

Corporate Governance and the Home Bias

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Abstract

This paper shows that there is a close relation between corporate governance and the portfolios held by investors. Most firms in countries with poor investor protection are controlled by large shareholders, so that only a fraction of the shares issued by firms in these countries can be freely traded and held by portfolio investors. We show that the prevalence of closely-held firms in most countries helps explain why these countries exhibit a home bias in share holdings and why U.S. investors underweight foreign countries in their portfolios. We construct an estimate of the world portfolio of shares available to investors who are not controlling shareholders (the world float portfolio). The world float portfolio differs sharply from the world market portfolio. In regressions explaining the portfolio weights of U.S. investors, the world float portfolio has a positive significant coefficient but the world market portfolio has no additional explanatory power. This result holds when we control for country characteristics. An analysis of foreign investor holdings at the firm level for Sweden confirms the importance of the float portfolio as a determinant of these holdings.

I. Introduction

The home bias is the least controversial stylized fact in international finance. There is now much evidence that investors overweight domestic stocks in their common stock portfolios. Excellent data on stock ownership is available for the U.S. for 1997. U.S. investors have roughly 91% of their stock investments in U.S. stocks, but U.S. stocks represent only 49.60% of the world market portfolio. If investors are mean-variance optimizers in a world of perfect financial markets,

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they should hold the world market portfolio of common stocks. U.S. investors are not close to holding the world market portfolio of common stocks and neither are investors in other countries.

Many authors have attempted to explain the home bias. As reviewed in Lewis (1999) and Karolyi and Stulz (2003), explanations proposed in the literature include barriers to international investment, departures from purchasing power parity, information asymmetries between domestic and foreign investors, hedging of human capital or other non-traded assets, and over-optimism of domestic investors toward home assets. This vast literature has not succeeded in providing a generally accepted explanation for the home bias.

In this paper, we show that differences in corporate governance across countries can help us understand the home bias through their impact on share ownership. La Porta, Lopez-de-Silanes, and Shleifer (1999) establish that firms outside the U.S. are typically controlled by a large resident shareholder. The large shareholder is most often a family. In countries where controlling shareholders are economically important, we would expect to see a large home bias in equity holdings since a large fraction of the outstanding shares is held by resident controlling shareholders. However, less intuitively, we show that the economic importance of controlling shareholders outside the U.S. helps explain the home bias of U.S. investors and leads non-U.S. investors to weight U.S. stocks more in their portfolios.

The world market portfolio used in the literature as a benchmark for estimates of the extent of the home bias is constructed assuming that all shares issued by a corporation could potentially be held by foreign investors. This is not correct. If a firm has a controlling shareholder who holds 51% of the firm's shares, only 49% of the firm's shares will be available for purchase by outside shareholders. An increase in the demand for a firm's shares by small shareholders will not lead the controlling shareholder to lower his holdings to less than 50% because in doing so he would lose the benefits from controlling the company. The controlling shareholder is therefore only willing to sell his shares as a control block for a price significantly above the price at which shares trade on the open market—he demands a control premium to sell. Nenova (2003) and Dyck and Zingales (2001) show that the benefits from control are substantial in most countries. We call portfolio investors those investors whose return from shares consists only of dividends and price appreciation, so that the shares these investors hold yield no private benefits from control. Shares held by investors who are controlling shareholders or who belong to a coalition of shareholders who control the firm cannot be bought by portfolio investors and therefore should not be included in the world market portfolio when estimating the home bias of these investors.

We construct estimates of the fraction of the shares that are closely held for 51 countries in 1997. Our estimate can also be thought of as measuring the float of shares in each market as a fraction of the market's capitalization, which would be one minus the fraction of closely-held shares. We define closely-held shares to be those held by a stockholder who would not sell without being paid a premium to reflect the benefits he derives from control. We call such a shareholder a controlling shareholder. We classify as controlling shareholders all shareholders

who are known to hold more than 5% of a firm's shares. Across the 51 countries, the average estimate is that 32% of the shares are not available for trading.

The typical country has a significant home bias explained by the concentration of ownership. To see this, consider a country whose market represents 1% of world stock market capitalization where controlling shareholders own 32% of the stock market capitalization. Assume further that the stock market wealth of investors in the country is equal to the capitalization of the local stock market. If the investors in the country had no home bias except that they hold shares to control local firms, these investors would hold more than 32% of the local stock market capitalization, which is more than 32 times what they would hold if they were to hold the world market portfolio.

We show that, under some assumptions, portfolio investors hold the world market portfolio of shares that are not closely held. Using data from 1997, we construct an estimate of this portfolio, which we refer to as the world float portfolio. The U.S. market weight in the world float portfolio is 58.32%, in comparison with its weight of 49.60% in the world market portfolio. This is because, relative to other countries, more of the shares issued by U.S. corporations can be held by portfolio investors because fewer of these shares are held by controlling shareholders. Consequently, portfolio investors should overweight the U.S. in their holdings relative to the share of the U.S. in the world market portfolio. We estimate closely-held shares to represent 7.94% of U.S. equities. Adding the holdings of controlling investors of U.S. corporations to the holdings U.S. equities portfolio investors would have if they held the world float portfolio, we find U.S. investors would hold at least 63.07% of their equities in U.S. shares when portfolio investors do not have a home bias. Taking into account the shares held by controlling shareholders has the effect of increasing the share of the U.S. in the world float portfolio and, thereby, reducing (but not eliminating) the home bias of U.S. investors as traditionally measured.

In our empirical analysis, we show that the share of a country's equities in the stock portfolio of U.S. investors is negatively related to the share of the stock market capitalization of the country held by large shareholders. The literature has established that financial markets are more developed in countries where investors' rights are better protected and firms are more likely to have a controlling shareholder or shareholder group than in countries where investors' rights are less protected (see La Porta, Lopez-de-Silanes, Shleifer, and Vishny (LLSV) (2000)). Hence, it could be that U.S. investors are more reluctant to invest in countries with poorer investor rights and that our estimate of shares held by controlling shareholders serves as a proxy for investor rights. We investigate this issue in multiple regressions and find that differences in investor rights and financial development across countries cannot explain why U.S. investors invest less in countries where large shareholders own a larger fraction of the market's capitalization when we control for the world float portfolio. This is not surprising since differences in investor rights and financial development should be capitalized in share prices so that investing in stocks will be a fair investment in a country regardless of that country's protection of investor rights and its financial development.

If we are right that ownership concentration can help explain the extent of the home bias, we should find that controlling shareholders are mostly local investors

and that foreign investors invest more in firms that are less closely held. Sweden has data on the identity of controlling shareholders, on the fractions of shares that are closely held, and on the fraction of shares held by foreign investors. We find that instances where foreign investors belong to the controlling coalition are rare and that a firm's weight in the float portfolio is an important determinant of foreign ownership. Surprisingly, we also find that foreign investors as a whole are closer to holding the Swedish float portfolio than U.S. investors. Finally, the difference between the fraction of voting rights held by the controlling coalition and the fraction of cash flow rights held by the same coalition, which is often viewed as a measure of agency costs, does not seem to be an important determinant of the ownership of Swedish shares by foreign investors.

The paper proceeds as follows. In Section II, we review the literature on the relation between ownership concentration and investor rights, and then discuss the conditions under which it is optimal for investors to hold the world float portfolio. We then estimate in Section III the fraction of shares held by large shareholders for 51 countries. In Section IV, we compare the world market portfolio to the world float portfolio. In Section V, we show that the fraction of shares held by U.S. investors in 50 foreign countries is negatively related to the proportion of shares held by controlling shareholders. We further show that the world float portfolio explains the stock holdings of U.S. investors better than the world market portfolio. In Section VI, we examine foreign ownership at the firm level in Sweden. Section VII concludes and discusses some additional implications of our results.

II. Investor Protection, Corporate Governance, and Foreign Investors

We first review the relation between investor protection and corporate governance. We then discuss the conditions under which portfolio investors hold the float portfolio.

