Immigration and Equity Home Bias

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Abstract

Why do investors hold such large positions in domestic equity when there are gains to be made from international diversification? This equity home bias puzzle has received considerable attention in the literature, with asymmetric information on domestic and foreign assets (whether by individual choice or by market imperfection) emerging as the most plausible explanation. What happens when we consider a subset of investors whose information sets are closer to investors in foreign countries? I assess the relationship between immigration and equity home bias and find that inward migration is positively correlated with increased foreign equity positions and reduced home bias. Looking across income groups, outward migration reduces home bias for relatively rich countries, but may actually increase home bias when migration occurs to or from a developing country. These results suggest that immigration generates a positive externality of increased information flows for developed countries, but not for developing nations. The effects of immigration on investment are strongest within the Euro-Zone, suggesting that this positive externality of immigration is largest when barriers to portfolio diversification (such as currency risk) are lowest.

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1 Introduction

Why do investors hold such a large portion of their wealth in domestic assets? Empirical evidence suggests significantly higher returns and even reduced risk through international diversification. Despite this, equity portfolios are routinely composed of over 90% domestic equity. This puzzle, known as equity home bias, has received considerable attention among both academics and financial practitioners.[1] Despite the attention, equity home bias remains a puzzle. One explanation that has gained increasing support in the empirical literature is that foreign equities carry higher information costs, biasing investors to stick with what they know.[2]

This argument has been recently challenged by Van Nieuwerburgh and Veldkamp (2009, henceforth VnV) who claim that this is simply replacing the puzzle of capital immobility with one of information immobility. Rather, investors have an informational advantage in local equity which they choose to maximize by investing at home. In either case, equity home bias results from domestic investors having different information sets than foreign investors (whether by individual choice or by market imperfection).

What if there was a subset of investors in a country that had an information set more in line with those in foreign countries? In fact, such a group does exist: immigrants. When someone moves from one country to another, they bring with them knowledge about their native country. This could be something as simple as speaking their native language to as complex as a social network extending back to their native country.[3] This unique information set suggests that immigrants should be more willing to invest in their native country's equity. Immigrants may also serve as a conduit through which information may be transmitted to local investors in the immigrants' adopted homelands. Thus, we should see equity home bias decline between countries that have a high degree of cross-border labor mobility.

Despite the compelling relation between immigration and equity home bias, only two studies that I am aware of have examined this issue and those only recently. Battacharya and Groznik (2007) look at migration and capital flows for the US. They find that inward immigration to the U.S. leads to increased outward portfolio investment, with the effect rising in immigrant income. This may suggest that immigrants themselves are the ones investing in their native countries. It may also be the case that the information effect from immigrant networks increases with immigrant income, suggesting that wealthier (or more skilled) immigrants have both better ties with their native countries and greater influence in their adopted homes. Groznik (2007) examines this issue at the aggregate and US level, finding a positive correlation between immigration and outward portfolio investment flows, though the direction of causality is unclear.[4]

My paper expands upon these studies by examining bilateral immigration and portfolio investment positions across a wide range of countries. Using OECD data on the foreign-born population across 28 countries I estimate the effect of immigrant populations on the foreign equity positions of these nations across a total of 41 foreign equity markets. An advantage of this approach is to differentiate between the effects of immigration (into a country) and emigration (out of a country) on foreign equity

[1] The seminal papers that launched this field are Grauer and Hakannson (1987) and French and Poterba (1991). Tesar and Werner (1995) debunked the argument that foreign equities carry higher transaction costs, while Cai and Warnock (2004) present recent evidence against the argument that diversification may be achieved through domestically based multinationals. For a survey of more recent studies on currency risk and equity home bias, see Fidora, Fratzscher, and Thimann (2006).

[2] For example, Coval and Moskowitz (1999) find that mutual fund managers exhibit a strong preference for locally headquartered firms. Barber and Odean (2008) find that institutional investors tend to trade only a small subset of equities, typically the ones they already own.

[3] A growing field has examined the role social networks play in enforcing contracts in international trade (see Combes, Lafourcade, and Mayer 2005 for a recent example). Given that cross-border investment would also benefit from the contract enforcement and improved information flow generated by these networks, it is surprising that so little attention has been given to their effect on international investment.

[4] Another recent study of interest is Statman and Weng (2010), who find that first generation emigrants from China to the US tend to have portfolios less concentrated in American assets than non-emigrant Americans. Though not directly looking at equity home bias, this result supports a key finding in this study: immigrants tend to maintain a preference for their native country assets.

positions. The effect of immigration is further broken down by the relative income level of both the sending and receiving countries.

Migration affects investment through two channels. First, migration can increase information flows between the immigrants' native countries and their current residences through the strengthening of social networks across borders. Second, migration increases the number of people living in a country who have an informational advantage in foreign rather than domestic equity. If migration leads to increased information flows through social networks, then migration should lead to increased investment both into the migrants' native countries and out of these countries into their adopted nations. If migration simply moves people with a bias for native country equity from one nation to another, then we should only see a positive relationship between migration and outward investment to the native country.

This paper finds support for the latter theory, as migration into a country leads to increased portfolio investment from that country to the migrants' native countries. Outward migration actually reduces outward investment, suggesting that increased information flows are not driving the immigration-investment relationship. On the surface, these results support the VnV theory, as immigrants are maximizing their information advantage as opposed to spreading information about foreign markets both at home and abroad. However, when the effects are broken down by relative development in sending and receiving countries, information flows do matter when immigration occurs between relatively rich nations. This suggests that immigrant networks need a certain level of economic development and infrastructure to have a noticeable effect on foreign portfolio investment. This argument is supported by the fact that the positive effect of immigration on outward investment is strongest within the Euro Area, suggesting that the lower barriers to capital mobility within a currency union enhance the pro-investment effect of immigration.

2 Theoretical Model Linking Immigration and Equity Home Bias

In a world with perfect capital mobility and no transaction or information costs, the International Capital Asset Pricing Model (IntCAPM) suggests that investors should hold foreign country portfolio positions equal to each country's share of world market capitalization. For example, Australia's market capitalization represents 2% of global equity, so portfolios, regardless of location, should hold 2% Australian equity. Numerous studies have documented the empirical failure of this theory, and in fact the equity home bias puzzle is precisely that investors tend to hold portfolios significantly overweight in domestic equity and underweight in foreign equity. In reality, the typical Australian investor holds 85.5% domestic equity, a far cry above the 2% suggested by the IntCAPM. By contrast, only Ireland and New Zealand hold Australian equity positions close to 2%, with all other countries well below this threshold.

The goal of this study is to examine one reason why the data disagrees so strongly with theoretical predictions. To identify the effects of immigration on equity home bias, we need to control for all other variables which may influence the share of foreign equity held by an investor. If the IntCAPM worked, then we could simply regress the foreign equity share on the foreign country's share of market capitalization and some measure of immigration. Given the empirical failures of the aforementioned model, it would be wiser to derive control variables from the IntCAPM itself.

