Corporate Governance, Investor Protection, and The Home Bias

by

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Abstract

If investors are poorly protected, it is optimal for firms to be closely held because selling shares to minority shareholders is otherwise too expensive. Empirically, most firms in countries with poor investor protection are closely held so that investors cannot hold the market portfolio. We show that the prevalence of closely held firms in countries with poor investor protection explains part of the home bias of U.S. investors. 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.

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 portfolio. 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% of the world market portfolio. If investors are mean-variance optimizers in a world of perfect financial markets, 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.

Many authors have attempted to explain the home bias. As reviewed in Lewis (1999) and Karolyi and Stulz (2002), 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 investor protection and corporate governance across countries can help understand the home bias. La Porta, Lopez-de-Silanes, and Shleifer (1999) establish that firms outside the U.S. are typically controlled by a large 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 will be held by local 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.

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 controlling block for a price significantly above the price at which shares trade on the open market – he demands a control premium to sell. Nenova (2000) 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. Our estimates may overstate the holdings of shares unavailable for stock market trading, because some of the large shareholders may not belong to a coalition of controlling shareholders and may be willing to alter their holdings without receiving a control premium. Yet, it is also possible that our estimates understate the holdings of shares unavailable for trading because many shareholders that may belong to a control coalition hold too few shares to be included in the database we use. For instance, a firm controlled by a coalition of shareholders where each shareholder in the coalition owns less than 5% of the shares would be viewed as a firm with no controlling shareholder in our analysis. Across the 51 countries, the average estimate is that 32% of the shares are not available for trading. However, there is substantial variation across countries in the fraction of shares that can be held by portfolio investors. Not surprisingly, the U.S. is the country where controlling shareholders are least important. In nine countries, tradeable shares (i.e., float) represent less than half of the market's total capitalization.

We show that, under some assumptions, portfolio investors hold the world market portfolio of shares that are not closely held. We construct an estimate of this portfolio, which we refer to as the world float portfolio. Our data is for 1997. 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. Consequently, portfolio investors should overweight the U.S. in their holdings relative to the share of the U.S. in the world market portfolio. Controlling shareholders are typically residents in the country where the firm is headquartered – the management team belongs to the coalition of controlling shareholders and has to be resident. Therefore, with few exceptions, foreign investors are portfolio investors and not controlling shareholders. Since the stock market wealth of U.S. investors is estimated to be 102.47% of the capitalization of U.S. equities and closely-held shares are estimated to represent 7.94% of U.S. equities, we expect U.S. investors to hold at least 63.07% of their equities in U.S. shares.[1] 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, of reducing (but not eliminating) the home bias of U.S. investors as traditionally measured.

In our empirical analysis, we show that controlling shareholders directly affect the investment of U.S. shareholders in a country. We find 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 controlling shareholders are more important in countries where investors' rights are

[1] The IFC reports the U.S. market capitalization to be $11,308,779 million in 1997. 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. 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, which is 102.47% of the U.S. market capitalization. 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 only U.S. shares, U.S. portfolio investors hold $10,689,649 in equities. If these investors held the world float portfolio, they would invest 58.32% of their wealth in U.S. equities. Consequently, we would expect U.S. investors to hold 0.5832 x $10,689,649 + $897,917 million in U.S. equities, or 63.07% of their wealth invested in equities.

less protected (see La Porta, Lopez-de-Silanes, Shleifer, and Vishny (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.

If we are right that differences in corporate governance can help explain the extent of the home bias, we should also see that foreign investors should invest more in firms that are less closely held. Sweden has data both on the fractions of shares that are closely held and on the fraction of shares held by foreign investors. We explore the relation between foreign ownership and the fraction of shares closely held in Sweden. We find that a firm's float portfolio is an important determinant of foreign ownership. The Swedish data is sufficiently complete that we can also use it to examine a number of assumptions we make in our analysis across countries. In particular, we find that instances where foreign investors belong to a controlling coalition are rare. 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 affect how the portfolio of foreign investors differs from the float portfolio for Sweden.

The paper proceeds as follows. We first present in Section I a simple model to show the conditions under which portfolio investors hold the world float portfolio. We then estimate in Section II the fraction of shares held by large shareholders for 51 countries. In Section III, we compare the world market portfolio to the world float portfolio. In Section IV, 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 V, we examine foreign ownership at the firm level in Sweden. Section VI concludes and discusses some additional implications of our results.

I. Investor protection, corporate governance, and foreign investors.

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

I.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 its 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 make management safer in its position. 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.

If the rights of investors are so poorly protected that those in control of firms have the ability to expropriate assets, it can be so expensive for firms to raise funds that doing so makes no economic sense unless firms can find ways to commit to limits on expropriation. When those in control of a firm have a large stake in the firm's cash flows, expropriation is expensive if it involves 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 Wolfenson (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 La Porta et al. (2002) and Burkart, Gromb, and Panunzi (1998)).

Empirical evidence shows that concentrated ownership is prevalent in countries with poor investor protection. La Porta et al. (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. La Porta et al. (2002) and Claessens et al. (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.

I.B. International diversification in the presence of large shareholders.

Consider a world with no transaction costs for trading in financial assets, no taxes, no barriers to international investment, and where portfolio investors are price takers. Risky assets include both domestic and foreign stocks. For simplicity, there is no inflation and no exchange rate uncertainty.[2] The investment opportunity set is constant and asset prices follow lognormal diffusions. Define $\mathbf{V}$ to be the variance-covariance matrix of domestic currency returns on risky assets, : the vector of expected domestic currency returns of risky assets over the risk-free rate, and $\mathbf{w}^{ki}$ the vector of weights of risky assets in the portfolio of investor i of country k. Investors can borrow or lend at the risk-free rate to satisfy their wealth constraint. If

[2] See Karolyi and Stulz (2001) 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.