A. Investor Protection and Corporate Governance

If the rights of minority shareholders in firms are poorly protected, those who control the firms can more easily use the firms' resources to pursue their own objectives. The literature on the agency costs of managerial discretion focuses on how management can make decisions that are not in the interest of shareholders but instead improve management's welfare. This literature often emphasizes that management values firm size more than it would if it were maximizing shareholder wealth. In many countries, those in control of firms are not simply making investment choices that shareholders would prefer they did not make. Instead, they can remove corporate assets from the firm in a variety of ways. For instance, they can sell corporate assets at below-market prices to corporations they control or can issue securities at below-market prices.¹

If the rights of investors are so poorly protected that those in control of firms have the ability to expropriate assets, firms may find it too expensive to raise

¹See Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) for examples.

funds unless those in control can commit to limiting expropriation. When those in control of a firm have a large stake in the firm's cash flows, expropriation is expensive for them when it involves deadweight costs since they end up paying a large fraction of these deadweight costs. Consequently, having a controlling shareholder with a large cash flow stake is one solution whereby firms can become public and raise public equity.

Shleifer and Wolfenzon (2002) build a model where an entrepreneur who sets up a firm has some chance of getting caught and being fined if he expropriates minority shareholders. The probability of getting caught is higher in countries with better shareholder protection. In their model, better investor protection leads to greater recourse to external finance by firms. This corresponds to a negative relation between cash flow rights of controlling shareholders and investor protection. Alternative specifications of the cost of diverting cash flow from the minority shareholders lead to similar results (see LLSV (2002) and Burkart, Gromb, and Panunzi (1998)).

Empirical evidence shows that concentrated ownership is prevalent in countries with poor investor protection. LLSV (1999) show that atomistic ownership is prevalent mostly in the U.S. and in the U.K., which are the countries with the best investor protection. LLSV (2002) and Claessens, Djankov, Fan, and Lang (2002) provide indirect evidence in support of theories that emphasize a positive relation between the extent to which minority shareholders can be expropriated and ownership concentration. They show that there is a stronger relation between ownership of cash flow rights and Tobin's Q in countries with poorer shareholder protection.

It must be noted that diffuse ownership is not necessarily the outcome of good investor protection. First, as Roe (2002) points out, ownership is concentrated in a number of countries with good corporate law. Second, Cheffins (2002) argues that there is no compelling empirical evidence showing that diffuse ownership is associated with greater performance. Third, even if investor rights are somehow perfectly enforced, information asymmetries can still make it optimal for entrepreneurs to retain a large investment in their firm as shown by Leland and Pyle (1977). Finally, Martin and Rey (2001) develop a model where entrepreneurs face downward-sloping demand curves for their firms' shares because of the size of the market where they can float the shares. Their model shows that entrepreneurs in smaller countries will retain a bigger stake, which is consistent with the empirical evidence.

B. International Diversification in the Presence of Large Shareholders

Consider first a world with perfect financial markets, so that there are no barriers to international investment. For simplicity, there is no inflation and no exchange rate uncertainty.² Assume further that all investors are mean-variance investors with identical information about the distribution of returns—investors

²See Karolyi and Stulz (2003) for a review of how inflation and exchange rate uncertainty affect portfolio choice in open economies. Models that focus on barriers to international investment usually ignore inflation and exchange rate uncertainty like we do. The model we present is unchanged in the presence of inflation and exchange rate uncertainty provided that returns are real returns, that purchasing power parity holds, and that there is an asset that has a risk-free real return.

who form their portfolios by trading off expected return against variance of return. If the investments available to investors are common stocks and the risk-free asset, all investors invest in the world market portfolio of common stocks, which we denote by the superscript M , and in the risk-free asset. The portfolio weight of a firm's common stock in that portfolio, w_{pq}^M , is defined as the total capitalization of the equity of firm q in country p (which we call firm pq) divided by the total capitalization of the equity of all firms in the world.

The result that each investor holds the world market portfolio of common stocks depends crucially on the assumption that each investor trades off expected return against variance of return taking the value of firms as given when forming his portfolio. A controlling shareholder does not form his portfolio this way. By controlling a firm, such a shareholder affects the value of that firm and the value of the private benefits he receives from that firm. Suppose that firm pq has a controlling shareholder and that this shareholder owns a fraction δ_{pq} of the outstanding shares of that firm. He is not willing to reduce his stake in the firm because doing so would put his control of the firm at risk.

In a world with controlling investors, expected returns will be such that portfolio investors hold the shares not held by controlling investors. With mean-variance portfolio investors, these investors still hold the same portfolio of common stocks, but it is no longer the world market portfolio. Instead, they hold the world portfolio of shares not held by controlling shareholders. The composition of this portfolio depends on the holdings of controlling shareholders. Suppose that controlling shareholders can perfectly hedge the risk of their controlling stake. In this case, each investor would hold the risk of the world market portfolio of common stocks. However, portfolio investors would be counterparties to the hedges of controlling investors, so that if the controlling shareholder of firm pq hedges his holdings with a total return swap, then the portfolio investors would end up bearing the risk associated with the long equity position in firm pq of that total return swap. Because of counterparty risks and credit constraints, it seems unreasonable to believe that controlling shareholders will be able to hedge their holdings effectively through short sales, swaps, or costless collars. For instance, with a total return swap, the counterparties to the controlling shareholder would want to reduce their counterparty risk. A mark-to-market swap would require the controlling shareholder to put up large amounts of cash if the value of his control block increases. As long as his control block is most of his wealth, he will not be able to do so without selling shares, hence breaking up his control block. Consequently, a controlling shareholder who is concerned about maintaining his control block would not enter such a hedge. In addition, however, the controlling shareholder would have to make payments on the swap for which he might not have cash available if the dividend yield on his control block is low and if most of his wealth is invested in the stock. The counterparty risk argument also applies for short sales and costless collars.

If the controlling shareholder does not hedge and has no other equity investments, then the total investment in firm pq of portfolio investors has to be $(1 - \delta_{pq})w_{pq}^M M$, where M is the market capitalization of all the shares of common stock in the world.

Denote by w_{pq}^{ki} the portfolio weight of the common stock of firm pq in the portfolio of common stocks of investor i in country k . The fraction of the investor's portfolio invested in firm pq relative to the fraction of the investor's portfolio invested in firm kj has to be

$$(1) \quad \left(\frac{w_{pq}^{ki}}{w_{kj}^{ki}} \right) = \frac{(1 - \delta_{pq}) w_{pq}^M}{(1 - \delta_{kj}) w_{kj}^M}.$$

The portfolio weight of stock pq falls relative to the portfolio weight of stock kj as the fraction of the shares of firm pq held by the controlling shareholder increases. If controlling shareholders hold different proportions of stocks pq and kj , portfolio investors cannot hold the world market portfolio. In particular, if stocks pq and kj have the same weights in the world market portfolio, but the controlling shareholder of firm pq holds more than the controlling shareholder of firm kj , the weight of stock pq in the portfolio of portfolio investors has to be less than the weight of stock kj .

We can also express holdings of firm pq as a fraction of the portfolio of risky assets of an investor relative to what the holdings would be without closely-held shares. The weight of firm pq in the portfolio of investor ki relative to the weight of firm pq in the world market portfolio is

$$(2) \quad \left(\frac{w_{pq}^{ki}}{w_{pq}^M} \right) = \frac{(1 - \delta_{pq})}{\sum_k \sum_j (1 - \delta_{kj}) w_{kj}^M}.$$

The numerator on the right-hand side is the fraction of the stock pq not held by controlling shareholders. The denominator of the right-hand side of this expression corresponds to the fraction of the world market portfolio that can be held by portfolio investors. In the traditional CAPM, this fraction is one, and since there are no controlling shareholders, the numerator is one also. Therefore, with the CAPM assumptions, each investor's portfolio of risky assets is the world market portfolio. The right-hand side of equation (2) exceeds one when a firm's controlling shareholders own a smaller fraction of the firm's stock than the fraction of the world stock market wealth held by controlling shareholders, and will be smaller than one otherwise.

The existing literature on the home bias has analyzed how departures from mean-variance optimization can help explain the home bias. Departures from mean-variance optimization would affect the holdings of portfolio investors in our model, but they would not change the two key points we make, namely that the existence of controlling shareholders implies that there is an inherent home bias in how investors in a country invest their wealth and that the existence of controlling shareholders increases the portfolio shares of countries with dispersed firm ownership for portfolio investors.