Consider the following model adapted from Lewis (1999). There are two countries in the world: home (h) and foreign (f). From the point of view of an investor living in home, the share of foreign equity in her portfolio is χ^f, while the share of domestic equity is $1-\chi^f$. Assume further that the investor's utility increases with expected wealth, but decreases with the volatility of wealth. Her objective function is given by:

$$U = U\left(E\left[W_{t+1}|I_t^h\right], Var\left[W_{t+1}|I_t^h\right]\right) \tag{1}$$

$W_{t+1}$is the investors wealth at time t+1, $I_t^h$is the home investors information set at time t, and E and Var are the expectations and variance operators. Without loss of generality, assume that the investor's wealth depends solely on the value of her equity portfolio. We can therefore define the following expressions:

$$E\left[W_{t+1}|I_t^h\right] = W_t\left(1+\chi^f E\left[r_{t+1}^f|I_t^h\right]+(1-\chi^f)E\left[r_{t+1}^h|I_t^h\right]\right) \tag{2}$$

$$\begin{aligned} Var\left[W_{t+1}|I_t^h\right] &= W_t^2\chi^{f2}Var\left[r_{t+1}^f|I_t^h\right]+W_t^2(1-\chi^{f2})Var\left[r_{t+1}^h|I_t^h\right] \\ &\quad +2W_t^2\chi^f(1-\chi^f)Cov(r_{t+1}^h,r_{t+1}^f) \end{aligned} \tag{3}$$

The real return on equity is given by r_{t+1}^j, where j identifies the country issuing the equity (home or foreign). Real returns are defined, from the perspective of both home and foreign investors as:

$$Home\begin{cases} r_t^h = R_t^h - \pi_t \\ r_t^f = R_t^f - \pi_t - s_t \end{cases} \tag{4}$$

$$Foreign\begin{cases} r_t^{*h} = R_t^h - \pi_t^* + s_t \\ r_t^{*f} = R_t^f - \pi_t^* \end{cases} \tag{5}$$

The real return on domestic equity depends on the nominal return and the domestic inflation rate, while the real return on foreign equity increases with the nominal (foreign currency) return, but decreases with the domestic inflation rate or appreciations in the domestic currency.

The investor's objective is to maximize her utility by choosing an optimal foreign equity position (χ^f). The resulting first order condition is:

$$\frac{\partial U}{\partial \chi^f} = \frac{\partial U}{\partial E\left[W_{t+1}|I_t^h\right]}\frac{\partial E\left[W_{t+1}|I_t^h\right]}{\partial \chi^f}+\frac{\partial U}{\partial Var\left[W_{t+1}|I_t^h\right]}\frac{\partial Var\left[W_{t+1}|I_t^h\right]}{\partial \chi^f}=0 \tag{6}$$

We can simplify matters by assuming that this investor's preferences exhibit constant relative risk aversion such that the coefficient of relative risk aversion may be defined as:

$$\gamma = -2W_t\frac{\partial U/\partial Var\left[W_{t+1}|I_t^h\right]}{\partial U/\partial E\left[W_{t+1}|I_t^h\right]} \tag{7}$$

Plugging this term into 6:

$$2W_t\frac{\partial E\left[W_{t+1}|I_t^h\right]/\partial \chi^f}{\partial Var\left[W_{t+1}|I_t^h\right]/\partial \chi^f}=\gamma \tag{8}$$

Differentiating 2 and 3 with respect to χ^f, then plugging into 8:

$$\gamma = \frac{E_t r_{t+1}^f - E_t r_{t+1}^h}{\chi^f\left[Var(r_{t+1}^f)+Var(r_{t+1}^h)-2Cov(r_{t+1}^h,r_{t+1}^f)\right]-Var(r_{t+1}^h)+Cov(r_{t+1}^h,r_{t+1}^f)} \tag{9}$$

The term in brackets in the denominator should be recognizable as $Var(r^f - r^h)$, the variance of excess foreign returns. Using this substitution and solving for the optimal foreign equity share yields[5]

$$\chi^f = \frac{E_t(r_{t+1}^f - r_{t+1}^h)/\gamma}{Var(r^f-r^h)}+\frac{Var(r^h)-Cov(r^h,r^f)}{Var(r^f-r^h)} \tag{10}$$

According to this model, the optimal share of foreign equity increases if:

[5]For notational convenience, I have dropped the time subscripts for the variance and covariance operators under the implicit assumption of homoskedastic returns. While a large literature suggests that asset returns do indeed have time varying volatility, this is an empirical issue that may be addressed in the data.

1. The excess real return on foreign equity rises
2. The volatility of domestic real returns rises
3. The covariance between home and foreign equity falls
4. Foreign excess returns become less volatile

Thus, an investor should increase her exposure to foreign equities when they yield a better return (1), when domestic returns become riskier (2), when foreign assets provide better diversification (3), or when foreign assets become relatively less risky (4). Any empirical model that estimates the determinants of χ^f should therefore include some measure of these four variables as controls.

Looking at the model derived above, we must then ask how immigration would affect these predictions. Immigration should influence foreign investment through two channels: increased information about foreign markets and increasing the number of home investors with a preference for foreign assets. As immigration increases, the volatility of excess foreign returns should decrease due to improved information about foreign equity. If investors are better able to predict when foreign assets will rise and fall in value, the risk inherent in these assets should fall. We should expect that as immigration flows increase between home and foreign, the denominator of 10 will shrink, causing χ^f in both countries to rise.

Immigrants may also exhibit a preference for domestic equity. This could be based on purely behavioral reasons or could be a function of immigrants exploiting their informational advantage as in VnV (2009). To operationalize this foreign preference, we say that immigrants are more optimistic about foreign equity, so that they expect higher excess foreign returns than their native counterparts.[6] As immigration increases, the share of foreign equity held should also increase.

A third channel is possible, though only in cases where immigration flows are large. Completely unhindered mobility in both capital and labor should eventually lead to factor price equalization and greater synchronization of business cycles. As immigration flows increase, differences in labor costs and market sizes between countries should fade, leading to a greater correlation of equity returns. As foreign equities move more or less in tandem with domestic equities, the diversification benefit of foreign exposure disappears. In this extreme case, the share of foreign equity held will depend solely on the excess return on foreign equity. In this event, immigration may actually decrease the share of foreign equity held, though the first two effects described above should dominate at the relatively low levels of immigration observed in the world today.

3 Empirical Model to Estimate the Impact of Immigration

The model discussed above suggests that we need to include several characteristics of both domestic and foreign equity returns as control variables. They are the excess real return on foreign equities, the variance of excess returns, the variance of domestic returns, and the covariance between real domestic and foreign returns. To these controls I will also add several determinants of foreign equity positions that have proven to be important in earlier studies. Research on asymmetric information finds that common language, the presence of a border, and physical distance all have significant effects on foreign equity positions. The idea here is that similar countries (sharing a language and/or neighboring), will see a greater degree of information flow, and therefore more cross-border investment.