1 is a vector of ones, then **1'w**^{ki} is the investor's allocation to risky assets. Investors maximize the expected utility of their terminal wealth. With these assumptions, each investor chooses the portfolio that minimizes volatility of return subject to a constraint on expected return. Any investor holds the following portfolio of risky assets regardless of his home country:

$$w^{ki} = \lambda^{ki} V^{-1} \mu \tag{1}$$

where 8^{ki} is the Lagrangian multiplier associated with the constraint on expected return. Since all investors hold the same portfolio of risky assets up to a scalar multiple, the fraction of holdings of risky assets that a U.S. investor invests in the U.S. must be the same as the fraction of holdings of risky assets any investor in the world holds in the U.S. Since all investors hold any two risky assets in identical proportions regardless of their home countries, these proportions must be the proportions of the world market portfolio. Investors therefore invest in the riskless asset and in the world market portfolio of risky assets. With this model, investors in a country have a home bias if the weight of home country risky assets in their portfolios exceeds the weight of these assets in the world market portfolio. The world market portfolio includes all assets in positive net supply. For simplicity, we assume that only common stocks are in positive net supply.

Let's now add controlling shareholders to this simple model. Each one of these shareholders owns a large stake in a firm, and as a result, controls that firm. To simplify the analysis, we assume that the controlling shareholder never sells shares so that he would lose control. There are no restrictions on borrowing and lending, so that the controlling shareholder can always make the required investment to have a controlling stake. We, therefore, model the controlling shareholder as a shareholder who chooses a portfolio by minimizing return volatility subject to a constraint on the expected return of the portfolio and subject to the constraint that he must hold enough shares of his firm so as to retain control.

We assume that to maintain control, the controlling shareholder must own a fraction T^{kj} of the shares of the firm he controls, firm kj. It will simplify the notation to adopt the convention that the controlling investor of firm j in country k is investor j in country k. Throughout, when we refer to firm (or controlling shareholder) xy, we mean firm y in country x. Controlling shareholders belong to the set *c* and portfolio investors belong to the set *nc*. For all investors kj in *c*, let W^{kj} be the controlling investor's wealth and M_{kj} be the market capitalization of the firm that the investor controls. The controlling shareholder must invest at least $T^{kj}M_{kj}/W^{kj}$ of his wealth in the equity of the firm to have control assuming that an investor's proportionate ownership of cash flow rights is his proportionate ownership of voting rights. The controlling shareholder then solves his portfolio optimization problem subject to the following constraint on his holdings of shares:

$$L^{kj} = \frac{1}{2} w^{kj\prime} V w^{kj} + \lambda^{kj}[Q^{kj} - w^{kj\prime}\mu] + \delta^{kj}\left[\frac{\omega^{kj} M_{kj}}{W^{kj}} - w^{kj\prime} h^{kj}\right] \quad \forall\ kj \in c \tag{2}$$

where Q^{kj} is the investor's required expected return for the portfolio and h^{kj} is a vector that has zeroes everywhere except in its kj-th element. Solving for the optimal portfolio, we obtain:

$$w^{kj} = \lambda^{kj} V^{-1}\mu + \delta^{kj} V^{-1} h^{kj} \quad \forall\ kj \in c \tag{3}$$

Investor kj puts 8^{kj} of his wealth in portfolio $V^{-1}\mu$, and $*^{kj}$ in portfolio $V^{-1}h^{kj}$. Portfolio $V^{-1}\mu$ is the portfolio of risky assets of a non-controlling investor with logarithmic utility, so we call it the log portfolio. $*^{kj}$, the Lagrangian multiplier associated with the constraint that the controlling investor must hold enough shares in the firm to have control, is equal to zero if the firm does not have a controlling shareholder. Absent controlling shareholders, the log portfolio is proportional to the world market portfolio. With controlling shareholders, it no longer is. This is because the controlling shareholders do not divide their holdings between the market portfolio and the risk-free asset.

The controlling shareholders divide their wealth among three portfolios: the risk-free asset, the log portfolio, and the portfolio $V^{-1}h^{kj}$. The portfolio $V^{-1}h^{kj}$ is investor-specific. For controlling investor kj, it is the minimum-variance portfolio that is constrained to have a portfolio weight of one in the common stock of firm kj. To construct this portfolio, controlling shareholder kj must take long and short positions in risky assets that reduce the risk he bears from his controlling stake.

In equilibrium, the demand for risky securities must equal their supply. Let M be the vector of the capitalizations of common stocks so that M_{kj}, the capitalization of the common stock of firm kj, is the element kj of the vector. W^w is the sum of the wealth of the investors in the world, then M/W^w corresponds to the vector of portfolio shares of the world market portfolio, which we write w^M. Capital market equilibrium requires that:

$$\begin{aligned} \mu &= \frac{1}{\lambda^w}\left[Vw^M - z\right] \\ \lambda^w &= \sum_{ki} \lambda^{ki} \frac{W^{ki}}{W^w} \end{aligned} \tag{4}$$

The first term in the brackets is the covariance of a security with the world market portfolio – the numerator of the security's CAPM beta. Absent controlling shareholders, the term z in the square brackets is equal to zero and the Sharpe-Lintner model holds. In the presence of controlling shareholders, z is not equal to zero, so that the term in the brackets is not equal to the covariance of a security with the world market portfolio. To understand how the presence of controlling shareholders affects the expected return of stock kj, we need to consider the determinants of z_{kj}.

The vector z is an adjustment factor due to the differential portfolio demands of the controlling shareholders. The element kj of that adjustment factor is:

$$z_{kj} = \left(\frac{\mu_L \dfrac{\omega^{kj} M_{kj}}{W^{kj}} - w^L_{kj} Q^{kj}}{V^{-1}_{kj} \mu_L - w^L_{kj} \mu^{kj}_{Hedge}} \right) \frac{W^{kj}}{W^{w}} \tag{5}$$

where μ_L is the expected excess return of the log portfolio and μ^{kj}_{Hedge} is the expected excess return on the hedge portfolio for controlling investor kj. Note that μ_L must be positive.

From equation (4), the expected return on stock kj falls as z_{kj} increases. Consider a stock that is uncorrelated with all other stocks. The return on this stock cannot be hedged, so that the expected excess return of the hedge portfolio for that stock is zero. Keeping the expected excess return on the log portfolio constant, an increase in the fraction of the stock held by the controlling shareholder and an increase in the capitalization of the stock both increase z_{kj} and, hence, decrease the expected excess return on the stock.[3] These results follow from the fact that as a stock's ownership becomes more concentrated, portfolio investors hold less of the stock in their portfolio, so that they require a smaller risk premium to hold the supply of the stock available to them.

