij}$  is the share of country  $j$  in mutual fund holdings of host country  $i$  ( $i \neq j$  for calculating foreign bias) and  $w_j$  is the world market capitalization weight of country  $j$  using the world float portfolio, which adjusts for closely held shares based on figures reported in Dalquist et al. (2002). The explanatory variables are  $INV\_DBIAS$ , which equals  $(1 - DBIAS\_FLOAT_j)$ ; log GDP per capita ( $GDPC$ ); real GDP growth ( $RGDP$ ); trade volume scaled by GDP ( $TRADE$ ); foreign direct investment scaled by GDP ( $DI$ ); country credit rating ( $CREDIT$ ); capital flows restrictions ( $RFLOW$ ); stock market capitalization scaled by GDP ( $SIZE$ ); log turnover ratio ( $TURN$ ); log transaction costs ( $COST$ ); emerging market dummy variable ( $DUMEMG$ ); common language dummy variable ( $DUMLANG$ ) for two countries; log geographical distance between two countries ( $DIST$ ); and bilateral trade volume between two countries ( $TRADEB$ ); rule of law index ( $LAW$ ); accounting standard index ( $ACC$ ); risk of expropriation index ( $EXPROP$ ); efficiency of judicial system index ( $EFFICIENCY$ ); past 1-year return ( $RET1$ ); past 5-year return ( $RET5$ ); correlation between returns of two countries ( $CORR$ ); and withholding tax percentage ( $TAX$ ). The  $t$ -statistics are based on standard errors adjusted for heteroskedasticity using the White (1980) method.

	DBIAS_FLOAT												FBIAS_FLOAT	
	Economic Development Variables		Capital Control		Stock Market Development		Familiarity		Investor Protection Variables		Other Variables		All Variables	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
CONSTANT	16.64	1.78	6.32	5.97	2.62	0.91	-23.04	-1.75	17.65	5.68	2.62	0.71	17.44	5.47
INV_DBIAS													-3.05	-4.79
GDPC	-0.97	-0.84											-0.86	-3.24
RGDP	-0.19	-1.05											0.35	6.67
TRADE	0.14	0.24											-0.86	-4.48
DI	-0.03	-0.60											0.01	0.25
CREDIT	-0.04	-0.80											0.02	1.03
RFLOW			-0.32	-2.73									0.18	2.22
SIZE					-0.67	-2.02							0.42	3.25
TURN					-0.64	-2.62							0.26	1.55
COST					1.18	1.45							-0.59	-2.06
DUMEMG					1.68	3.11							-2.33	-4.68
DUMLANG							-9.49	-2.30					1.00	4.32
DIST							3.14	2.07					-0.98	-10.92
TRADEB													-4.54	-3.92
LAW									1.10	2.01			0.28	2.10
ACC									-0.03	-0.92			-0.02	-1.47
MINORITY									0.11	0.34			0.07	0.69
EXPROP									-2.00	-3.62			-0.06	-0.22
EFFICIENCY									-0.40	-1.57			-0.32	-3.33
DUMLEGAL									-0.26	-0.19			-0.59	-1.86
RET1											-1.30	-1.00	2.22	5.01
RET5											-0.30	-0.09	-3.57	-5.15
CORR											-4.96	-1.01	1.70	2.62
TAX											27.64	1.71	-3.78	-3.10
Adjusted R <sup>2</sup>	0.11		0.09		0.31		0.13		0.14		0.07		0.41	

economic-development and investor-protection variables are either insignificant or bear the wrong sign. In an alternative approach in which we regress the foreign-bias measure on all of the fitted explanatory variables from the first stage regressions, the stock market development and familiarity variables are again the most statistically significant. Conversely, the coefficient of the fitted value of capital control has the wrong sign, and that of investor protection is insignificant. These results are broadly consistent with those in Table V, which shows that only the stock market development and familiarity contribute to the investment decisions of domestic investors. Here, we find that these two categories of variables have the most significant influence on the investment decisions of foreign investors as well.

Our results are closely related to those of Portes and Rey (2000). Portes and Rey (2000) find that the market size (equity market capitalization), openness (population or the ratio of total trade to GDP), efficiency of transactions (an index of sophistication of the financial market), and distance play a critical role in equity transaction flows between 14 developed countries for the period 1989 to 1996. While our study and theirs address a different issue, we both reach similar conclusions. The implication is that the market size, openness, and distance not only determine the home bias, but also the bilateral equity flows between countries. More importantly, Portes and Rey's evidence helps to support our earlier claim that our results are not necessarily restricted to mutual funds, but can be generalized to include other institutional investors as well.