In a study examining the effects of immigration on equity home bias, it is critical to include any variables which may work through the same channels on foreign equity positions as immigration. Immigrants are more likely to move to countries that share the same language or border or are closer together. Is it possible that the consistent significance of these variables across previous studies is

[6] Strong and Xu (2003) use survey data to show that fund managers exhibit significant optimism toward domestic equity returns. This is in line with earlier work by Kilka and Weber (2000), who used experimental methods to show that German investors and American investors were both more confident about forecasting returns on native country assets, even when information on assets from each country was equally available.

simply a proxy for the effects of immigration? If immigration is included while controlling for these variables, will they still matter? These are two interesting questions that this study definitively answers.

A baseline model that measures equity home bias is given by:

$$X_{j,k} = \beta \frac{M_k}{M} + \Gamma D_{j,k} + \Phi R_{j,k} + u_{j,k} \tag{11}$$

The share of country k equity held in country j's portfolio is a function of country k's share of world market capitalization ($\frac{M_k}{M}$, the IntCAPM prediction), a vector of "similarity" control variables relating countries j and k ($D_{j,k}$: common language, border, distance), and a vector of return characteristics relating to equities issued by countries j and k ($R_{j,k}$: expected excess real return on country k equity, variance of excess returns, variance of country j real return, and covariance of returns on equity from countries j and k.) I also include a measure of financial market development for both the sending and receiving countries from the World Economic Forum to capture barriers to foreign investment.

Once we have controlled for country similarity variables and differential returns and risks, how closely do investors in country j track the world portfolio? A liberal definition of home bias would be to estimate β and see how close it is to unity. If investors in country j are truly following the global portfolio, then a 1% increase in country k's share of world market capitalization should induce a 1% increase in country j's holdings of country k's equities. Any estimate less than 1 suggests that country j investors are biased against country k equity (relative to the global investor) and any estimate greater than 1 suggests a bias in favor of equity issued in country k. Note that this is a liberal definition of home bias since it does not require investors to actually hold weights equal to the market portfolio, only to adjust their position in tandem with the portfolio. Home biases estimated using this method are likely to be lower bounds, since they allow for absolute deviations from the global portfolio, only requiring that local portfolio weights move synchronously with global weights.

The model above gives us baseline estimates with which to make comparisons. As this paper is concerned with immigration, the next step is to add a measure of cross-border labor flows. To control for differences in country size, the immigration variables are defined as $IM_{j,k}/Pop_j$ and $EM_{j,k}/Pop_k$: immigrants from country k living in country j as a percentage of country j's population and emigrants from country j living in country k as a share of country k population. These variables are added separately to 11 to give two augmented regressions:

$$X_{j,k} = \alpha_1 \frac{M_k}{M} + \alpha_2 \left(\frac{M_k}{M} * \frac{IM_{j,k}}{Pop_j} \right) + \Gamma D_{j,k} + \Phi R_{j,k} + u_{j,k} \tag{12}$$

$$X_{j,k} = \beta_1 \frac{M_k}{M} + \beta_2 \left(\frac{M_k}{M} * \frac{EM_{j,k}}{Pop_k} \right) + \Gamma D_{j,k} + \Phi R_{j,k} + u_{j,k} \tag{13}$$

If equity home bias is defined as 1 minus the partial correlation between the foreign equity share for country j investors and the foreign equity share for global investors, we have:

$$\text{Immigration Home Bias} = 1 - \frac{\partial X_{j,k}}{\partial (M_k/M)} = 1 - \alpha_1 - \alpha_2 \frac{IM_{j,k}}{Pop_j} \tag{14}$$

$$\text{Emigration Home Bias} = 1 - \frac{\partial X_{j,k}}{\partial (M_k/M)} = 1 - \beta_1 - \beta_2 \frac{EM_{j,k}}{Pop_k} \tag{15}$$

Suppose that $\alpha_2 > 0$. This implies that as immigrants from country k make up a larger share of country j's population, there is an increase in portfolio investment from country j to country k. In this case, labor and capital flows appear to be substitutes, with labor flowing from country k to j and being replaced by capital flowing from j to k. Whether this occurs because immigrants bring with them greater information about investment opportunities in country k or because immigrants from country k bring with them their own home bias toward country k assets is unclear, however.

Now suppose that $\beta_2 > 0$. This would suggest that as immigration from country j to country k increases, country j investors increase their holdings of country k equity. In this case, labor and

capital flows are complementary, with both labor and capital flowing from country j to country k. In this case, it must be the case that immigrants from country j are transmitting information back to investors about local conditions in country k. The local preference effect would be refuted if $\beta_2 > 0$, since increased immigration from country j actually increased investment in country k. If $\beta_2 < 0$, however, the local preference effect may in fact be dominant.

4 Datasets and Variable Construction

4.1 Immigration and Portfolio Shares

Bilateral migration data is gathered from SourceOECD's database on international migration. This database has reliable information on the source countries of the foreign-born population across 28 receiving nations. The foreign born population data come from national census estimates and are for single years, generally between 2000 and 2004.

This information is then matched with data on bilateral equity holdings from the IMF's *Coordinated Portfolio Investment Survey* (CPIS), a database frequently used when looking at equity home bias. The CPIS data covers the years 1997 and 2001-2004, giving the dollar value of foreign equity holdings for a wide range of nations. Combined with the immigration data, I construct a dataset that covers the equity holdings and foreign-born population of 28 reporting nations paired together with 41 partner countries.[7] As the CPIS data is collected annually (after 2001), but immigration data is only available for one year, the model must be run as a cross-section. I take averages across 1997-2004 for all annual variables, though the results do not measurably change when looking at a particular year, reflecting the fact that the immigration variable is fairly stable across the sample period.

Augmenting these two key datasets are information on country similarities and equity returns. Geographical distance between countries is taken from the CEPII's Geodesic distances database, which also includes information on whether or not countries speak a common language and are adjacent. Nominal equity returns for each country are computed as using the monthly returns on each country's *Morgan Stanly Capitalization Index* (MSCI). The return for a particular year is computed using both the average annual return and the monthly return in December. Real returns are computed as in 4 and 5 using inflation and exchange rate data from the IMF's International Financial Statistics. Expected real returns in year t are proxied by the return in year t-1, while the variance and covariance of these returns are computed using standard sample estimators.[8]

There are three key variables in this analysis: the share of a country j's portfolio made up by country k equity, the share of country k equity in world market capitalization, and the share of country j's population that was born in country k. To construct the first variable, we must first determine the total value of a country's equity portfolio:

$$P_j = M_j - \sum_{i \neq j}^{K-1} e_{i,j} + \sum_{i \neq j}^{K-1} e_{j,i} \tag{16}$$

For example, the equity portfolio for Belgium is defined as the market value of all Belgian equity (M_{BEL}) less the value of Belgian equity owned by investors in K-1 foreign countries ($\sum_{i \neq BEL}^{K-1} e_{i,BEL}$) plus the value of foreign equity from K-1 countries owned by Belgian investors ($\sum_{i \neq BEL}^{K-1} e_{BEL,i}$). The share of a particular foreign country k's equity in country j's portfolio would then be:

[7] The group of 41 partner countries includes the 28 reporters and an additional 13 countries for which I do not have reliable outward foreign portfolio investment positions on or reliable foreign-born population data.