In general, the proportion of a stock in the log portfolio will be trivial relative to the proportion of that stock in the controlling shareholder's portfolio. Consequently, the numerator of the term in brackets of equation (5) will be positive. In the special case where stock returns are uncorrelated, there is no hedge portfolio and the denominator is μ_L / σ^2_{kj}, which is positive. We expect the denominator to be generally positive because the hedge portfolio has primarily short positions if stock returns are positively correlated.

[3] Note that the denominator is unchanged as the fraction of the stock held by the controlling shareholder increases. The first term in the numerator increases. As the first term increases, the weight of the stock in the log portfolio falls because the expected excess return of the stock falls, which decreases the second term. However, the second term has a minus sign, so that the decrease in that term increases the numerator.

This means that the existence of a controlling shareholder for firm kj reduces the required return of that firm's stock relative to the CAPM for a given expected return on the market portfolio.

It is important to note that this result does not imply that going from an economy with no controlling shareholders to one with controlling shareholders lowers expected returns on common stocks. This is because introducing controlling shareholders affects $1/8^{w}$. In the Sharpe-Lintner model, $1/8^{w}$ is the price of risk. With controlling shareholders, it is not. An analysis of how $1/8^{w}$ changes as the degree of ownership concentration in the economy changes is beyond the scope of this paper since portfolio shares are unaffected by $1/8^{w}$. Further, the value of a firm's equity equals the expected cash flows to equity discounted at the required return for equity. Because controlling shareholders extract private benefits of control, the expected cash flows to minority shareholders are lower when the firm has a controlling shareholder, so that it would not be correct to infer that firms with concentrated ownership are worth more than other firms for minority shareholders.

We can now solve for the holdings that portfolio investors must have in this model by substituting equilibrium expected returns given by equation (4) into equation (1):

$$w^{ki} = \frac{\lambda^{ki}}{\lambda^{w}}\left[w^{M} - V^{-1}z\right] \tag{6}$$

It immediately follows from equation (6) that portfolio investors do not hold the world market portfolio. Consider two stocks, pq and kj. There is no controlling shareholder for firm pq, but there is one for firm kj. If we ignore the impact of controlling shareholders, we would predict that each investor in the world should hold the two shares in the ratio w^{M}_{pq} / w^{M}_{kj} . Now, using equation (6), suppose that the return of stock kj is uncorrelated with all other securities. In this case, our model predicts that portfolio investors hold the two shares in the ratio of $w^{M}_{pq} /(w^{M}_{kj} - z_{kj} / \sigma^{2}_{kj})$. We know already that in this case z_{kj} is positive, so that portfolio investors allocate more of their wealth to stock q relative to stock j than they would in a world without controlling shareholders. With our assumptions, equation (6) therefore predicts that the portfolios of portfolio investors in countries with few controlling shareholders will appear to have a home bias because portfolio investors underweight stocks of firms with controlling shareholders.

The key implication of the asset demand equation for a controlling shareholder is that he uses risky assets to reduce the risk resulting from his controlling stake. In a world where the investor could hedge his controlling stake exactly, he would do so and then choose the same portfolio as any other investor. Obviously, the investor is not able to hedge his controlling stake exactly – he cannot go short a security with a return perfectly correlated with the return of the stock of firm kj. This leaves the investor in a situation where he will choose to be short in the portfolio whose return is most highly correlated with the stock of firm kj without including the stock of firm kj. In general, stocks from the investor's home country, country k, are likely to be positively correlated with the stock of firm kj. In financial markets with no restrictions to short sales and no transaction costs, we would therefore expect controlling shareholders to be short stocks from their home country to hedge their controlling stake. This behavior would reduce the home bias predicted by our model since foreign investors and local portfolio investors would have to buy the shares sold short by the controlling shareholders.

Selling stocks short is difficult and expensive in many countries. In addition, selling stocks short to hedge a controlling stake requires the short-sale positions be kept in place as long as the investor holds the controlling stake. If there is a chance that the investor would have to close the short sale, the investor might have to sell shares from his controlling stake if the shares sold short have appreciated. Because of the risk involved, the controlling stake cannot be fully used as collateral for margin requirements for the short sale. As a result, if the shares sold short appreciate, it is highly likely that eventually the controlling shareholder would become liquidity constrained and would have to sell shares from his stake to meet margin requirements. Consequently, hedging his controlling position through short sales creates a substantial risk for the controlling investor, making it unlikely that he will establish a hedge portfolio even if short-sales are feasible.

If the controlling shareholder cannot sell shares short, an interesting case to consider is the one where the controlling shareholder's stock holdings consist only of his control block. Consequently, the market-clearing condition for the common stock of firm kj is:

$$\sum_{\mathrm{ki} \in nc} \lambda^{\mathrm{ki}} \mathrm{V}^{-1} \mu \mathrm{W}^{\mathrm{ki}} \mathrm{h}^{\mathrm{kj}} = (1 - \omega^{\mathrm{kj}}) \mathrm{M}_{\mathrm{kj}} \tag{7}$$

where *nc* is the set of portfolio investors.

Solving for the asset demands of portfolio investors in equilibrium, we have:

$$\mathrm{w}^{\mathrm{ki}} = \left(\frac{\mathrm{W}^{\mathrm{w}} \lambda^{\mathrm{ki}}}{\mathrm{W}^{\mathrm{wnc}} \lambda^{\mathrm{wnc}}} \right) (1 - \omega) \otimes \mathrm{w}^{\mathrm{M}} \tag{8}$$

where $(1 - \omega) \otimes \mathrm{w}^{\mathrm{M}}$ denotes a vector where element kj is $(1 - \omega^{\mathrm{kj}}) \mathrm{w}_{\mathrm{kj}}^{\mathrm{M}}$, $\mathrm{W}^{\mathrm{wnc}}$ is the aggregate wealth of investors who are not controlling shareholders, and 8^{wnc} is the wealth-weighted average of the Lagrangian multiplier across investors who are not controlling shareholders. In this model, portfolio investors do not hold the world market portfolio. More precisely, portfolio investors hold stocks in the ratio:

$$\left(\frac{\mathrm{w}_{\mathrm{pq}}^{\mathrm{ki}}}{\mathrm{w}_{\mathrm{kj}}^{\mathrm{ki}}} \right) = \frac{(1 - \omega^{\mathrm{pq}}) \mathrm{w}_{\mathrm{pq}}^{\mathrm{M}}}{(1 - \omega^{\mathrm{kj}}) \mathrm{w}_{\mathrm{kj}}^{\mathrm{M}}} \tag{9}$$