### C. Additional Tests

#### C.1. Domestic Bias Calculated Based on a World Float Portfolio

According to Dahlquist, Pinkowitz, Stulz, and Williamson (2003), the prevalence of closely held firms in countries with poor investor protection explains part of the home bias of U.S. investors. Based on their estimates of the percentage of closely held market capitalization, we construct a world float portfolio with country weights based on the amount of free-floating shares available to investors. Next, we calculate the float-adjusted foreign bias (*FBIAS\_FLOAT*) and domestic bias (*DBIAS\_FLOAT*), which are used as dependent variables in the regression analysis. The results are reported in Table VII. The second to the seventh columns of the table show regression estimates of *DBIAS\_FLOAT* against the respective six groups of explanatory variables, and the final column shows those of *FBIAS\_FLOAT* on all variables jointly, while conditioning on *INV\_DBIAS* ( $=1 - DBIAS\_FLOAT$ ).

The results for the float-adjusted domestic bias, while more pronounced, are qualitatively the same as those for the unadjusted domestic bias, *DBIAS*. Explanatory variables that have a significant effect on *DBIAS* also exhibit a significant effect on *DBIAS\_FLOAT*, but the predictive power of the latter is generally slightly greater than that of the former. Consistent with the results of Table V, the stock market development and familiarity variables play a significant role

**Table VIII**  
**Regression Analysis of the Foreign Bias for Financial**  
**and Nonfinancial Centers**

The dependent variable is the foreign bias ( $FBIAS_{ij}$ ), as measured by the log ratio of the share of country  $j$  in mutual fund holdings of host country  $i$  to the world market capitalization weight of country  $j$ . The explanatory variables are  $INV\_DBIAS$  (one minus domestic bias for country  $i$ ); log GDP per capita ( $GDPC$ ); real GDP growth ( $RGDP$ ); trade volume scaled by GDP ( $TRADE$ ); foreign direct investment scaled by GDP ( $DI$ ); country credit rating ( $CREDIT$ ); capital flows restrictions ( $RFLOW$ ); stock market capitalization scaled by GDP ( $SIZE$ ); log turnover ratio ( $TURN$ ); log transaction costs ( $COST$ ); emerging market dummy variable ( $DUMEMG$ ); common language dummy variable ( $DUMLANG$ ) for two countries; log geographical distance between two countries ( $DIST$ ); and bilateral trade volume between two countries ( $TRADEB$ ); rule of law index ( $LAW$ ); accounting standard index ( $ACC$ ); risk of expropriation index ( $EXPROP$ ); efficiency of judicial system index ( $EFFICIENCY$ ); past 1-year return ( $RET1$ ); past 5-year return ( $RET5$ ); correlation between returns of two countries ( $CORR$ ); and withholding tax percentage ( $TAX$ ). The table summarizes estimates of seemingly unrelated regressions corresponding to financial and nonfinancial centers. The financial centers are: the United States, the United Kingdom, Luxembourg, Switzerland, Ireland, Japan, Hong Kong, and Singapore. The  $t$ -statistics are based on standard errors adjusted for heteroskedasticity using the White (1980) method. The  $F$ -stat tests the hypothesis that the coefficients of the respective variable are the same between financial and nonfinancial centers.

	Predicted Sign	Financial Centers		Nonfinancial Centers		$F$ -stat. ( $p$ -value)
		Coeff.	$t$ -stat.	Coeff.	$t$ -stat.	
<i>CONSTANT</i>		13.82	<b>4.75</b>	13.98	<b>4.47</b>	0.02 (0.96)
<i>INV\_DBIAS</i>	—	−3.14	− <b>3.09</b>	−2.11	− <b>2.01</b>	0.42 (0.51)
<i>GDPC</i>	+	−0.41	−1.59	−1.04	− <b>3.70</b>	2.68 (0.10)
<i>RGDP</i>	+	0.24	<b>4.62</b>	0.37	<b>6.59</b>	2.93 (0.08)
<i>TRADE</i>	+	−0.65	− <b>3.23</b>	−0.89	− <b>3.93</b>	0.61 (0.44)
<i>DI</i>	+	−0.03	−0.66	0.02	0.32	0.46 (0.49)
<i>CREDIT</i>	+	0.01	0.66	0.03	1.63	0.56 (0.45)
<i>RFLOW</i>	+	0.01	0.19	0.28	<b>3.42</b>	5.79 (0.01)
<i>SIZE</i>	+	0.17	1.16	0.49	<b>3.13</b>	3.04 (0.08)
<i>TURN</i>	+	0.47	<b>2.71</b>	−0.03	−0.18	3.79 (0.05)
<i>COST</i>	—	−0.82	− <b>2.86</b>	−0.34	− <b>2.11</b>	1.27 (0.26)
<i>DUMEMG</i>	—	−1.42	− <b>2.60</b>	−2.09	− <b>3.56</b>	2.19 (0.13)
<i>DUMLANG</i>	+	0.33	1.36	1.03	<b>3.30</b>	2.89 (0.08)
<i>DIST</i>	—	−0.84	− <b>8.65</b>	−0.94	− <b>8.70</b>	0.43 (0.51)
<i>TRADEB</i>	+	−5.32	− <b>2.43</b>	−3.17	− <b>1.98</b>	0.80 (0.39)
<i>LAW</i>	+	−0.10	−0.90	0.25	<b>2.15</b>	3.09 (0.06)
<i>ACC</i>	+	0.00	−0.20	−0.01	−0.45	0.51 (0.48)
<i>MINORITY</i>	+	0.02	0.18	0.14	1.35	0.52 (0.47)
<i>EXPROP</i>	+	−0.09	−0.39	0.31	1.19	1.31 (0.26)
<i>EFFICIENCY</i>	+	−0.08	−0.87	−0.43	− <b>4.30</b>	6.92 (0.01)
<i>DUMLEGAL</i>	+	0.25	0.73	−1.13	− <b>3.24</b>	8.03 (0.01)
<i>RET1</i>	+	1.21	<b>2.66</b>	2.19	<b>4.38</b>	2.11 (0.14)
<i>RET5</i>	+	−2.42	− <b>3.11</b>	−2.67	− <b>3.12</b>	0.22 (0.63)
<i>CORR</i>	—	1.33	<b>1.99</b>	1.10	1.62	0.05 (0.82)
<i>TAX</i>	—	−1.32	−1.17	−6.82	− <b>5.34</b>	10.46 (0.01)
Adjusted $R^2$			0.56		0.53	