III. Controlling Shareholders and the World Market Portfolio

Our sample of U.S. investor holdings of foreign securities is taken from the 2000 version of the *Report on U.S. Holdings of Foreign Long-term Investments*

published by the U.S. Treasury Department. The report examines foreign equity holdings in 164 countries by U.S. investors as of the end of 1997. The equity holdings are obtained from a survey by the Treasury Department and the Federal Reserve Board of major custodians and large institutional investors. Participation in the survey is mandatory and lack of compliance is subject to penalties. The primary source for the world market portfolio is the 1998 *Emerging Markets Fact Book* of the International Finance Corporation (IFC). We also use the data reported by the Fédération Internationale des Bourses de Valeurs (FIBV), the World Bank, and the Salomon Guide to World Equities of 1999. All sources report market capitalizations as of the end of 1997. For most countries, the numbers provided by these various sources are very similar. However, there are some countries with large differences—Ireland has a capitalization of \$24 billion according to IFC but \$49 billion according to FIBV.³ Our conclusions are not sensitive to these differences.

We define country k 's weight in the world market portfolio, w_k^M , as the ratio of the market capitalization of country k divided by the market capitalization of all equity markets in the world as reported by the IFC. To obtain the fraction of a firm's shares that are closely held, δ_{kj} , we use the data on closely-held shares from the Worldscope Database. Closely-held shares correspond to shares held by insiders. Insiders are considered to be officers, directors, and their immediate families, shares held in trusts, shares held by another corporation (except shares held in a fiduciary capacity by financial institutions), shares held by pension benefit plans, and shares held by individuals who hold 5% or more of the outstanding shares. For Japanese firms, closely-held shares represent the holdings of the 10 largest shareholders.

The first column of Table 1 shows the number of firms in each country for which Worldscope has any information for 1997. Worldscope typically has information on large firms in a country. Not surprisingly, the number of firms in the dataset varies dramatically across countries, with two firms in Slovakia and 2,409 firms in Japan. Among the firms for which Worldscope has information, it has ownership information for only a subset of firms. The second column in the table reports the number of firms in each country for which ownership data are available. In some countries, the number of firms for which ownership data are available is close to the number of firms in the Worldscope dataset. In other countries, only a small fraction of firms have ownership information. For instance, Worldscope has ownership data on 2,392 of 2,409 Japanese firms, but only 15 of 166 firms in Taiwan.

Our estimate of the fraction δ_{kj} has some potential biases. One upward bias arises because the measure includes large holdings by shareholders who may not be part of the controlling coalition. For instance, when T. Boone Pickens attempted to acquire a board seat at Koito Manufacturing in the 1980s, he owned 26% of that company. With our approach, this stake would be part of the closely-held shares of the company, so that we would overstate the ownership of the con-

³As Ahearn, Griver, and Warnock (2001) point out, "Differences between the two sources were for the most part small or nonexistent, except in the data for Ireland, Australia, and New Zealand, where the IFC number was based on an incorrect currency conversion." We use the FIBV number for Ireland.

TABLE 1
Summary Statistics for Countries

Country	No. of Firms (i)	No. of Firms with Closely-Held Shares Data (ii)	% of Market Cap. Closely Held (iii)	Market Cap. of Firms with Closely-Held Shares Data (iv)	Total Market Cap. (\$ Mil) (v)	Sample Firm % of Total Market Cap. (iv)/(v) (vi)
Argentina	43	14	52.68%	37,764	59,252	63.73%
Australia	279	268	24.85%	257,422	295,785	87.03%
Austria	90	42	54.85%	31,627	35,724	88.53%
Belgium	115	98	47.14%	133,346	136,965	97.36%
Brazil	149	23	67.13%	121,861	255,478	47.70%
Canada	483	125	48.82%	156,119	567,635	27.50%
Chile	81	75	64.94%	53,888	72,046	74.80%
China	79	64	68.74%	14,941	206,366	7.24%
Czech Rep.	8	8	78.10%	4,818	12,786	37.68%
Denmark	182	119	25.10%	85,557	93,766	91.24%
Egypt	5	3	40.55%	1,388	20,830	6.66%
Finland	105	92	23.49%	72,200	73,322	98.47%
France	546	475	37.98%	558,215	674,368	82.78%
Germany	605	492	44.74%	811,349	825,233	98.32%
Greece	107	23	75.18%	3,383	34,164	9.90%
Hong Kong	392	387	42.73%	373,916	413,323	90.47%
Hungary	26	16	49.48%	11,432	14,975	76.34%
India	282	33	40.32%	26,838	128,466	20.89%
Indonesia	130	122	68.97%	25,079	29,105	86.17%
Ireland	57	54	13.06%	47,068	49,371	95.34%
Israel	54	20	58.01%	10,092	45,268	22.29%
Italy	194	87	37.54%	257,611	344,665	74.74%
Japan	2409	2392	38.38%	2,330,318	2,216,699	105.13%
Jordan	4	2	65.55%	1,079	5,446	19.82%
Korea, South	301	296	39.23%	35,924	41,881	85.78%
Luxembourg	17	6	66.74%	11,867	33,892	35.02%
Malaysia	432	420	52.15%	85,255	93,608	91.08%
Mexico	78	11	26.15%	40,240	156,595	25.70%
Morocco	8	6	48.93%	4,531	12,177	37.21%
Netherlands	196	158	33.74%	465,149	468,736	99.23%
New Zealand	52	51	77.48%	26,933	30,511	88.27%
Norway	123	112	41.07%	63,497	66,503	95.48%
Pakistan	95	16	77.37%	5,893	10,966	53.74%
Peru	33	6	68.60%	1,720	17,586	9.78%
Philippines	108	42	51.13%	6,315	31,361	20.13%
Poland	41	24	64.26%	3,939	12,135	32.46%
Portugal	63	48	35.04%	44,827	38,954	115.08%
Singapore	219	215	57.10%	107,452	106,317	101.07%
Slovakia	2	1	50.79%	222	1,826	12.18%
South Africa	196	182	52.86%	144,091	232,069	62.09%
Spain	154	113	42.12%	154,716	290,383	53.28%
Sri Lanka	12	12	19.15%	670	2,096	31.94%
Sweden	193	172	20.99%	259,614	272,730	95.19%
Switzerland	187	140	25.73%	234,537	575,338	40.77%
Taiwan	166	15	22.26%	31,384	287,813	10.90%
Thailand	243	123	57.83%	7,306	23,538	31.04%
Turkey	78	58	70.86%	22,424	61,090	36.71%
U.K.	1510	1474	9.93%	1,933,420	1,996,225	96.85%
U.S.	484	464	7.94%	6,907,039	11,308,779	61.08%
Venezuela	18	2	61.53%	6,169	14,581	42.31%
Zimbabwe	6	6	36.63%	455	1,969	23.08%

We use December 1997 prices, and splice fiscal year-end prices when December 1997 prices are unavailable. In all the firms, only 57 prices are other than December year-end. The percentage of market capitalization closely held in column (iii) is computed using only firms for which ownership data is available on Worldscope.

trolling coalition for that company.⁴ Another upward bias exists only for the firms with ADR programs. For firms with large ADR programs, a U.S. bank holds shares in the firm. That stake can be large enough that the bank could be counted as a large shareholder. Worldscope in principle does not count that among the

⁴This particular example does not affect our results because our data come from 1997. The example is merely illustrative of possible biases.

stakes held by large shareholders. However, it is clear that there are cases with ADR programs where the shareholders with stakes exceeding 5% reported by Worldscope include the U.S. bank that issued the ADRs.⁵

The first downward bias occurs if part of the stake of a controlling shareholder is held through third parties, such as other corporations, that own small stakes in the firm. We might miss these stakes altogether. For instance, a company with a controlling shareholder who exerts control through 15 stakes of 4% would appear to have no controlling shareholder with our data. La Porta, Lopez-de-Silanes, and Shleifer (1999) show both that indirect ownership is important and that finding the ultimate owner of a corporation is difficult. However, their analysis would also miss a controlling shareholder who exerts control through 15 stakes of 4%. The second downward bias occurs because of poor reporting. Importantly, disclosure requirements vary across countries and the disclosure requirements are not consistently enforced. Worldscope cannot report undisclosed holdings. This may lead us to especially understate the fraction of closely-held shares in countries with poor disclosure requirements. The third occurs because Worldscope reports data only for the largest companies in a country. Controlling shareholders are even more prevalent in the smaller companies. This third bias may not be important because the market portfolio for a country is value-weighted.