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 hold these stocks in different proportions than their proportions in the world market portfolio. In particular, if stocks pq and kj have the same proportions in the world market portfolio, portfolio investors hold a larger proportion of stock pq in their portfolio than of stock kj if the controlling shareholder of firm pq holds a greater proportion of that firm's stock than the controlling shareholder of firm kj holds of the stock of that firm.

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:

$$\left(\frac{\overline{w}_{pq}^{ki}}{w_{pq}^{M}}\right) = \frac{(1-\omega^{pq})}{1'[(1-\omega)\otimes w^{M}]} \tag{10}$$

where $\overline{w}_{pq}^{ki}$ denotes the portfolio weight of asset pq in investor ki's portfolio of risky assets. The portfolio weights $\overline{w}_{pq}^{ki}$ sum to one, while the w_{pq}^{ki} weights do not. 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 a dollar 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 (10) 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.

Our model predicts that poor investor protection implies that portfolio investors do not hold the world market portfolio. In firms with poor investor protection, firms have controlling shareholders with large stakes in the firm's cash flows. Fewer shares in firms from countries with poor investor protection are therefore available to portfolio investors. Portfolio investors therefore overweight the shares of countries where the fraction of total capitalization held by controlling shareholders is smaller than the fraction of the world market portfolio held by controlling shareholders and underweight the shares of other countries relative to the world market portfolio weights.

The U.S. is a country where the fraction of total capitalization held by controlling shareholders is relatively low. Suppose that the controlling shareholders in the U.S. hold 10% of the U.S. market portfolio and the U.S. market portfolio is 49% of the world market portfolio. Suppose further that, outside the U.S., controlling shareholders hold 50% of the capitalization of firms. The numerator of equation (10) is 0.9. The denominator is 0.9 x 0.49 + 0.5 x 0.51, or 0.70. Consequently, for portfolio investors, the U.S. has a weight equal to 1.29 times its weight in the world market portfolio, or 0.63. Assume further that U.S. stock market wealth equals the capitalization of the U.S. stock market. With 10% of the U.S. market held by controlling shareholders, our model predicts that U.S. shareholders hold 67% of the U.S. market portfolio. With this example, roughly half of the home bias of U.S. investors is explained. As we will see, the assumptions made in this example are not unreasonable. We can also predict the extent of the home bias in a typical foreign country. We assume that controlling shareholders are domestic shareholders, which is generally the case.[4] Consider then a country that is 5% 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

[4] Unfortunately, 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 V that this is the case for Sweden.

capitalization, even when portfolio investors do not have a home bias in that country.

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.

II. 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 United States Department of Treasury. 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.[5] 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

[5] As Ahearne, 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.

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, ω^{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 ten 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 2 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 ω^{kj} has one upward bias and several downward biases. The 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 controlling coalition for that company.[6] The downward biases appear more significant.

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 fifteen 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 fifteen 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.

The model of Section I assumes that there are no 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. This would lead us to underestimate the extent to which the existence of controlling shareholders reduces the home bias.

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

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

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. We then use this value as our estimate of the fraction of shares held by controlling shareholders for the country. This is shown in equation (11) below where $T^{kj} \times M_{kj}$ is the market value of closely held shares in firm kj and M_{kj} is the market value of all shares in firm kj:

$$\text{Fraction of closely held shares for country k} = \frac{\sum_{j=1}^{N} \omega^{kj} M_{kj}}{\sum_{j=1}^{N} M_{kj}} \qquad (11)$$

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 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 one percent 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%.

La Porta, et. al (2000) provide evidence that common law countries protect investor rights better than civil law countries. We would therefore expect that ownership is less concentrated in common law countries. Nenova (2000) shows that the value of control is lower in common law and Scandinavian law countries. Eight out of the eleven countries where value-weighted controlling ownership is below 30% are either common law countries or Scandinavian countries. The exceptions are Mexico, Switzerland, and Taiwan. Though a country with low ownership concentration is almost surely a common law country or a Scandinavian country, a country with common law does not necessarily have low ownership concentration. Common law countries are almost equally split between value-weighted ownership below 50% (eight countries) and value-weighted ownership above 50% (seven countries). There is stronger evidence that the value-weighted controlling ownership is negatively related to measures of capital market development: The U.K. and the U.S. have the lowest value-weighted controlling ownership and the most developed capital markets.

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.

Section III. The home bias after taking into account closely-held shares.

In the first column of Table 2, we report the weight of each country in the U.S. investors' portfolio. The second 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 third column of Table 2 shows the fraction of the world float portfolio, which is constructed using only the shares that are not closely-held. For each country, the available shares of firm kj represent a fraction $(1-\omega^{kj})w_{kj}^{M}$ of the world market portfolio. Since the portfolio weights of the world float portfolio 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, $\overline{w}_p^F$:

$$\overline{w}_p^F = \sum_{kj} \overline{w}_{kj}^{ki} = \sum_{kj} \frac{(1-\omega^{kj})(w_{kj}^M / w_j^M)}{1'[(1-\omega) \otimes w^M]} w_j^M \tag{12}$$

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 p's market portfolio. Consequently, a country will have a larger weight in the world float portfolio only if the fraction of shares available in that country is greater than the fraction of shares available 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 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.