[8] Admittedly, this is a crude way to predict asset returns. More sophisticated models can and have been used to better predict asset returns than the simple random walk assumption used here. However, given results in the literature suggesting that investors tend to chase after past returns, this model seems appropriate. In addition, I assume homoskedastic returns. Given the large attention GARCH models have received in the literature, this may not be such an innocuous assumption to make.

$$X_j^k = e_{j,k}/P_j \tag{17}$$

The total share of foreign equity in the domestic portfolio is given by:

$$X_j^f = \sum_{k \neq j}^{K-1} X_j^k = \frac{\sum_{k \neq j}^{K-1} e_{j,k}}{P_j} \tag{18}$$

Foreign equity shares may be expressed either in terms of a particular country or across all foreign countries (as has been done in the existing literature). The added flexibility of this approach is one of the strengths of this paper.

The empirical strategy is to regress these foreign equity shares on foreign shares of world market capitalization, foreign population shares, and bilateral control variables. This data is summarized in Table 1, where each reporting country is listed with immigration and equity holding data. Looking at the immigration data, we see that migration tends to move along cultural, geographic, and historical lines. Comparing immigrant population shares to foreign equity shares, there is some limited support for a relationship between the two. For example, German immigrants and German equity are the largest components of both Austria's foreign-born population and Austria's equity portfolio. However, nearly every country in the sample exhibits a significant bias toward domestic equity, with weights well above that suggested by their positions in the global equity portfolio.[9]

Tables 2 and 3 present further evidence of a link between immigration and foreign portfolio flows. In Table 2 we identify the top migration source countries for each nation in this study. Looking at investment behavior between these country pairs, we see that in many cases, the weight placed on the equity of the top sending country actually exceeds that predicted by the IntCAPM. For example, Swedish equity has a 5.38% weight in Finland's portfolio, despite Sweden representing only 0.95% of world market capitalization. In fact, for only three cases (Germany and Turkey, Japan and Korea, the Netherlands and Turkey) is the portfolio weight on the top sending country relative to its weight in the global portfolio smaller than the portfolio weight on other foreign equity relative to global weights. This suggests a strong explanatory role for immigration in predicting home bias. Table 3 presents similar evidence, but for the top outward migration destinations. As with the results in Table 2, there are several instances in which the top receiving country has a local portfolio weight in excess of its global weight. However, the link between outward migration and equity home bias appears weaker, a result that will be confirmed in the next section.

4.2 Instrumenting Migration

One possible concern with estimating the model above is potential simultaneity between migration and portfolio investment. While it is unlikely that portfolio investment is causing people to migrate from one country to another, there may be unobserved variables that affect both migration and investment. For example, a strong information network between countries will positively affect both portfolio investment and migration. As this variable is difficult to measure, estimating the model above may lead to attributing the effect of information flows on bilateral investment to migration.

To correct for this potential bias, I instrument migration flows. Following McKenzie (2005) and Javorcik et al (2006), the bilateral migrant stock is instrumented with the following relationship:

$$IM_{j,k} = \alpha_1 IM_{j,k,1990} + \alpha_2 lnY_j + \alpha_3 lnY_k + \alpha_4 \frac{Trade_{i,j}}{Trade_j} + \alpha_5 \frac{Tel_{i,j,t}}{\sqrt{Y_j * Y_k}} + \Gamma D_{j,k} + \Phi R_{j,k} + e_{j,k}. \tag{19}$$

[9] The one notable exception is Ireland, which actually takes a short position when the domestic equity portfolio is constructed as in 15. This is not a result unique to this study, but rather one that is common to nearly all studies using CPIS data and is likely a result of a high degree of foreign ownership of Irish firms. Some authors have recommended excluding Ireland as it presents such a stark outlier. The empirical results do not qualitatively change when Ireland is excluded, which is perhaps not surprising given the wide range of countries included in the sample.

The immigrant stock in 2000 is instrumented with the migrant stock in 1990, log GDP in the sending and receiving countries, bilateral trade as a share of the receiving country's total trade, bilateral telephone traffic divided by the square root product of GDP, the vector of similarity variables (distance, language and border), and the vector of return variables. For the emigrant stock, the same relation is estimated only with the emigrant stock in 1990 and the trade variable now referring to bilateral trade as a share of the sending country's total trade. The migrant stock variables in 1990 come from Docquier and Marfouk (2007), while trade variables are from UN Comtrade. Bilateral telephone traffic is from Telegeography's international traffic database.

Immigration and Emigration are first estimated with this relation then fitted values are used to construct the key interaction variables in 12 and 13. In the first stage regressions, the lagged migrant stock is the strongest predictor of current migration as expected. For immigration, GDP in the receiving country has a positive effect while GDP in the sending country has a negative effect, consistent with migrants moving from poor countries to rich nations. Trade share has a strong positive effect, perhaps reflecting strong network ties between nations that facilitate migration. Bilateral telephone traffic has a positive, albeit insignificant effect on migration.

5 Discussion

5.1 Baseline Results

Tables 1-3 suggest a complementary relationship between migration and foreign equity positions. Estimation of 11-13 allow for formal tests of this relationship. The first step is to estimate a baseline model that does not include any migration variables. The first column of Table 4 presents OLS estimates of equation 11 using average equity holdings and return data over the period 1997-2004. The key coefficient is the marginal effect of foreign country market capitalization. I estimate that a 10% increase in country k's share of world market capitalization will only induce investors in country j to increase their share of country k equity by 1.61%, holding constant such factors as country similarity, excess returns, and foreign equity risk. Defining home bias as 1 minus the coefficient on market capitalization, the average home bias in this sample is 83.9%.

As has been found by several existing studies, equity home bias is much lower within the Euro-Zone.[10] Whereas home bias is estimated to be 83.9% for country pairs that do not share the same currency, home bias is only 44.4% for intra-EMU portfolio flows. This may indicate that currency risk was preventing international diversification or simply that information flows increase within a monetary union, leading to greater diversification. Confirming results from past studies, countries that share a common language or a common border tend to hold larger foreign asset positions with each other, while foreign equity shares decline with distance. These results suggest that the further away two countries are, defined by physical distance or culture, the less likely they are to invest in one another's financial markets. Turning to characteristics of the asset markets, we see that the only two variables that matter are expected returns (proxied by lagged returns) and exchange rate volatility. Foreign equity positions decline with currency risk, one aspect of foreign assets that you need not consider when investing at home. What is surprising is the negative coefficient on excess foreign returns, though the estimate is not significantly different from zero. One would expect investors to increase their position if they believed foreign equities would rise in price relative to domestic equities. However, this result may reflect the relatively simplistic substitution of lagged returns for expected returns. If investors believe that returns exhibit some form of mean reversion, then a negative coefficient on lagged returns is quite logical and expected. You should reduce your exposure to foreign equities if those equities are due to come back down in price this year following a boom last year. It would be interesting to see how this result would change with a more sophisticated formulation of expected equity returns, though that is not the central objective of this paper.