In the discussion in Section II, we ignored barriers to international investment. Such barriers exist and they contribute to the home bias. In particular, in many countries, some shares cannot be held by foreign investors. We use a market portfolio for each country that ignores the ownership restrictions against foreign investors. The reason for proceeding this way is that we cannot distinguish within the controlling block which shares have ownership restrictions and which do not. Consequently, what we call the portfolio of available shares may include some shares that are not available to foreign investors.

To aggregate the firm level data to the country level, we estimate the percentage of shares closely held in a country by forming a value-weighted average of controlling stakes for the firms for which Worldscope reports the data. The value-weighted estimate divides the sum of the market value of all closely-held shares in a country by the sum of the market value of all shares. Define M_{kj} to be the market value of the equity of firm kj . With this notation, our estimate of the fraction of shares held by controlling shareholders for country k is

$$(3) \quad \text{fraction of closely-held shares for country } k = \frac{\sum_{j=1}^N \delta_{kj} M_{kj}}{\sum_{j=1}^N M_{kj}}.$$

We construct this index for each country using only the firms with available data on closely-held shares in that country. Data on closely-held shares are available for 51 countries. The third column of Table 1 reports our estimate of the fraction of closely-held shares for country k . Worldscope reports firm data for the end of a firm's fiscal year. Different firms in a country can have different fiscal years, so that the market values using Worldscope can be measured at different points in time. We therefore compute the fraction of closely-held shares using end of December stock prices. The difficulty with this approach is that while all the stock

⁵We thank Frank Warnock for alerting us to this problem.

prices are from December 1997, we are using the number of shares outstanding measured at different month ends. We also compute the fraction of closely-held shares using end of fiscal year data. The two approaches lead to estimates of the fraction of closely-held shares that are virtually identical. Except for three countries, the two approaches lead to estimates that are within 1% of the country's market capitalization.

Table 1 shows that the U.S. is unique among the countries for which we have data. For the U.S., the fraction of shares that are closely held is 7.94%, which makes the U.S. the country with the lowest value-weighted controlling ownership. The U.K. is next with 9.93%. Except for Ireland, Sri Lanka, the U.S., and the U.K., no country has a value-weighted controlling ownership of less than 20%. Only seven countries have value-weighted controlling ownership between 20% and 30%. Twenty-three countries have value-weighted controlling ownership in excess of 50%.

The last three columns show the market value of the firms for which we have information about closely-held shares, the market value of the country's firms, and the percentage of the market capitalization of the country represented by the firms for which we have information about closely-held shares. For 19 countries, we have information on closely-held shares for more than 80% of the market's capitalization. For some countries, the value of the firms for which we have information on closely-held shares exceeds the reported value of the market capitalization. This could arise for a number of different reasons. First, in some cases, the market capitalization of IFC is low compared to the estimate of FIBV. Second, shares could have been issued since the end of the fiscal year. Third, firms have different classes of shares, so that estimates of firm market values could differ because of differences in ways of treating different classes of shares. Fourth, some firms could be traded only on regional exchanges that may not be included in the IFC or FIBV estimates. Fifth, some closely-held shares might be non-traded shares. According to the last column of Table 1, however, for many countries the market capitalization of the firms for which we have closely-held shares information is close to the market capitalization of all firms. We do not use the percentage in the last column in our analyses. The number we use is the percentage of closely-held shares and that number varies little for an individual country if we compute it at either fiscal year-end or calendar year-end. Consequently, we are reassured that the percentage of closely-held shares is not sensitive to timing.

IV. The Home Bias after Taking into Account Closely-Held Shares

In this section, we show that taking into account that some shares are not available for stock market trading reduces the extent of the home bias significantly for the U.S. and dramatically for most other countries. In the first column of Table 2, we report the weight of each country in the U.S. investors' portfolio. These weights overstate the extent of the home bias by U.S. investors, in that U.S. controlling shareholders cannot sell their shares to diversify internationally. To compute the home bias of U.S. investors, it is therefore necessary to compute the bias relative to shares U.S. investors hold that are available for stock market trad-

ing. While U.S. investors held \$11,587,566 million in equities in 1997, of which \$1,207,787 million were foreign equities, closely-held shares represented 7.94% of the U.S. stock market capitalization, which was \$11,308,779 million according to IFC. Consequently, portfolio investors held \$10,689,649 in equities.⁶ To assess the home bias of portfolio investors, portfolio weights of foreign stock holdings have to use a denominator of \$10,689,649 million rather than \$11,587,566 million. Assuming that none of the foreign equities were closely held, portfolio investors owned 11.30% of their stock wealth in foreign stocks. The second column of Table 2 computes the portfolio proportions of portfolio investors this way. The portfolio weights of foreign countries are increased uniformly to reflect the fact that the same dollar amount—holdings by U.S. investors in a country—is now divided by a smaller denominator—U.S. holdings of shares that are not closely held.

The third column shows the world market portfolio weight for each country in our dataset. The portfolio weights range from 0.01% for Zimbabwe to 49.60% for the U.S. Out of the 51 countries, 43 countries have a world portfolio share below 2%. Only the U.S. has a portfolio share greater than 10%.

The fourth column of Table 2 shows the float portfolio weight of each country. For each country, the available shares of firm kj represents a fraction $(1 - \delta_{kj})w_{kj}^M$ of the world market portfolio. Since these weights do not sum to one, we divide each weight by the sum of the weights to get portfolio weights that sum to one. After making this adjustment and summing the available shares across a country, we get the portfolio weight of the country in the world float portfolio, w_k^F ,

$$(4) \quad w_k^F = \frac{\sum_j (1 - \delta_{kj})w_{kj}^M}{\sum_r \sum_s (1 - \delta_{rs})w_{rs}^M}$$

The denominator on the right-hand side of the equation is the fraction of available shares in the world market portfolio. The numerator is the fraction of available shares in country k 's market portfolio. Consequently, a country will have a larger weight in the world float portfolio only if the fraction of shares available for trading in that country is greater than the fraction of shares available for trading in the world market portfolio. The only countries with greater weights in the world float portfolio than in the world market portfolio are Ireland, Sri Lanka, Sweden, the U.K., and the U.S. The weight of the U.S. in the world float portfolio is 58.32%, in contrast to 49.60% in the world market portfolio. For a number of countries, the drop in the portfolio weight is large in proportion to the weight of the country in the world market portfolio. An example is Brazil, which falls from 1.12% to 0.47%. The weight of Brazil in the portfolio of equities held by U.S. investors

⁶Since the U.S. stock market capitalization is \$11,308,779 million in 1997 and the Treasury Department reports for the same year that foreign investors held \$929,000 million in U.S. equities, holdings of U.S. equities by U.S. investors must therefore have been \$10,379,779 million. The Treasury Department also reports that U.S. investors own \$1,207,787 million of foreign equities. Thus, U.S. investors hold equities for \$11,587,566 million. Our estimate using Worldscope data is that 7.94% of U.S. market capitalization represents closely-held shares. Assuming that U.S. controlling shareholders hold closely only U.S. shares, U.S. portfolio investors hold \$10,689,649 million in equities.