Rather than measuring a country's portfolio share in the portfolio of U.S. investors, we can measure the extent to which U.S. investors exhibit a home bias when investing in a particular country. Ahearne, Griver, and Warnock (AGW, 2001) introduce a measure of the home bias defined as one minus the ratio of a country's weight in the portfolio of U.S. investors divided by the country's weight in the world market portfolio. In the presence of closely-held shares, our analysis predicts a bias:

$$\text{Predicted Bias} = 1 - \frac{w_k^{US}}{w_k^{M}} = 1 - \frac{(1-\omega^k)}{1'[(1-\omega)\otimes w^M]} \tag{13}$$

The fourth column of Table 2 shows the AGW bias measure. The bias measure exceeds 0.5 for all countries. Our predicted bias is positive in all countries but five and exceeds 0.5 in 14 countries. A negative bias means that we expect a country to be overweighted in the portfolio of U.S. investors. U.S. investors are only expected to overweight Ireland, Sri Lanka, Sweden, the U.K., and the U.S.

The average AGW bias is 0.81 while our average predicted bias is 0.33. The home bias is not eliminated when we take into account closely-held shares. The means of the predicted bias and the AGW bias are significantly different. Taking into account closely-held shares using our measure brings the unexplained bias to 0.48. Using the world market portfolio as a benchmark for evaluating the extent to which U.S. investors have a home bias therefore builds in a substantial bias in the comparison. When one starts from the world float portfolio, the home bias is 41% smaller.

Section IV. 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 shares of the U.S. is one minus the sum of the portfolio shares of the other countries.

The first column of Panel A of 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-square 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 of 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 the second panel 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 this orthogonalization procedure, the dependent variables are the country weight in the world market portfolio and a variable which corresponds to the information in the country weight in the world float portfolio that is not also in the world market portfolio.[7] 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 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 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

[7] The orthogonalization procedure we use is not regressing the U.S. portfolio share on the world market share and the residual of a regression of the float portfolio market share on the world market share. We use the Orthog procedure in Stata which uses a QR decomposition and thus the reported coefficients in the orthogonalized regression differ from the coefficients using two-stage least squares by a simple transformation of the data. We can obtain the two-stage least squares coefficients simply by multiplying our coefficient vector by the transpose of the inverse of the R matrix created in the decomposition.

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 affect our conclusions.

In all regressions of Table 4, we control for GNP per capita in 1997 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 La Porta et al. (1998) anti-director index. A higher value of the index means greater minority shareholder protection. La Porta et al. (1998) compute this index by adding up dummy variables that take value one if a country does not block shares before the shareholder meeting, if a country allows voting by mail, if it allows for cumulative voting or proportional representation, if it has a mechanism for shareholders to pursue redress against decisions of the company that they believe to be harmful, if it has preemptive rights, and finally if less than 10% of the shareholder vote can call a shareholder assembly. We then control for measures of judicial efficiency, corruption, and expropriation risk. These indices are those used by La Porta et al. (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. Finally, 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. 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.

Though we do not reproduce the results, we estimate the regressions of Table 4 imposing the requirement that a country has to have at least 5, 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 Table 4 using weighted least squares regressions. The idea is that we estimate more precisely the fraction of market capitalization that is closely-held in some countries than in others. We choose to weight more countries where this fraction is higher. When we proceed this way, our results become stronger.

V. A firm-level examination for Sweden.

In the empirical analysis of Sections III and IV, we construct a world float portfolio using data reported by Worldscope. For the countries used in our analysis, we do not have available 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 share ownership 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 investors. 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.

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. Sweden has better investor protection than most countries in our sample. Nenova (2000) shows that the value of control is low in Sweden. It is not surprising, therefore, that the extent to which shares are closely held is less in Sweden than in many countries in our sample. Yet, at the same time, the extent to which shares are closely-held is higher in Sweden than in the U.S. or the U.K. and there is substantial cross-sectional variation in the fraction of shares held by controlling shareholders. 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.

V. A. Data.

We consider data on individual firms for the year of 1997. The market capitalization of a firm is the total number of shares outstanding times the price of each share at the year-end.[8] The data are collected from Stockholm Information Exchange (SIX). Stockholders of all listed firms in Sweden are registered at Värdepaperscentralen (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. 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 (2001) who study agency costs of controlling minority 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

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[8] A 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 same cash flow rights but lower voting rights. The firms with non-listed shares are generally the smaller firms. Our results are not sensitive in 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.

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. 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 74% and 87%.

V.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 at the Stockholm Stock Exchange in 1997.[9] 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 III, 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 among the lowest fraction 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.

[9] The SEK/USD exchange rate was at the end of 1997 about 7.97.

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. Our dataset allows us to distinguish between cash flow rights and voting rights of the controlling shareholder block. A one 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 same the family as the founder), or another corporation. Controlling foreign ownership by 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.

We sort all firms by the cash flow rights of the controlling shareholder coalition and divide them into two groups (each with 114 firms) – firms with low and high cash flow rights ownership by controlling shareholders. For the group with low cash flow rights ownership, the sum of all shareholder coalitions has on average 26% of the equity, whereas the group with high cash flow rights has on average 57% of the equity. Within each group we then compute the average market capitalization. On average, firms with less ownership of cash flow rights by controlling shareholders are four times larger than firms with more ownership of cash flow rights by controlling shareholders. If the two largest firms (Astra and Ericsson) are excluded from the analysis, the average market capitalization of firms with low cash flow rights ownership by controlling shareholders is about two times larger than the average market capitalization of firms with high cash flow rights ownership by controlling shareholders.

We also do a more formal statistical analysis by regressing cash flow rights on market capitalization or log of market capitalization (to avoid the influence of a few large firms). We find a negative correlation relation between cash flow rights of controlling shareholders and market capitalization (for both our measure of cash flow rights). We can reject a zero correlation at the 1% level (using robust standard errors). The R-squares are, however, only about 2% to 4%. The overall conclusion is that firms with a large fraction of controlled shares are typically smaller than firms with fewer shares held by controlling shareholders.

V. C. The bias in foreign portfolio shares

If foreign investors held the Swedish market portfolio, then the AGW measure of the bias should be zero for each Swedish share. This measure is one minus the ratio of the weight of a firm in the portfolio of foreign investors divided by the weight of the firm in the market portfolio. If the difference between the market portfolio and the float portfolio explains the home bias, there should be no bias if we compute the

AGW measure using the weight of a firm in the float portfolio. We compute the float AGW measure using two different float portfolios: a float portfolio that takes into account only the shares held by the largest shareholder coalition (the narrow float portfolio) and a float portfolio that takes into account the shares held by all shareholder coalitions (the broad float portfolio).