[10] DeSantis and Gerard (2006) and Foad (2006) both find evidence of this result.

5.2 The Effect of Migration on Home Bias

The key contribution of this paper is given in columns 2 through 5 of Table 4, which present the baseline model augmented by immigration in and emigration out for the OLS and IV specifications. In the first case, country k's share of country j's population is interacted with country k's share of world market capitalization. With this variable, we are looking at how migration from country k to country j affects investment by country j in country k. The coefficient on the market cap/immigrant share interaction is positive and highly significant. As immigrants from foreign country k become an ever larger part of country j's population, the weight on country k equity in j's portfolio moves more in tandem with the weight in the global portfolio. Suppose, for example, that there are zero German immigrants living in Italy. The second column in Table 4 predicts that the correlation between the Italian weight on German equity and the global weight on German equity will be 0.102, for an Italian Home Bias of 89.8%. As native Germans move to Italy, however, the share of German equity held by the typical Italian investor moves closer and closer to that suggested by Germany's share of world market capitalization. In fact, once native Germans make up 2.6% of the Italian population, I predict that Italian investors will exhibit zero home bias with regard to German equity.[11] In reality, native Germans make up 0.3% of Italy's population and the average weight on German equity in the typical Italian investor's portfolio is 1.85%. Given that Germany's share of world market capitalization is 3.2%, it is not so far fetched to believe that increased immigration from Germany to Italy would increase Italian ownership of German equity. In fact, the numbers in Table 2 present multiple cases of countries being "overweight" in nations that send them a lot of immigrants.[12]

The second striking result in Table 4 is that both the common language and the common border variables become statistically insignificant with the inclusion of the migration variable. As the cost of migration rises with both physical distance and cultural distance, we should see higher migration between adjacent locations and those countries sharing a common language. That these two variables cease to significantly affect cross-border investment when we explicitly control for migration suggests that past studies including these variables have turned them into unknowing proxies for migration. This fact is supported by the relatively large increase in explanatory power gained by including the immigration variable. Without controlling for immigration, the model explains 34.3% of the variation in foreign equity holdings, while including immigration raises this number to 50.4%. Given that these are cross sectional regressions across a group of fairly heterogeneous countries, a 16 percentage point increase in adjusted R^2 is a meaningful increase in predictive power.

That common language and a border cease to be significant with the inclusion of migration variables may also indicate the presence of multicollinearity between these variables. We should see greater migration between countries that share a common language and a border, all else equal. If these variables are highly correlated, can we be sure that any reductions in home bias between countries with high migration are actually due to migration rather than similarity variables that migration is picking up? As Table 5 indicates, however, there is at most a 36% correlation between migration and common language and a 34% correlation between migration and countries that share a border. Thus, these factors certainly affect migration, but there is enough independent variation in the migration variable to get clear identification of its effect on home bias.

To further control for unobserved variables that could affect both home bias and migration, the immigration and emigration variables were instrumented as in 19. Looking back at Table 4, we see that with the IV specification, the marginal effect of immigration on equity home bias declines, but is still significantly positive. This suggests that some of the positive effect of immigration on portfolio investment was due to unobserved variables that affected both migration and investment. Under this specification, we estimate that if there were no German immigrants in Italy, then the Italian home bias on German equity would be 87.1% (1-0.129). As more and more Germans moved to Italy, this home

[11] This was computed by setting home bias equal to zero and solving for the Immigrant share using the estimated coefficients in the second column of Table 4: $0 = 1 - 0.102 - 34.301 * \frac{IM_{j,k}}{Pop_j}$

[12] Overweight in this case means that the weight placed on a particular foreign equity exceeds that country's share of world market capitalization (its weight in the global portfolio).

bias would decline, eventually disappearing when native Germans make up 4.1% of Italy's population.

Turning our attention to outward migration (column three in Table 4), we see the opposite relation holding. While inward migration led to increased outward investment, increased outward migration causes inward investment to drop. Using a similar example as before, suppose that there are zero native Italians living in Germany. We would predict that the weight on German equity in the typical Italian portfolio would have a partial correlation of 17.1% with the global portfolio weight on Germany, for a home bias measure of 82.9%. As more and more Italians move to Germany, the further and further away the Italian portfolio moves from the global portfolio with regards to Germany. In fact, when Italians constitute about 2.9% of Germany's population, we predict that there will be zero correlation between the Italian and global portfolios in regards to Germany. So why does outward labor migration reduce outward capital? On one hand, this result simply affirms traditional economic theory that the conditions that yield high returns to labor (thereby attracting immigrants) are the same that produce low returns on capital (reducing outward capital flows). In fact, the inward migration result confirms this, with labor flowing into a country associated with increased capital flowing out.

Immigration may actively affect cross-border investment through two channels. The first is increased information flow. The conflicting results between inward and outward migration suggest that this has a limited effect on home bias. Consider two types of immigration: Polish natives moving to the U.S. and American natives moving to Poland. With both types of migration, there should be increased information flow between Poland and the U.S. With increased information and reduced risk, we should also see increased equity holdings, regardless of the type of migration that occurred. This is clearly not happening: US holdings of Polish equity only increase when Polish natives move to the U.S., not when Americans move to Poland.

Increased information flow does not appear to explain the relationship between migration and equity home bias, so why does immigration matter? Perhaps it is due to immigrant preferences for native country equity. It is possible that the "home bias" in equity is not geographically bounded, but rather carried in the nationalities of the investors themselves. Thus, an American native will always exhibit a preference for American equity, regardless of where they live. This would certainly explain the conflicting results estimated in this model. When Polish natives move to the U.S., there is an increase in American holdings of Polish equity because those Polish natives are buying up their native country equities. When American natives migrate to Poland, there is no corresponding increase in Polish equity holdings because the population of investors in America with a preference Polish equity has not changed. The native country equity preference need not be irrational either, as pointed out by VnV (2009). Immigrants may indeed have an informational advantage in their native country equity over their adopted countrymen. They should maximize that advantage by investing heavily in their native country equity, increasing source country exposure.

The sixth through tenth columns of Table 4 estimate these relations for members of the Euro-Zone only. Here we are looking at how bilateral equity shares respond to global equity shares in the absence of currency risk and with a common monetary policy. The first thing to note is that bilateral shares are much more highly correlated with the global share in this subsample, with a home bias measure from the baseline model of 32%. This confirms the earlier positive significance of the Euro dummy variable in the full sample. Looking at column 7, we see that the effect of immigration on foreign investment is actually larger in the Euro-Zone. If immigration creates opportunities for foreign investment, then we should see these opportunities being exploited more often where the cost of foreign investment is lower. One such place is within a monetary union, given the lack of nominal currency risk and common interest rates set by a single central bank.