in explaining *DBIAS\_FLOAT*, with the former having the largest adjusted  $R^2$  value of 31%. Similarly, the results for the float-adjusted foreign bias are also generally consistent with those for the unadjusted foreign bias, *FBIAS*. We find that all the variables that previously had an effect on *FBIAS* still possess a significant explanatory power for *FBIAS\_FLOAT*. In particular, the stock market development and familiarity variables maintain their statistically significant explanatory power for the foreign bias.

Overall, the results corroborate our evidence that several predetermined variables not only are significant, but also exhibit varying effects on the domestic bias and foreign bias, even after controlling for closely held firms.

### *C.2. Financial versus Nonfinancial Centers*

Here we consider the possibility that the results we have so far established may be due to the approach we use to classify funds. As discussed earlier, we group funds into domestic and foreign funds strictly based on the country of incorporation of the funds. This might create a problem, as it is quite common to incorporate mutual funds in some financial centers that will receive subscriptions from investors all around the world. For example, Asian investors might subscribe to a mutual fund incorporated in Luxembourg or the U.K., or U.S. investors might subscribe to a fund incorporated in Hong Kong or Singapore. As a result, the funds incorporated in financial centers might serve investors from other countries as well.

To examine this possibility, we divide the funds into two groups: financial centers and nonfinancial centers. The financial centers include the United States, the United Kingdom, Switzerland, Luxembourg, Ireland, Japan, Hong Kong, and Singapore, with the remaining host countries classified as nonfinancial centers. We re-estimate all the regressions for both samples using the foreign bias as the dependent variable and the same set of explanatory variables. We use a seemingly unrelated regression method to allow for any possible correlation in the residuals of the two regressions. Results are presented in Table VIII. The overall results indicate that our earlier results are robust. The coefficients that are significant in the whole sample remain significant in the nonfinancial center subsample. In fact, the level of significance for some of the coefficients in the nonfinancial center subsample appears to be higher than those in the financial centers subsample.

## **V. Conclusion**

This study presents a comprehensive and thorough analysis of the mutual fund holdings of 26 countries, with a breakdown of their allocations across 48 countries, for the years 1999 and 2000. It is the first to seek evidence of how the home bias is distributed across different countries from all over the world, including developed and emerging markets. In contrast to earlier studies in

the literature, we distinguish between the domestic bias (overweighting of the domestic market) and the foreign bias (under- or overweighting of the foreign markets) and examine what economic factors can possibly capture their cross-sectional variation across countries.

Our analysis provides robust evidence of the home bias for every developed and developing market. More interestingly, different countries exhibit different degrees of the domestic bias (domestic residents overweighting the country) and of the foreign bias (foreign investors under- or overweighting the country). The evidence motivates us to investigate whether the cross-sectional variation in the foreign bias and domestic bias can be explained by some common factors. The results show that six categories of predetermined variables drawn from the literature have varying significant effects on the two types of biases. Only the stock market development and familiarity variables play an important role in the domestic bias. These two variables also exhibit significant, but asymmetric, effects on the foreign bias. When a host country is more remote from the rest of the world and has a different language, domestic investors will invest more in the market, while foreign investors will invest less. In contrast, the remaining factors such as economic development, capital control, and investor protection have a less-pervasive impact on the foreign and domestic biases.

Finally, we draw a connection between our results and those on international cross listings. Recent studies such as those by Sarkissian and Schill (2004) and Pogano, Röell, and Zechner (2002) have examined the market preference of firms listing their stocks abroad. Interestingly, the factors that influence overseas-listing decisions are those related to geographical proximity of the foreign market along with other variables that proxy for the degree of familiarity, variables that are shown in this paper to affect the foreign bias as well. Therefore, our results suggest that the overseas-listing decisions are not driven purely by the supply of foreign stock, but also by the demand for such stock. The reason that the U.S. market lists so many American Depositary Receipts from other developed countries like Canada and European countries is in part due to the lower informational asymmetry associated with companies from these countries, hence creating a demand for the stock in the U.S. market.

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