The equally weighted bias is about 37.7% for total foreign ownership and about 60.2% for U.S. ownership when market capitalization weights are used. When we instead adjust for shares held by controlling shareholders, the bias is much lower for foreigners in total (it is 27.2% and 17.7% for the narrow float portfolio and for the broad float portfolio). For U.S. ownership the corresponding numbers are 55.7% and 53.0%, that is, somewhat lower than with market capitalization weights.

In Table 5, we report the results from a more formal statistical analysis to characterize the foreign holdings bias in the cross-section. We regress our first measure of the bias on market capitalization and find a significantly negative relation, that is, the larger firm size, the lower the bias. This relation is robust to the inclusion of a dummy for firms with foreign listings or other characteristics. The adjusted R-square in the regression is 11.2% When we include a proxy for controlling shareholders (either controls of cash flow rights or control of vote rights), it enters significant in the regressions. Foreigners tend to underweight firms where controlling shareholders have a large stake. The adjusted R-square is now 14.4%. We then control for the difference between voting rights ownership and cash flow rights ownership. One might think of this difference, which we call the wedge, as a proxy for agency costs. The wedge is significant, so that there is a larger bias when the wedge is larger. However, when we include both a measure of voting rights ownership and the wedge, only the measure of voting rights ownership is significant.

Portfolio investors cannot buy the closely-held shares. We therefore also regress the bias measures constructed from the narrow and broad float portfolios on the same set of variables. The R-squares in the regressions without a proxy for controlling shareholders are now much lower, 4.9% and 3.38%. Hence, controlling for closely-held shares reduces the within-market bias. However, the wedge is significant in the regressions. The bias increases with the wedge. Finally, when we include both the ownership of voting rights by controlling shareholders and the wedge, the results seem unreliable because of multicollinearity. However, the difference between float portfolios and the market portfolio cannot explain the role of firm size as a determinant of foreign portfolio holdings since firm size is significant in all the regressions. Interestingly, a foreign listing does not reduce the bias in contrast to the results in AGW. When we repeat the regressions for U.S. ownership, the controlling shareholder variables explain less when the bias is measured using the float portfolio.

Table 6 presents results from regressions of foreign and U.S. holdings on market portfolio and float portfolio weights. The results show that foreign and U.S. investors hold portfolios closer to the float portfolio than to the market portfolio, so that the portfolio holdings of foreign and U.S. investors in Sweden are less anomalous relative to the Swedish market portfolio when compared to a benchmark that accounts for closely-held shares.

Section VI. 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 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.

Though we have focused on holdings of foreign shares by U.S. investors across countries, our results also have implications for two additional issues that have received attention over time:

1) Turnover and home bias. Tesar and Werner (1995) show that foreign investors have greater turnover than domestic investors. Warnock (2001) using different data finds that U.S. investors turn over their foreign shares faster than their holdings of NYSE stocks but more slowly than their holdings of NASDAQ stocks. Since controlling shareholders do not trade their holdings, our evidence suggests that for foreign investors to trade more than the domestic investors who trade, one should observe a turnover ratio for foreign investors that exceeds the turnover ratio of domestic investors. Unless the turnover ratio of foreign investors is much larger than the turnover ratio of domestic investors, one has to conclude that foreign investors trade less than domestic investors.

2) Bias of foreign investors toward large firms. Kang and Stulz (1997) show that foreign investors in Japan have a bias towards holding larger firms. This size bias has been confirmed for other countries. There are a number of possible explanations for this bias. However, there is evidence in the U.S. that smaller firms are more likely to have high inside ownership (see Demsetz and Lehn (1985)). If this stylized fact for the U.S. holds across countries, then the fraction of shares that are available to foreign investors is likely to be proportional to size. This fact does hold for Sweden, but there is still a positive relation between a firm's share in the portfolio of foreign investors and the firm's size after controlling for closely-held shares.

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Table 1
Summary Statistics for Countries for Year 1997
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 (3) is computed using only firms for which ownership data is available on Worldscope.

COUNTRY	Number of Firms	Number of Firms with Closely-held shares Data	Percentage of Market Cap. Closely Held	Market Cap. of Firms With Closely-held shares Data	Total Market Cap. ($ Mil)	Sample Firm Percent of Total Market Cap. (4)/(5)
	(1)	(2)	(3)	(4)	(5)	(6)
ARGENTINA	43	14	52.68%	37,764	59,252	63.73%
AUSTRALIA	279	268	24.85%	257,422	295,785	36.95%
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 REPUBLIC	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%
UNITED KINGDOM	1510	1474	9.93%	1,933,420	1,996,225	96.85%
UNITED STATES	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%

Table 2
World market index and home bias measures
The world float portfolio is the world market portfolio adjusted to reflect that not all shares are available for purchase by portfolio investors. We calculate the Ahearne, Griever, and Warnock (2001, AGW) measure of home bias using our dataset.