Interestingly, the absolute magnitude of the emigration effect is larger for the Euro-Zone. For example, we predict that migration from Germany to France will cause German investment in France to fall more than German investment in the US following migration from Germany to the US, suggesting that the substitute relationship between labor and capital is stronger within the Euro-Zone. The negative relationship here may also suggest that hedging against income risk is easier within the Euro-Zone (i.e. a German migrant to France can diversify her consumption risk by increasing her German equity position since her labor income is in France).

5.3 Differential Income Effects

The results of the preceding section suggested that migration and portfolio investment act as substitutes, with increased inward migration leading to a larger share of foreign equity and increased outward migration leading to a smaller foreign equity share. These results pooled across a large and diverse group of country pairs. Given the heterogeneity in the sample, it is illuminating to see how these results change across one important classification: relative income levels.

Does the marginal effect of migration on equity home bias change when we are looking at migration from a poor country to a rich one or vice versa? To answer this question, the regression models in 12 and 13 are augmented with the following dummy variables:

Rep.R = 1	if reporting country per capita GDP is 1 standard deviation above the sample average per capita GDP across all reporting countries
Rep.P = 1	if reporting country per capita GDP is 1 standard deviation below the sample average per capita GDP across all reporting countries
Par.R = 1	if partner country per capita GDP is 1 standard deviation above the sample average per capita GDP across all reporting countries
Par.P = 1	if partner country per capita GDP is 1 standard deviation below the sample average per capita GDP across all reporting countries

From these dummy variables, I then created four more variables to represent the extreme cases of immigration between rich countries, from rich countries to poor countries, from poor countries to rich countries, and between poor countries. Define the following:

RR = 1	if both the reporting and partner countries are classified as rich above.
RP = 1	if the reporting country is rich and the partner is poor.
PR = 1	if the reporting country is poor and the partner is rich.
PP = 1	if both the reporting and partner countries are poor.

Suppose that the U.S. is the reporting country. Immigration from Switzerland to the US would classify as RR=1, whilst immigration from Mexico to the US would classify as RP=1. Now suppose Turkey is the reporter. Immigration from Germany to Turkey would qualify as PR=1, whilst immigration from the Slovak Republic to Turkey would classify as PP=1.

A useful feature of this classification system is that it allows us to examine the impact of immigration on equity home bias across different income groups. To assess this, I augment the relations in 12 and 13 to be:

$$\begin{aligned} X_{j,k} &= \alpha_1 m_k + \alpha_2 m_k im_{j,k} + \alpha_3 m_k im_{j,k} RR_{j,k} + \alpha_4 m_k im_{j,k} RP_{j,k} + \\ &\quad \alpha_5 m_k im_{j,k} PR_{j,k} + \alpha_6 m_k im_{j,k} PP_{j,k} + \Gamma D_{j,k} + \Phi R_{j,k} + u_{j,k} \end{aligned} \tag{20}$$

$$\begin{aligned} X_{j,k} &= \beta_1 m_k + \beta_2 m_k em_{j,k} + \beta_3 m_k em_{j,k} RR_{j,k} + \beta_4 m_k em_{j,k} RP_{j,k} + \\ &\quad \beta_5 m_k em_{j,k} PR_{j,k} + \beta_7 m_k em_{j,k} PP_{j,k} + \Gamma D_{j,k} + \Phi R_{j,k} + u_{j,k} \end{aligned} \tag{21}$$

The proportional variables above (market cap share, immigrant share, and emigrant share) are expressed as lowercase letters for expositional ease. Looking at 20 and 21 above, we see that the estimates across income group are all relative to the control group defined as any bilateral grouping in

which either the reporter or partner country has a per capita GDP that is within one standard deviation of the sample averages. We are thus comparing the effects of migration between very different countries with migration between relatively similar countries in terms of per capita GDP.

Looking at the first column in Table 6, we first see that immigration between similar countries does in fact increase foreign equity shares as before. When the two countries are classified as rich, the marginal reduction in home bias is even larger, though the estimated coefficient is not significantly different from zero. When at least one of the countries is poor, however, immigration appears to reduce foreign equity shares, though the effect is only significant for poor reporters with rich partners. Stated differently, immigration from Germany to Turkey will have a relatively weaker effect on Turkish investment to Germany than immigration from Germany to France would have had on French investment in Germany. That the immigration effect only holds when looking at average and high income countries makes sense, as foreign investment requires that the investors themselves have the necessary capital to exploit profitable opportunities. Furthermore, poor countries may lack the necessary infrastructure and financial market development to attract foreign investments.

The third column of Table 6 presents the estimated results relating emigration from reporters to partners with investment from reporters to partners. In contrast to the results in Table 4, outward migration increases foreign equity shares for highly developed countries. This is compelling evidence for the information network effect of migration. For example, the migration of Americans to a high income country like Switzerland is estimated to *increase* American holdings of Swiss equity, suggesting that these American migrants transmitted information about Swiss market conditions back home. The emigration effect is insignificant for rich to poor migrations or poor to poor migrations, but significantly negative for emigrations from poor to rich countries. For example, Mexican immigration to the U.S. is predicted to *reduce* the share of American assets in the typical Mexican investor's portfolio. Is this because Mexican immigrants to the U.S. are not able to transmit valuable information about American assets back to Mexican investors (limited access and influence due to relatively low skill levels?) or because Mexican immigrants are precisely the kind of people who would have invested in U.S. assets had they stayed behind? This is an interesting question and presents an opportunity for further research.

6 Conclusion

The results in this study suggest that immigration leads to a greater weight on the immigrant's native country assets in the adopted country equity portfolio. However, the weight on adopted country equity in the native country portfolio does not increase and may even decline. Thus, immigration reduces equity home bias by increasing the share of the domestic population that has a preference (or informational advantage) for foreign equity rather than by increasing the flow of information between countries.

When looking at these relationships across income levels, we see that the effects of migration are strongest for the most developed countries. Migration from a relatively high income country like Ireland to another high income country like Switzerland will increase Swiss investment to Ireland. However, migration from a relatively low income country like Turkey to any other country (regardless of the receiving country's income level) will not increase that country's investments in Turkey. Similarly, migration from Switzerland to Ireland will increase Swiss investment in Ireland, but migration from any country to Turkey will not increase that country's investment in Turkey (and may even reduce investment). This suggests that for rich countries, migration may increase cross-border investment through both migrant preferences (immigration increases investment) and increased information flow (emigration increases investment). When either the sending or receiving country is low income, migration fails to induce foreign investment either because migrants lack the capital necessary to exploit foreign investment opportunities or the low income country lacks the financial infrastructure to attract foreign investment.