TABLE 2
World Market Index and Home Bias Measures

Country	Weight for All Investors (i)	Weight for Portfolio Investors (ii)	World Market Portfolio Weight (iii)	World Float Portfolio Weight (iv)	Float Weight as % of Market Weight (iv)/(iii)	Bias Relative to Market [(i) - (iii)]/(iii)	Bias Relative to Float [(ii) - (iv)]/(iv)
Argentina	0.098%	0.127%	0.260%	0.157%	60.38%	-0.62	-0.19
Australia	0.237%	0.307%	1.297%	1.245%	95.99%	-0.82	-0.75
Austria	0.028%	0.036%	0.157%	0.090%	57.32%	-0.82	-0.60
Belgium	0.046%	0.060%	0.601%	0.406%	67.55%	-0.92	-0.85
Brazil	0.239%	0.310%	1.120%	1.120%	41.96%	-0.79	-0.34
Canada	0.539%	0.699%	2.490%	1.627%	65.34%	-0.78	-0.57
Chile	0.035%	0.045%	0.316%	0.142%	44.94%	-0.89	-0.68
China	0.017%	0.022%	0.905%	0.361%	39.89%	-0.98	-0.94
Czech Rep.	0.006%	0.008%	0.056%	0.016%	28.57%	-0.89	-0.51
Denmark	0.068%	0.088%	0.411%	0.393%	95.62%	-0.83	-0.78
Egypt	0.006%	0.008%	0.091%	0.069%	75.82%	-0.93	-0.89
Finland	0.113%	0.147%	0.322%	0.314%	97.52%	-0.65	-0.53
France	0.647%	0.839%	2.958%	2.343%	79.21%	-0.78	-0.64
Germany	0.495%	0.642%	3.619%	2.555%	70.60%	-0.86	-0.75
Greece	0.012%	0.016%	0.150%	0.047%	31.33%	-0.92	-0.67
Hong Kong	0.214%	0.278%	1.813%	1.326%	73.14%	-0.88	-0.79
Hungary	0.027%	0.035%	0.066%	0.042%	63.64%	-0.59	-0.17
India	0.047%	0.061%	0.563%	0.429%	76.20%	-0.92	-0.86
Indonesia	0.019%	0.025%	0.128%	0.051%	39.84%	-0.85	-0.52
Ireland	0.107%	0.139%	0.217%	0.240%	110.60%	-0.51	-0.42
Israel	0.054%	0.070%	0.199%	0.106%	53.27%	-0.73	-0.34
Italy	0.316%	0.410%	1.512%	1.206%	79.76%	-0.79	-0.66
Japan	1.038%	1.347%	9.722%	7.651%	78.70%	-0.89	-0.89
Jordan	0.000%	0.000%	0.024%	0.011%	45.83%	-1.00	-1.00
Korea, South	0.034%	0.044%	0.184%	0.143%	77.72%	-0.82	-0.69
Luxembourg	0.041%	0.053%	0.149%	0.063%	42.28%	-0.72	-0.16
Malaysia	0.036%	0.047%	0.411%	0.251%	61.07%	-0.91	-0.81
Mexico	0.266%	0.345%	0.687%	0.648%	94.32%	-0.61	-0.47
Morocco	0.002%	0.003%	0.053%	0.035%	66.04%	-0.96	-0.93
Netherlands	0.814%	1.056%	2.056%	1.740%	84.63%	-0.60	-0.39
New Zealand	0.040%	0.052%	0.134%	0.039%	29.10%	-0.70	0.33
Norway	0.072%	0.093%	0.292%	0.220%	75.34%	-0.75	-0.58
Pakistan	0.009%	0.012%	0.048%	0.014%	29.17%	-0.81	-0.17
Peru	0.018%	0.023%	0.077%	0.031%	40.26%	-0.77	-0.25
Philippines	0.022%	0.029%	0.138%	0.086%	62.32%	-0.84	-0.67
Poland	0.012%	0.016%	0.053%	0.024%	45.28%	-0.77	-0.35
Portugal	0.053%	0.069%	0.171%	0.142%	83.04%	-0.69	-0.52
Singapore	0.078%	0.101%	0.466%	0.256%	54.94%	-0.83	-0.60
Slovakia	0.000%	0.000%	0.008%	0.005%	62.50%	-1.00	-1.00
South Africa	0.076%	0.099%	1.018%	0.612%	60.12%	-0.93	-0.84
Spain	0.192%	0.249%	1.274%	0.942%	73.94%	-0.85	-0.74
Sri Lanka	0.001%	0.001%	0.009%	0.009%	100.00%	-0.89	-0.86
Sweden	0.295%	0.383%	1.196%	1.207%	100.92%	-0.75	-0.68
Switzerland	0.471%	0.611%	2.523%	2.394%	94.89%	-0.81	-0.74
Taiwan	0.038%	0.049%	1.262%	1.253%	99.29%	-0.97	-0.96
Thailand	0.016%	0.021%	0.103%	0.056%	54.37%	-0.84	-0.63
Turkey	0.046%	0.060%	0.268%	0.100%	37.31%	-0.83	-0.40
U.K.	1.656%	2.148%	8.755%	10.072%	115.04%	-0.81	-0.79
U.S.	91.290%	88.701%	49.598%	58.322%	117.59%	0.84	0.52
Venezuela	0.015%	0.019%	0.064%	0.031%	48.44%	-0.77	-0.37
Zimbabwe	0.001%	0.001%	0.009%	0.007%	77.78%	-0.89	-0.81

The world float portfolio is the world market portfolio adjusted to reflect that not all shares are available for purchase by portfolio investors.

is 0.24%. Though the share of Brazil in the portfolio of U.S. investors is 21% of Brazil's weight in the world market portfolio, it is 51% of Brazil's weight in the world float portfolio. This effect takes place across countries, but obviously its importance depends on the extent to which shares are closely held in a country.

Traditionally, the home bias has been measured using the world market portfolio as a benchmark and assuming that all shares held by investors in a country could be freely traded. A measure of the bias is the percentage by which investors

overweight their home country relative to the world market portfolio weight. With this measure, the home bias of U.S. investors is $(0.913 - 0.496)/0.496$, or 84%. The sixth column of Table 2 shows the home bias of U.S. investors against each country measured as the difference of a country's weight in the portfolio of U.S. investors and the world market portfolio weight of that country expressed as a fraction of the country's weight in the world market portfolio.⁷

There are two problems with the traditional calculation for the U.S.: it assumes all shares in the U.S. can be freely traded and it assumes all foreign shares can be freely traded also. Neither assumption is correct because there are closely-held shares in each country. Investors cannot hold the world market portfolio as long as most firms outside the U.S. are controlled by large shareholders. Further, if U.S. investors could hold the world market portfolio, they would not do so because doing so would force controlling shareholders in the U.S. to liquidate their control blocks. The shares in which U.S. investors can invest freely are the shares they own that are not closely held. We saw that with this computation, U.S. portfolio investors put 11.3% of their common stock wealth available for stock market trading in foreign stocks. We can compute the home bias of U.S. portfolio investors using our bias measure. It is $(0.887 - 0.5832)/0.5832$, or 52%. Therefore, using a measure of tradeable shares only, the home bias falls by 38%. The last column of Table 2 shows the home bias computed this way.

We do not have the data to compute the home bias in foreign countries. To do that, we would need to know the stock market wealth of a country as well as the value of foreign stocks held by the residents of that country. However, we can show that ownership concentration leads to a large home bias even if portfolio investors have no home bias. To show this, we assume that controlling shareholders are domestic shareholders, which is generally the case.⁸ Consider then a country that is 1% of the world market portfolio where controlling shareholders hold 50% of the market capitalization. In this country, local shareholders hold more than 50% of the market capitalization, even when portfolio investors do not have a home bias in that country. Suppose that stock market wealth in that country is equal to the stock market capitalization, that local portfolio investors do not have a home bias, and that the country represents 0.5% of the world float portfolio. In this case, 50.25% of domestic stock market wealth is invested in the local market portfolio. Using the world market portfolio, the home bias is $(0.5025 - 0.01)/0.01$, or 4,925%. In contrast, using the world float portfolio taking into account that controlling shareholders are local investors, there is no home bias with our assumptions. In other words, our approach can explain a home bias where the portfolio weight of local stocks of local investors is 10 times or more larger than what it should be in the absence of controlling investors.

⁷Ahearne, Grier, and Warnock (2001) measure the home bias this way, but they multiply it by minus one.

⁸Unfortunately, except for Doidge (2001), the residence of controlling investors has not been investigated in the literature. Doidge (2001) provides evidence that in a sample of firms that have ADRs, almost all firms have resident controlling shareholders. We show in Section VI that this is the case for Sweden.

V. The Determinants of Country Portfolio Shares in the Portfolio of Stocks of U.S. Investors

In this section, we use multiple regressions to examine the determinants of a country's portfolio share in the portfolio of stocks of U.S. investors. In all the regressions reported in Tables 3 and 4, the dependent variable is the portfolio share of a country for U.S. investors. The U.S. is not included in the sample since the portfolio share of the U.S. is one minus the sum of the portfolio shares of the other countries.