COUNTRY	Weight in U.S. Investor Portfolio (1)	World Market Portfolio Weight (2)	World Float Portfolio Weight (3)	AGW Measure of Home Bias 1-[(1)/(2)]	Predicted Home Bias 1-[(3)/(2)]
ARGENTINA	0.10	0.26	0.16	0.62	0.40
AUSTRALIA	0.24	1.30	1.25	0.82	0.04
AUSTRIA	0.03	0.16	0.09	0.82	0.42
BELGIUM	0.05	0.60	0.41	0.92	0.33
BRAZIL	0.24	1.12	0.47	0.79	0.58
CANADA	0.54	2.49	1.63	0.78	0.35
CHILE	0.03	0.32	0.14	0.89	0.55
CHINA	0.02	0.91	0.36	0.98	0.60
CZECH REPUBLIC	0.01	0.06	0.02	0.90	0.72
DENMARK	0.07	0.41	0.39	0.84	0.04
EGYPT	0.01	0.09	0.07	0.94	0.24
FINLAND	0.11	0.32	0.31	0.65	0.02
FRANCE	0.65	2.96	2.34	0.78	0.21
GERMANY	0.49	3.62	2.55	0.86	0.29
GREECE	0.01	0.15	0.05	0.92	0.68
HONG KONG	0.21	1.81	1.32	0.88	0.27
HUNGARY	0.03	0.07	0.04	0.60	0.35
INDIA	0.05	0.56	0.43	0.92	0.24
INDONESIA	0.02	0.13	0.06	0.85	0.60
IRELAND	0.11	0.22	0.24	0.51	-0.11
ISRAEL	0.05	0.20	0.11	0.73	0.46
ITALY	0.32	1.51	1.21	0.79	0.20
JAPAN	1.04	9.72	7.65	0.89	0.21
JORDAN	0.00	0.24	0.01	0.99	0.56
KOREA (SOUTH)	0.03	0.18	0.14	0.82	0.22
LUXEMBOURG	0.04	0.15	0.06	0.73	0.58
MALAYSIA	0.04	0.41	0.25	0.91	0.39
MEXICO	0.27	0.69	0.65	0.61	0.06
MOROCCO	0.00	0.05	0.04	0.97	0.35
NETHERLANDS	0.81	2.05	1.74	0.60	0.15
NEW ZEALAND	0.04	0.13	0.04	0.70	0.71
NORWAY	0.07	0.29	0.22	0.75	0.25
PAKISTAN	0.01	0.05	0.01	0.81	0.71

PERU	0.02	0.08	0.03	0.77	0.60
PHILIPPINES	0.02	0.14	0.09	0.84	0.38
POLAND	0.01	0.05	0.02	0.77	0.54
PORTUGAL	0.05	0.17	0.14	0.69	0.17
SINGAPORE	0.08	0.47	0.26	0.83	0.45
SLOVAKIA	0.00	0.01	0.01	0.92	0.37
SOUTH AFRICA	0.08	1.02	0.61	0.93	0.40
SPAIN	0.19	1.27	0.94	0.85	0.26
SRI LANKA	0.00	0.01	0.01	0.89	-0.03
SWEDEN	0.30	1.20	1.21	0.75	-0.01
SWITZERLAND	0.47	2.53	2.39	0.81	0.05
TAIWAN	0.04	1.26	1.25	0.97	0.01
THAILAND	0.02	0.10	0.06	0.84	0.46
TURKEY	0.05	0.27	0.10	0.83	0.63
UNITED KINGDOM	1.66	8.76	10.07	0.81	-0.15
UNITED STATES	91.29	49.60	58.32	-	-0.18
VENEZUELA	0.02	0.06	0.03	0.77	0.51
ZIMBABWE	0.00	0.01	0.01	0.88	0.19

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.

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 which 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.

Panel A: Simple regressions of the world market portfolio and the world float portfolio.

Dependent Variable is Weight in Portfolio of Stocks of U.S. Investors				
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)
N	50	50	50	50
Adjusted R^2	0.8416	0.8816	0.8792	0.8517

Panel B: Orthogonalization of world market portfolio and world float portfolio.

Dependent Variable is Weight in Portfolio of Stocks of U.S. Investors		
Constant	0.0017 (11.47)	0.0017 (11.47)
Weight in World Market Portfolio	0.0028 (11.36)	
Weight in World Float Portfolio - Additional explanatory power	0.0006 (3.22)	
Weight in World Float Portfolio		0.0029 (14.11)
Weight in World Market Portfolio - Additional explanatory Power		0.0000 (0.09)
N	50	50
Adjusted R^2	0.8792	0.8792

Table 4: The determinants of a foreign country's share in the portfolio of stocks of US investors.

The world float portfolio is the world market portfolio adjusted to reflect that not all shares are available for purchase by portfolio investors. US$ 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, Lopes 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). The table reports least square estimates and t-statistics based on heteroskedasticity-consistent standard errors in parentheses.

Dependent variable is weight in US stock portfolio								
Constant	0.0007	0.0003	-0.0007	-0.0030	0.0002	0.0005	-0.0000	-0.0007
	(1.51)	(0.69)	(-1.05)	(-2.09)	(1.02)	(1.76)	(-0.01)	(-0.19)
Weight in World Market Portfolio	-0.0169	-0.0164	-0.0063	-0.0041	-0.0183	-0.0799	-0.0062	-0.0693
	(-0.28)	(-0.27)	(-0.12)	(-0.09)	(-0.33)	(-1.23)	(-0.10)	(-1.19)
Weight in World Float Portfolio	0.1720	0.1695	0.1602	0.1559	0.1711	0.2140	0.1603	0.1858
	(3.35)	(3.34)	(3.78)	(4.03)	(3.70)	(4.21)	(3.09)	(4.17)
$ GNP per capita	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(1.36)	(1.18)	(-0.46)	(-1.37)	(1.70)	(1.41)	(1.27)	(0.09)
Anti-director Rights Index	-0.0001							-0.0003
	(-0.83)							(-0.90)
Judicial efficiency Index		-0.0000						-0.0002
		(-0.05)						(-0.56)
Corruption Index			0.0002					0.0006
			(1.41)					(1.85)
Expropriation Risk Index				0.0005				0.0001
				(2.26)				(0.15)
Stock Market Capitalization to GDP					0.0001			0.0017
					(0.20)			(1.16)
Equity Issues to GDP						-0.0122		-0.0455
						(-0.96)		(-1.08)
Average Openness							0.0006	-0.0012
							(0.55)	(-0.94)
N	37	37	37	37	42	24	33	20
Adjusted R^2	0.8846	0.8823	0.8902	0.8963	0.8872	0.8966	0.8827	0.9113

Table 5: Home Bias Regressions for Swedish Firms

The table shows the results from regressions of measures of the home bias on various variables. In Panel A the dependent variables are bias measures for foreign investors. In Panel B the dependent variables are bias measures of U.S. investors. The variable Bias refers to 1 – Weight(Foreign or U.S. Ownership in a Firm)/Weight(Benchmark), where the benchmark weights are market capitalization weights. Bias I refers to the bias measure adjusted for closely held shares by largest shareholder coalition (the narrow measure of closely held shares). Bias II refers to the bias measure adjusted for all closely held shares (the broad measure of closely held shares). The bias measures are expressed in %. LogMCap is the log of the market capitalization of a firm. Voting Rights I refers to the voting rights of the largest shareholder coalition. Voting Rights I refers to the voting rights of all shareholder coalitions. 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.