While these results are significant from an academic perspective, they also have several policy im-

plications. For sending countries, immigration is associated with larger foreign ownership of domestic equity. This may be beneficial to sending countries as increased foreign portfolio investment tends to improve local corporate governance, increases scrutiny of financial markets, and accounting transparency. Second, any reduction in equity home bias should be welfare improving, as investors can gain both higher returns and lower risk through greater diversification (equity home bias wouldn't be a puzzle otherwise). Immigration, between high income countries at least, creates a positive externality that needs to be considered when arguing the costs and benefits of international labor mobility.

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Table 1: Immigration and Equity Shares

Country	Top Sender	Top Receiver	Top Foreign Equity Position	Domestic Equity Share	World Market Cap Share
Australia	UK(5.1%)	New Zealand(1.4%)	USA(8.4%)	86.5%	2.0%
Austria	Germany(1.7%)	Switzerland(0.7%)	Germany(10.5%)	59.5%	0.2%
Belgium	France(1.5%)	Netherlands(0.3%)	France (4.5%)	88.4%	2.0%
Canada	UK(1.9%)	USA(0.3%)	USA(13.0%)	74.3%	3.1%
Czech Rep.	Slovak Rep.(2.8%)	Slovak Rep.(1.4%)	Austria(2.3%)	91.1%	0.1%
Denmark	Turkey(0.6%)	Norway(0.5%)	USA(9.7%)	64.1%	0.4%
Finland	Sweden(0.5%)	Sweden(2.1%)	Sweden(6.4%)	69.8%	0.5%
France	Portugal(0.1%)	Belgium(1.5%)	UK(3.0%)	79.1%	4.9%
Germany	Turkey(1.4%)	Switzerland(2.4%)	USA(5.6%)	72.4%	3.2%
Greece	Germany(0.9%)	Australia(0.6%)	USA(1.5%)	96.5%	0.3%
Hungary	Slovak Rep.(0.4%)	Austria(0.4%)	South Africa(0.8%)	95.9%	0.1%
Ireland	UK(6.0%)	UK(0.9%)	USA(42.1%)	-27.7%	0.3%
Italy	Germany(0.3%)	Switzerland(3.2%)	USA(4.5%)	78.0%	2.1%
Japan	Korea(0.4%)	New Zealand(0.2%)	USA(5.1%)	90.6%	9.7%
Korea	China(0.1%)	New Zealand(0.4%)	USA(0.7%)	98.8%	1.1%
Mexico	USA(0.3%)	USA(3.1%)	USA(1.8%)	98.2%	0.5%
Netherlands	Turkey(1.1%)	Belgium(0.9%)	USA(26.6%)	42.4%	1.6%
New Zealand	UK(5.4%)	Australia(1.8%)	USA(14.9%)	68.6%	0.1%
Norway	Sweden(0.7%)	Sweden(0.5%)	USA(16.0%)	55.1%	0.4%
Poland	Germany(0.3%)	Canada(0.6%)	USA(0.2%)	99.4%	0.2%
Portugal	France(0.9%)	Switzerland(1.4%)	Spain(4.0%)	85.0%	0.2%
Slovak Rep.	Czech Rep.(1.4%)	Czech Rep.(2.8%)	Hungary(9.4%)	85.1%	0.0%
Spain	France(0.4%)	Switzerland(0.8%)	France(1.8%)	91.2%	2.5%
Sweden	Finland(2.1%)	Norway(0.7%)	USA(12.8%)	67.1%	1.0%
Switzerland	Italy(3.2%)	Italy(0.3%)	USA(8.0%)	79.7%	2.2%
Turkey	Germany(0.4%)	Austria(1.5%)	Netherlands(0.1%)	99.9%	0.3%
UK	Ireland(0.9%)	Ireland(6.0%)	USA(7.9%)	72.0%	7.4%
USA	Mexico(3.1%)	Canada(0.9%)	UK(2.6%)	87.2%	43.1%

The Immigrant share is defined as the largest foreign-born population in each reporting country. The emigrant share is the country in which the reporter has the largest share of the population. The foreign equity position gives the country with the largest weight in the domestic portfolio. The domestic equity share is defined as 1 minus the sum of foreign equity shares. The negative number for Ireland is not a typo and is a result of an inordinately high degree of foreign ownership of Irish equity.

Table 2: Inward Migration and Equity Home Bias

	Top Sender	Sender's Local Share	Sender's Share of WMC	Local to World Share	Foreign to World Share
Australia	UK(5.1%)	1.46%	7.94%	0.18	0.14
Austria	Germany(1.7%)	10.93%	3.42%	3.20	0.41
Belgium	France(1.5%)	6.33%	4.24%	1.49	0.12
Canada	UK(1.9%)	2.81%	7.94%	0.35	0.27
Czech Rep.	Slovak Rep.(2.8%)	0.53%	0.01%	53.00	0.09
Denmark	Turkey(0.6%)	0.03%	0.02%	1.50	0.36
Finland	Sweden(0.5%)	5.38%	0.95%	5.66	0.30
France	Portugal(0.1%)	0.07%	0.02%	3.50	0.22
Germany	Turkey(1.4%)	0.04%	0.22%	0.18	0.29
Greece	Germany(0.9%)	0.17%	3.42%	0.05	0.04
Hungary	Slovak Rep.(0.4%)	0.003%	0.01%	0.30	0.04
Ireland	UK(6.0%)	30.73%	7.94%	3.87	1.28
Italy	Germany(0.3%)	1.85%	3.42%	0.54	0.22
Japan	Korea(0.4%)	0.02%	0.90%	0.02	0.10
Korea	China(0.1%)	0.01%	1.77%	0.01	0.01
Mexico	USA(0.3%)	1.18%	46.99%	0.03	0.02
Netherlands	Turkey(1.1%)	0.04%	0.22%	0.18	0.59
New Zealand	UK(5.4%)	3.96%	7.94%	0.50	0.31
Norway	Sweden(0.7%)	2.52%	0.95%	2.65	0.45
Poland	Germany(0.3%)	0.04%	3.42%	0.01	0.01
Portugal	France(0.9%)	1.03%	4.24%	0.24	0.15
Slovak Rep.	Czech Rep.(1.4%)	1.55%	0.06%	25.83	0.15
Spain	France(0.4%)	1.56%	4.24%	0.37	0.09
Sweden	Finland(2.1%)	1.67%	0.53%	3.15	0.33
Switzerland	Italy(3.2%)	0.51%	0.94%	0.54	0.21
Turkey	Germany(0.4%)	0.03%	3.42%	0.01	0.00
UK	Ireland(0.9%)	0.94%	0.26%	3.62	0.30
USA	Mexico(3.1%)	0.21%	0.48%	0.44	0.22

Top Sender is the country sending the most immigrants to the reporting country. The sender's local share is the weight on sending country's equity in the reporting country's portfolio. The sender's share of WMC is the weight on sending country equity in the global portfolio. The Local to World Share is the ratio of these two weights. The foreign to world share is calculated as the weight on all foreign equity in the reporting country's portfolio divided by the sum of world market capitalization shares for all countries excluding the reporter (i.e. the global weight on foreign equity from the perspective of the reporting country)