The first column of panel A in Table 3 shows that the portfolio share of a country for U.S. investors is positively related to the weight of that country in the world market portfolio. Absent a home bias and absent closely-held shares, the coefficient on the world market portfolio weight of a country should be one. Instead, the coefficient is 0.1496 with a t -statistic of 5.59. When we use the weight of a country in the world float portfolio, the coefficient is 0.1610 and the t -statistic is 14.68. The adjusted R^2 of the regression increases from 0.8416 to 0.8816 when we substitute the weight of the float portfolio for the weight of the market portfolio. In the third column, we report a regression with both weights. The weight of a country in the world market portfolio is not significant in that regression. Finally, in the last column, we include in the regression the weight of a country in the world market portfolio and the fraction of shares closely held in that country. The fraction of shares closely held has a significant negative coefficient, so that U.S. investors have a lower portfolio share of countries with a larger fraction of shares that are closely held. All these results are consistent with the model in Section I. However, taking into account the fraction of shares that are closely held does not make the home bias disappear since the coefficient on the float portfolio share is not one.

In panel B of Table 3, we examine whether there is information in the country weights of the world float portfolio that is not in the country weights of the world market portfolio. For that purpose, we use an orthogonalization procedure. In panel B, the dependent variables are the country weight in the world market portfolio and a variable that corresponds to the information in the country's weight in the world float portfolio that is not also in the country's weight in the world market portfolio.⁹ It is clear from the regression that the weight in the world float portfolio has information that is not in the weight of the world market portfolio. We then reverse the procedure to show that the weights of the market portfolio have no information for understanding the country portfolio shares of U.S. investors that the weights of the float portfolio do not have.

We find that the fraction of closely-held shares helps explain the portfolio shares of countries in the stock portfolio of U.S. investors. It could be, however, that the float portfolio better explains the country portfolio shares of U.S. investors than the market portfolio simply because the fraction of closely-held shares proxies for country characteristics that explain the country weights in the portfolio. In that case, controlling for country characteristics would remove the

⁹The orthogonalization is done by using the residual of a first pass regression of the float portfolio share on the world market portfolio share.

TABLE 3

The World Market Portfolio, the Float Portfolio, and Closely-Held Shares as Predictors of a Foreign Country's Share in the Portfolio of Stocks of U.S. Investors

(dependent variable is weight in portfolio of stocks of U.S. investors)

<i>Panel A. Simple Regressions with World Market Portfolio and/or World Float Portfolio Weights</i>				
Constant	0.0002 (1.24)	0.0004 (3.22)	0.0004 (2.51)	0.0013 (2.10)
Weight in world market portfolio	0.1496 (5.59)		0.0049 (0.09)	0.1423 (5.47)
Weight in world float portfolio		0.1610 (14.68)	0.1560 (3.22)	
Closely-held shares				-0.0021 (-2.17)
<i>N</i>	50	50	50	50
Adj. <i>R</i> ²	0.8416	0.8816	0.8792	0.8517
<i>Panel B. Orthogonalization of World Market Portfolio and World Float Portfolio</i>				
Constant			0.0002 (1.75)	0.0040 (3.18)
Weight in world market portfolio			0.1496 (11.36)	
Weight in world float portfolio—additional explanatory power			0.1560 (3.22)	
Weight in world float portfolio				0.1610 (14.11)
Weight in world market portfolio—additional explanatory power				0.0049 (0.09)
<i>N</i>			50	50
Adj. <i>R</i> ²			0.8792	0.8792

The world float portfolio is the world market portfolio adjusted to reflect that not all shares are available for purchase by portfolio investors. Closely-held shares is the percentage of shares in a country that are unavailable for purchase by the portfolio investors. Each country represents one observation. The table reports least square estimates and *t*-statistics based on heteroskedasticity-consistent standard errors in parentheses.

explanatory power of the world float portfolio in a regression that also includes the world market portfolio.

In Table 4, we take the regression of panel A of Table 3 that regresses the portfolio share of a country in the portfolio of stocks of U.S. investors on the world market portfolio weight and the world float portfolio weight of a country and show that our results are robust to controlling for country characteristics. If investors were to hold the world market portfolio, the only country characteristic that would matter for their portfolio would be the share of the country in the world market portfolio. However, since we show that the fraction of shares held by controlling shareholders is significantly related to the weight of a country in the portfolio of U.S. investors, we have to be concerned that the fraction of shares held by controlling shareholders proxies for country characteristics correlated with the fraction of shares held by controlling shareholders. As discussed earlier, Shleifer and Wolfenzon (2002) predict that ownership is more concentrated when investor protection is weaker. Greater investor protection leads to greater financial development. Consequently, we examine whether controlling for measures of investor protection and financial development affects our conclusions.

In all regressions of Table 4, we control for GNP per capita to take into account the correlation between the other variables and economic development. GNP per capita is significant at the 10% level in only one regression. In the first regression, we control for the LLSV (1998) anti-director index. A higher value

TABLE 4
 The Determinants of a Foreign Country's Share in the Portfolio of Stocks of U.S. Investors
 (dependent variable is weight in U.S. stock portfolio)

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
Constant	0.0005 (1.23)	0.0004 (0.78)	-0.0008 (-1.12)	-0.0023 (-1.95)	0.0002 (1.02)	0.0006 (2.06)	0.0002 (0.37)	0.0001 (0.38)	-0.0008 (-0.20)
Weight in world market portfolio	-0.0127 (-0.21)	-0.0140 (-0.23)	-0.0052 (-0.10)	-0.0066 (-0.13)	-0.0183 (-0.33)	-0.0581 (-1.02)	-0.0085 (-0.14)	-0.0140 (-0.25)	-0.0696 (-1.13)
Weight in world float portfolio	0.1684 (3.34)	0.1684 (3.32)	0.1601 (3.70)	0.1598 (3.80)	0.1711 (3.70)	0.1976 (4.23)	0.1630 (3.12)	0.1686 (3.68)	0.1854 (3.90)
GNP per capita	0.0000 (1.61)	0.0000 (1.70)	-0.0000 (-0.51)	-0.0000 (-1.02)	0.0000 (1.70)	0.0000 (1.46)	0.0000 (1.78)	0.0000 (1.70)	0.0000 (0.06)
Anti-director rights index	-0.0001 (-0.57)								-0.0003 (-0.81)
Judicial efficiency index		-0.0000 (-0.20)							-0.0001 (-0.48)
Corruption index			0.0002 (1.45)						0.0006 (1.68)
Expropriation risk index				0.0004 (2.10)					0.0001 (0.17)
Stock market capitalization to GDP					0.0001 (0.20)				0.0017 (1.07)
Equity issues to GDP						-0.0106 (-1.00)			-0.0465 (-1.07)
Average openness							0.0002 (0.26)		-0.0013 (-0.95)
Enforcement of insider trading laws								0.0004 (1.82)	0.0002 (0.20)
<i>N</i>	42	42	42	42	42	26	38	49	20
Adj. <i>R</i> ²	0.8861	0.8854	0.8927	0.8949	0.8872	0.8943	0.8840	0.8920	0.9009

The world float portfolio is the world market portfolio adjusted to reflect that not all shares are available for purchase by portfolio investors. GNP per capita is the 1997 GNP per capita for each country measured in U.S. dollars. Anti-director rights is an index of the six variables that measure shareholder rights in each country. The judicial efficiency index is an index that measures the efficiency of a country's judicial system. The corruption index is a measure of a country's government corruption, and the expropriation risk index measures the risk of expropriation. These indices are from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). Average openness is the average openness from 1985 to 1995 for each country. The financial development and openness variables are from Beck, Demirgüç-Kunt, and Levine (1999). Enforcement of insider trading laws comes from Bhattacharya and Daouk (2002). The table reports least square estimates and *t*-statistics based on heteroskedasticity-consistent standard errors in parentheses.

of the index means greater minority shareholder protection. We then control for measures of judicial efficiency, corruption, and expropriation risk. These indices are those used by LLSV (1998). The indices are constructed so that a value of one means low investor protection and a value of 10 means high investor protection. Countries with greater expropriation risk have a lower share in the portfolios of U.S. investors. We control for the stock market capitalization per capita and for equity issues to GDP. These two measures are computed for 1997 and are obtained from Beck, Demirgüç-Kunt, and Levine (1999). These measures are unrelated to the share of a country in U.S. stock portfolios. We control for trade openness, defined as the ratio of the sum of exports and imports to GDP from 1985 to 1995, obtained from Beck, Demirgüç-Kunt, and Levine (1999). It is not significant. Finally, we estimate whether enforcement of insider trading laws (as reported by Bhattacharya and Daouk (2002)) affects ownership by U.S. investors. We find that U.S. equity holders invest more in countries that enforce insider trading laws; this effect is significant at the 5% level. When we use all these variables

in a regression, they increase the adjusted R^2 by 3%. The corruption index is the only significant variable besides the weight in the world float portfolio. The weight in the world float portfolio is highly significant in all the regressions of Table 4, while the weight in the world market portfolio is never significant. Adding the country control variables to the regressions of Table 3 affects none of our conclusions. The bottom line is that the indices of good government do not matter for the investment of U.S. investors. In other words, for a given supply of shares, U.S. investors do not invest less in a country because minority shareholders are less well protected or because laws are not enforced. If a country has bad government, it has lower stock prices, but stocks are priced so that investors can expect a fair return.