Panel A. Foreign Holdings

	Bias				Bias I				Bias II			
Constant	103.4101	72.5820	94.1520	75.6756	99.9051	95.7777	88.9656	110.1631	110.8753	125.4479	91.8222	144.6392
	(5.70)	(3.40)	(5.01)	(3.52)	(3.98)	(3.87)	(3.62)	(4.21)	(3.33)	(3.31)	(2.79)	(3.74)
LogMCap	-8.5772	-8.5335	-8.5601	-8.5357	-9.6909	-9.6567	-9.8989	-10.2593	-12.8478	-12.8684	-12.8126	-12.8821
	(-3.27)	(-3.17)	(-3.25)	(-3.18)	(-2.66)	(-2.66)	(-2.72)	(-2.85)	(-2.58)	(-2.60)	(-2.59)	(-2.74)
Foreign Listing	-25.6222	-21.0569	-29.0899	-24.1402	-13.2698	-12.4846	-13.6254	-19.1658	8.5852	6.4271	1.4487	-12.7007
	(-1.64)	(-1.34)	(-1.88)	(-1.56)	(-0.66)	(-0.61)	(-0.69)	(-0.99)	(0.36)	(0.27)	(0.06)	(-0.60)
Voting Rights I						0.0907		-0.6145				
						(0.41)		(-1.56)				
Voting Rights II		0.5366		0.3953						-0.2536		-1.1300
		(3.16)		(1.91)						(-0.94)		(-2.55)
Wedge I							0.9419	1.5246				
							(2.63)	(2.56)				
Wedge II			0.6537	0.3547							1.3454	2.2003
			(2.49)	(1.14)							(3.48)	(3.57)
Adjusted R^2	0.1117	0.1440	0.1361	0.1460	0.0525	0.0490	0.0827	0.0956	0.0388	0.0338	0.0750	0.1123

Table 5 Continued
Panel B. U.S. Holdings

	Bias				Bias I				Bias II			
Constant	149.1088 (10.75)	112.8186 (6.37)	146.1737 (9.50)	109.4402 (6.69)	149.3490 (9.13)	140.9139 (8.02)	145.3198 (7.99)	143.7906 (8.58)	153.4582 (8.59)	133.7323 (6.20)	145.5083 (7.52)	137.4976 (6.36)
LogMCap	-11.8015 (-5.86)	-11.7501 (-5.84)	-11.7961 (-5.82)	-11.7477 (-5.94)	-12.6119 (-5.33)	-12.5420 (-5.26)	-12.6885 (-5.33)	-12.6625 (-5.39)	-13.6851 (-5.42)	-13.6572 (-5.38)	-13.6704 (-5.39)	-13.6599 (-5.37)
Foreign Listing	-19.3442 (-1.44)	-13.9700 (-1.07)	-20.4435 (-1.53)	-10.6028 (-0.85)	-8.0488 (-0.62)	-6.4400 (-0.49)	-8.1758 (-0.63)	-7.7761 (-0.59)	1.2979 (0.10)	4.2191 (0.33)	-1.6798 (-0.13)	0.4663 (0.04)
Voting Rights I						0.1854 (1.22)		0.0443 (0.19)				
Voting Rights II		0.6316 (3.84)		0.7859 (4.84)						0.3433 (1.98)		0.1714 (0.70)
Wedge I							0.3469 (1.37)	0.3049 (1.21)				
Wedge II			0.2072 (0.78)	-0.3873 (-1.43)							0.5614 (2.03)	0.4317 (1.16)
Adjusted R^2	0.2017	0.2610	0.2017	0.2664	0.1372	0.1379	0.1411	0.1374	0.1203	0.1289	0.1340	0.1323

Table 6: U.S. and Foreign Investors' Holdings of Shares in Swedish Firms

The table shows the results from regressions of the weight in portfolio of stocks of foreign and U.S. investors on market capitalization weights and weights based float portfolios. In Panel A the dependent variable is the weight in portfolio of stocks of foreign investors. In Panel B the dependent variable is the weight in portfolio of stocks of U.S. investors. Float I refers to the market capitalization weights adjusted for closely held shares by largest shareholder coalition (the narrow measure of closely held shares). Float II refers to the market capitalization weights adjusted for all closely held shares (the broad measure of closely held shares). Orthogonal Market Capitalization Weights refers to the residual from a regression of Market Capitalization Weights on Float I or II (that is, the variable captures the explanatory power of market capitalization weights beyond Float I or II). There are 228 cross-sectional observations. The table reports least square estimates and t-statistics based on heteroskedasticity-consistent standard errors in parentheses.

Panel A. Dependent Variable: Foreign Weights

	(i)	(ii)	(iii)	(iv)	(v)
Constant	-0.0012 (-3.00)	-0.0007 (-2.33)	-0.0004 (-1.33)	-0.0007 (-3.50)	-0.0004 (-2.00)
Market Capitalization Weights	1.2811 (10.10)				
Float I Weights		1.1690 (15.20)		1.1641 (20.82)	
Float II Weights			1.1011 (17.02)		1.1011 (22.66)
Orthogonalized Market Capitalization Weights				-0.9024 (-2.14)	-0.6256 (-1.50)
Adjusted R^2	0.9230	0.9513	0.9567	0.9568	0.9605

Panel B. Dependent Variable: U.S. Weights

	(i)	(ii)	(iii)	(iv)	(v)
Constant	-0.0026 (-2.89)	-0.0021 (-3.00)	-0.0017 (-2.83)	-0.0021 (-4.20)	-0.0017 (-4.25)
Market Capitalization Weights	1.5965 (5.48)				
Float I Weights		1.4714 (6.71)		1.4714 (9.00)	
Float II Weights			1.3956 (7.10)		1.3956 (9.79)
Orthogonalized Market Capitalization Weights				-2.4233 (-2.02)	-2.3109 (-3.52)
Adjusted R^2	0.8587	0.9030	0.9210	0.9275	0.9534