Though we do not reproduce the results, we estimate the regressions of Tables 3 and 4 imposing the requirement that a country has to have at least five, 10, or 20 firms to be included in the regression. Our conclusions are not affected by this requirement. We also estimate the regressions of Tables 3 and 4 using only countries for which we have ownership data for at least 75% of the country's market capitalization. This requirement reduces the number of countries, but none of the conclusions we reach are affected when we impose this requirement.

We also estimate the regressions of Tables 3 and 4 using weighted least squares. The idea is that we estimate the fraction of market capitalization that is closely held more precisely in some countries than in others. When we weight more countries where this fraction is higher, our results become stronger.

VI. A Firm-Level Examination for Sweden

In the empirical analysis of Sections IV and V, we construct a world float portfolio using data reported by Worldscope. For the countries used in our analysis, we do not have the fraction of shares of each firm held by foreign investors. The ownership data we are able to use consistently across countries is the value-weighted share of each country in the portfolio of U.S. investors. Foreign ownership is available at the firm level for some countries, however. Our model predicts a negative relation between foreign ownership and closely-held ownership as long as controlling shareholders are domestic investors. In the case of Sweden, both foreign ownership and closely-held share ownership are available. This makes it possible for us to investigate the relation between foreign ownership and closely-held shares at the firm level. The Swedish data allow us to check whether foreign investors are controlling shareholders.

There are some additional benefits from an analysis using the Swedish data. First, we are able to use a much better data source than Worldscope since we have all Swedish firms in our sample and have information on the nationality of controlling shareholders. Second, we have data on the ownership by U.S. investors in Swedish firms as well as by all foreign investors, so that we can compare the float as a determinant of holdings for U.S. and foreign investors. Third, we can examine whether there is a negative relation between foreign ownership and closely-held share ownership keeping investor protection unchanged. Fourth, we can investi-

gate whether the quality of governance, proxied by departures from one share-one vote, matter for foreign ownership.¹⁰

As shown in Table 2, Sweden's weight in U.S. investors' portfolio in 1997 was about 0.3%, whereas Sweden's weight in the world market portfolio was about 1.2%. There are no restrictions to ownership of Swedish shares by foreign investors. The determinants of the foreign holdings of Swedish shares are examined by Dahlquist and Robertsson (2001) who find that foreign investors prefer large, financially solid, and well-known firms. Kang and Stulz (1997) find similar results for Japan and argue that this ownership pattern can emerge if non-resident investors know more about large firms than small firms in the market in which they invest. The prediction from our model is that the share of a firm in the portfolio of foreign investors is inversely related to the fraction of the shares of that firm that are held by its controlling shareholders. Since typically more shares are closely held in smaller firms, it is possible that the greater weighting of small firms in the world market portfolio than in the world float portfolio can help explain why foreign investors are more likely to invest in large firms.

A. Data

We consider data on individual firms for the year 1997. The market capitalization of a firm is the total number of shares outstanding times the price of each share at the year-end.¹¹ The data are collected from Stockholm Information Exchange (SIX). Stockholders of all listed firms in Sweden are registered at Värdepapperscentralen (the Swedish Security Register Centre). SIS Ägarservice identifies from these data actual owners in all firms listed on the Stockholm Stock Exchange. In particular, SIS Ägarservice has provided us with data of holdings by foreign investors (see Sundin and Sundqvist (1998)). We are also able to break up foreign holdings into holdings by U.S. and other countries' investors. For a detailed description of the data and foreign ownership in Sweden, see Dahlquist and Robertsson (2001). In our sample, there are 30 firms that are listed on multiple exchanges. We consider a dummy variable that takes the value of one if the firm's shares are listed abroad. Otherwise the value is zero. The data source is the Stockholm Stock Exchange.

We also collect data on control. We compute cash flow and voting rights of controlling shareholders. The original data come from SIS Ägarservice and corporations' own company charts or web pages, and were initially collected by Cronqvist and Nilsson (2003) who study agency costs of controlling minority

¹⁰Giannetti and Simonov (2002) explore the impact of governance on whether shares of a firm will be in the portfolio of foreign investors using a probit model. They find that a foreign investor is less likely to have shares of firms where minority shareholders are more at risk of expropriation in their portfolios. Our model has predictions on the share of firms in the portfolio of investors, but not on whether shares of a particular firm will be in the portfolio of a particular investor.

¹¹A firm can have some shares that are not listed. The non-listed shares typically have more voting rights than the listed shares, but obviously they are less liquid. In our sample, 99 firms have non-listed shares. We compute the market value of a firm's equity by adding the value of all shares issued by that firm. To estimate the value of the non-listed shares, we assume that non-listed shares trade at the same price as listed shares with the same cash flow rights but lower voting rights. The firms with non-listed shares are generally the smaller firms. Our results are not sensitive to how we estimate the value of non-listed shares in computing the market capitalization of a firm, in the sense that the results are the same if we assume that non-listed shares are worthless.

shareholders. Based on these data, we construct two measures of closely-held shares for each firm; the narrow measure is the fraction of the market capitalization of a firm held by the largest shareholder coalition; the broad measure is the fraction of the market capitalization held by all shareholder coalitions. By definition, the narrow measure is always less than or equal to the broad measure. We also consider the corresponding measures of voting rights. To be included in the measures of controlling shareholders, an investor has to own more than 5% of the voting rights. The broad measure corresponds to the measure used earlier in the paper. The narrow measure has the advantage that it captures those shareholders most likely to derive private benefits from control. By subtracting our measures of closely-held shares from the market capitalization, we effectively have two measures of the (local) market float portfolio. That is, the portfolio that accounts for closely-held shares and is available to a foreign investor.

These data differ from the Worldscope data, but there are 162 overlapping firms in the two datasets. The levels of closely-held shares are similar using our broad measure and the Worldscope data. The correlations between our narrow and broad measures with the Worldscope data of closely-held shares are 0.74 and 0.87.

B. Controlling Shareholders

We have 228 firms with complete data on foreign ownership and closely-held shares. The total market capitalization of these firms is about \$249 billion, which is 93% of the total market capitalization of the Stockholm Stock Exchange in 1997.¹² In 1997, U.S. and foreign investors held 15.9% and 32.7% of total market equity. The corresponding equally weighted averages are lower, 6.3% and 20.4%, that is, foreign and U.S. investors tend to underweight smaller firms. About 18.3% of total market capitalization is held by the largest shareholder coalition of each firm, and about 28.5% is held by all shareholder coalitions. Closely-held shares are more common in smaller firms as indicated by the equally weighted averages of 28.4% and 41.2% for our narrow and broad measures, respectively.

In Section IV, we noticed that in almost half of our sample countries closely-held shares represent more than half of the shares (see also Table 1). Though Sweden has one of the lowest fractions of market capitalization closely held, there is also a wide dispersion across firms. There are 77 firms (or 34% of our sample) where more than 50% of the shares are closely held.

An important issue we ignored in our earlier analysis is that a group of shareholders can exert control without owning a claim to half of the firm's cash flows. When that does happen, foreign investors have access to ownership of a greater fraction of the firm's cash flows, but the agency costs of controlling shareholders may be exacerbated. Nenova (2003) uses the differential voting rights of shares to estimate the private benefits from control in Sweden and concludes that they are small. However, Cronqvist and Nilsson (2003) reach a somewhat different conclusion as they show that Tobin's Q fall significantly as the agency costs of controlling shareholders increase. Our dataset allows us to distinguish between cash flow rights and voting rights of the controlling shareholder block. A one

¹²The SEK/USD exchange rate was about eight at the end of 1997.

share-one vote system means that the company law requires that ordinary shares carry one vote per share. In Sweden, many firms have dual-class shares; B shares have one share-one vote, whereas A shares have higher voting shares (typically 10 votes per share). However, there is no difference in cash flow rights for A and B shares. In our sample, 139 firms (or 64.7% of all firms) have dual class shares. Further, 71.2% of the firms with dual class shares have non-listed high voting shares. Finally, among the firms with non-listed shares with high voting rights, 22.3% have so-called preemptive rights. That is, the preemptive rights give owners of shares with high voting rights the option to buy back such shares sold by a coalition member to a third party. Finally, some firms have legally binding shareholder agreements that restrict a coalition member's sale of listed high voting shares to a third party and some firms have restrictions on how many shares a shareholder can vote.

The median voting and cash flow rights of the largest shareholder coalition are 38.9% and 25.5% of firms' market capitalization. The corresponding numbers for all shareholder coalitions are 57.1% and 40.9%. That is, the median controlling shareholder has about 13 percentage points more of the voting rights than of the cash flow rights. For all shareholder coalitions, the median voting right is about 16 percentage points larger than the median cash flow rights.

There are 46 firms (about 20% of all) with a foreign owner with more than 5% of the voting rights. The controlling foreign ownership corresponds to 3% of total market capitalization. However, a foreign controlling owner is in most cases a founder of the firm (or still within the same family as the founder), or another corporation. Controlling foreign ownership by a founder family or corporation accounts for 88% of controlling foreign ownership. Hence, it is only 12% of controlling foreign ownership that is from mutual funds or other institutional investors. Further, controlling foreign owners are often from Scandinavian countries. In summary, we find that it is not common for foreign (or U.S.) institutional investors to own more than 5% of the cash flow rights.

C. The Bias in Foreign Portfolio Shares

In Table 5, we investigate whether the determinants of foreign ownership in Sweden are consistent with the predictions of our model. We first regress the portfolio weight of a firm in the portfolio of Swedish shares held by foreign investors on the firm's weight in the Swedish market portfolio. We find that the market portfolio weight has considerable explanatory power in that regression. However, if we substitute the float portfolio shares for the market portfolio shares, we find that the float portfolio shares explain more of the cross-sectional variation in the portfolio shares of foreign investors in panel A and U.S. investors in panel B than the market portfolio shares. We add to the regression of foreign portfolio shares on float portfolio shares the residual from a regression of market portfolio shares on float portfolio shares. In the regression using the portfolio shares of foreign investors, this residual has a negative coefficient that is significant for one definition of the float and insignificant for the other definition. In the regression using the portfolio shares of U.S. investors, this residual has a negative significant coefficient in both regressions. Finally, we add to the regression a measure of departures

TABLE 5
U.S. and Foreign Investors' Holdings of Shares in Swedish Firms

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
<i>Panel A. Dependent Variable: Foreign Portfolio Weights</i>								
Constant	-0.1233 (-3.06)	-0.0741 (-2.71)	-0.0443 (-1.76)	-0.0007 (-3.26)	-0.0004 (-1.94)	-0.1652 (-2.65)	-0.0641 (-1.83)	-0.0555 (-1.57)
Market capitalization weights	1.2811 (10.10)					1.3197 (10.39)		
Float I weights		1.1690 (15.20)		1.1690 (20.90)			1.2070 (15.72)	
Float II weights			1.1011 (17.02)		1.1011 (22.64)			1.1230 (17.87)
Orthogonalized market capitalization weights				-0.9024 (-2.14)	-0.6256 (-1.50)			
Foreign listing						-0.3928 (-1.52)	-0.3554 (-1.80)	-0.2647 (-1.56)
Wedge I							0.0013 (0.64)	
Wedge II						0.0050 (1.57)		0.0023 (1.13)
Adj. R^2	0.9230	0.9513	0.9567	0.9568	0.9605	0.9275	0.9540	0.9584
<i>Panel B. Dependent Variable: U.S. Portfolio Weights</i>								
Constant	-0.2616 (-2.93)	-0.2068 (-3.08)	-0.1735 (-2.97)	-0.0021 (-4.06)	-0.0017 (-4.15)	-0.3640 (-2.88)	-0.2147 (-3.40)	-0.2224 (-2.94)
Market capitalization weights	1.5965 (5.48)					1.6814 (5.73)		
Float I weights		1.4714 (6.71)		1.4714 (9.01)			1.5631 (6.87)	
Float II weights			1.3956 (7.10)		1.3956 (9.80)			1.4582 (7.48)
Orthogonalized market capitalization weights				-2.4233 (-2.02)	-2.3109 (-3.52)			
Foreign listing						-0.8770 (-1.89)	-0.8654 (-2.26)	-0.7794 (-2.35)
Wedge I							0.0056 (2.03)	
Wedge II						0.0118 (1.97)		0.0080 (1.86)
Adj. R^2	0.8587	0.9030	0.9210	0.9275	0.9534	0.8737	0.9141	0.9316

Table 5 shows the results from regressions of the weight in portfolio of stocks of foreign and U.S. investors on market capitalization weights, weights based on float portfolios, and other firm-specific variables. In panel A, the dependent variable is the weight in the portfolio of stocks of foreign investors. In panel B, the dependent variable is the weight in the portfolio of stocks of U.S. investors. Float I weights refer to the market capitalization weights adjusted for closely-held shares by the largest shareholder coalition (the narrow measure of closely-held shares). Float II weights refer to the market capitalization weights adjusted for all closely-held shares (the broad measure of closely-held shares). All weights are expressed in %. The orthogonalized market capitalization weights variable refers to the residuals from a regression of market capitalization weights on Float I weights or Float II weights (that is, the variable captures the explanatory power of market capitalization weights beyond the float weights). Foreign listing is a dummy variable that equals one if a firm is listed on a foreign exchange, and zero otherwise. Wedge I is the voting rights minus cash flow rights for the largest shareholder coalition. Wedge II is the voting rights minus cash flow rights for all shareholder coalitions. There are 228 cross-sectional observations. The table reports least square estimates and t -statistics based on heteroskedasticity-consistent standard errors in parentheses.

from one share-one vote and a dummy variable if the firm has a foreign listing. The foreign listing dummy variable is negative and significantly so for U.S. investors. This is puzzling since Ahearne, Grier, and Warnock (2001) document a positive relation between whether a country has ADR programs and the U.S. portfolio share of a country. Perhaps surprisingly given the results of Giannetti and Simonov (2002), departure from one share-one vote has no significant impact on holdings of shares by foreign investors, but paradoxically increases holdings

by U.S. investors. As a result, there is no evidence that poorer corporate control adversely affects portfolio shares of foreign investors after controlling for the portfolio shares in the float portfolio.

VII. Conclusion and Additional Implications

In this paper, we show that the home bias is intricately linked to corporate governance. When companies are controlled by large investors, portfolio investors are limited in the fraction of a firm they can hold. Portfolio investors cannot hold the world market portfolio in a world with controlling shareholders. We show that the home bias is significantly smaller for the U.S. and dramatically smaller for most other countries when one takes into account the extent to which shares are held by controlling shareholders across the world. Since we have access to Swedish firm-level data on foreign ownership and closely-held shares, we use Sweden to investigate the predictions of our model at the firm level. We show that the weight of a Swedish firm in the portfolio of foreign investors is inversely related to the fraction of the firm held by controlling shareholders.

With our results, the removal of barriers to international investment cannot make the home bias disappear, however. For the home bias to disappear, it is necessary that investor rights improve across countries where firms are mostly controlled by large shareholders so that it becomes optimal for firms to have atomistic shareholders in these countries. Our regressions show that an improvement in investor protection in a country or in a firm does not lead to a greater portfolio share of that country or firm in the portfolio of U.S. investors keeping the share of the country or firm in the float portfolio constant. However, an improvement in investor protection increases the share of a country or a firm in the float portfolio and thereby increases the share of the country or firm in the portfolio of U.S. investors.

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