Table 3: Outward Migration and Equity Home Bias

	Top Receiver	Receiver's Local Share	Receiver's Share of WMC	Local to World Share	Foreign to World Share
Australia	New Zealand(1.4%)	0.03%	0.10%	0.30	0.14
Austria	Switzerland(0.7%)	2.67%	2.32%	1.15	0.41
Belgium	Netherlands(0.3%)	2.84%	1.71%	1.66	0.12
Canada	USA(0.3%)	14.69%	46.99%	0.39	0.27
Czech Rep.	Slovak Rep.(1.4%)	0.53%	0.01%	53.00	0.09
Denmark	Norway(0.5%)	0.33%	0.31%	1.06	0.36
Finland	Sweden(2.1%)	5.38%	0.95%	5.66	0.30
France	Belgium(1.5%)	0.74%	0.96%	0.77	0.22
Germany	Switzerland(2.4%)	2.07%	2.32%	0.89	0.29
Greece	Australia(0.6%)	0.003%	1.70%	0.00	0.04
Hungary	Austria(0.4%)	0.21%	0.16%	1.31	0.04
Ireland	UK(0.9%)	30.73%	7.94%	3.87	1.28
Italy	Switzerland(3.2%)	1.29%	2.32%	0.56	0.22
Japan	New Zealand(0.2%)	0.01%	0.10%	0.10	0.10
Korea	New Zealand(0.4%)	0.00%	0.10%	0.00	0.01
Mexico	USA(3.1%)	1.18%	46.99%	0.03	0.02
Netherlands	Belgium(0.9%)	0.78%	0.96%	0.81	0.59
New Zealand	Australia(1.8%)	6.29%	1.70%	3.70	0.31
Norway	Sweden(0.5%)	2.52%	0.95%	2.65	0.45
Poland	Canada(0.6%)	0.002%	2.75%	0.00	0.01
Portugal	Switzerland(1.4%)	0.26%	2.32%	0.11	0.15
Slovak Rep.	Czech Rep.(2.8%)	1.55%	0.06%	25.83	0.15
Spain	Switzerland(0.8%)	0.31%	2.32%	0.13	0.09
Sweden	Norway(0.7%)	0.39%	0.31%	1.26	0.33
Switzerland	Italy(0.3%)	0.51%	1.94%	0.26	0.21
Turkey	Austria(1.5%)	0.00%	0.16%	0.00	0.00
UK	Ireland(6.0%)	0.94%	0.26%	3.62	0.30
USA	Canada(0.9%)	0.82%	2.75%	0.30	0.22

Top Receiver is the country receiving the most immigrants from the reporting country. The receiver's local share is the weight on receiving country equity in the reporting country's portfolio. The receiver's share of WMC is the weight on receiving country equity in the global portfolio. The local to world Share is the ratio of these two weights. The foreign to world share ratio is calculated as the weight on all foreign equity in the reporting country's portfolio divided by the sum of world market capitalization shares for all countries excluding the reporter (i.e. the global weight on foreign equity from the perspective of the reporting country).

Table 4: The Effects of Migration on Equity Home Bias

	Full Sample Results					Euro-Zone Results				
	Baseline	Immigration		Emigration		Baseline	Immigration		Emigration	
		OLS	IV	OLS	IV		OLS	IV	OLS	IV
MC Share	0.161	0.102	0.129	0.170	0.180	0.671	0.467	0.433	0.760	0.775
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
MC*Migration	-	34.301	21.271	-5.558	-4.569	-	51.077	59.367	-55.527	-64.392
	-	[0.000]	[0.000]	[0.000]	[0.011]	-	[0.002]	[0.001]	[0.031]	[0.016]
MC*Euro	0.379	0.369	0.366	0.342	0.330	-	-	-	-	-
	[0.000]	[0.000]	[0.000]	[0.005]	[0.011]	-	-	-	-	-
Ln(Distance)	-0.002	-0.002	-0.002	-0.002	-0.002	-0.005	-0.005	-0.005	-0.005	-0.005
	[0.000]	[0.000]	[0.000]	[0.006]	[0.013]	[0.161]	[0.105]	[0.100]	[0.127]	[0.123]
Language	0.007	0.004	0.002	0.011	0.009	0.003	-0.003	-0.004	0.003	0.002
	[0.000]	[0.828]	[0.323]	[0.000]	[0.004]	[0.582]	[0.625]	[0.523]	[0.640]	[0.651]
Border	0.007	0.002	0.003	0.007	0.006	0.000	-0.002	-0.003	0.003	0.003
	[0.020]	[0.531]	[0.366]	[0.070]	[0.160]	[0.979]	[0.645]	[0.592]	[0.615]	[0.564]
R_{t-1}	-0.059	-0.053	-0.053	-0.092	-0.122	-0.287	-0.206	-0.193	-0.299	-0.301
	[0.286]	[0.307]	[0.373]	[0.283]	[0.271]	[0.235]	[0.376]	[0.409]	[0.208]	[0.205]
ERV	-0.272	-0.192	-0.267	-0.964	-1.157	-	-	-	-	-
	[0.593]	[0.693]	[0.609]	[0.328]	[0.296]	-	-	-	-	-
FMS-R	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004
	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]	[0.024]	[0.021]	[0.022]	[0.059]	[0.068]
FMS-P	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.004
	[0.186]	[0.140]	[0.114]	[0.170]	[0.131]	[0.111]	[0.072]	[0.069]	[0.073]	[0.069]
Constant	-0.005	-0.001	-0.003	-0.012	-0.016	-0.009	-0.004	-0.004	-0.005	-0.004
	[0.500]	[0.940]	[0.688]	[0.278]	[0.271]	[0.778]	[0.886]	[0.906]	[0.881]	[0.898]
Observations	1074	1039	960	691	597	110	110	110	110	110]
R^2	0.364	0.522	0.510	0.366	0.383	0.418	0.465	0.464	0.439	0.438

Estimates of equations 12 and 13 in the text. Heteroskedasticity consistent p-values are given in brackets. Migration can be defined as either inward immigration or as outward emigration. In the first case, migration flows from a partner country to a reporter country (where the reporter is the country reporting its foreign equity positions). In the second case, migration flows out of the reporter country and into the partner country. In both cases, migration is the percentage of the reporter or partner country population that is composed of immigrants from the partner or reporter country. The Euro-Zone variable is equal to 1 if both the reporting and partner countries use the euro. Language is equal to one if both countries speak the same language (either ocially or if a signicant minority in each country shares a language). R_{t-1} is the average monthly return over the past year, used as a proxy for the expected current return. ERV is real exchange rate volatility. FMS-R and FMS-P are the reporter and partner country scores on financial market development from the World Economic Forum. The Euro-Zone results only consider bilateral investment between members of the Euro-Zone.

Table 5: Correlation Matrix of Key Explanatory Variables

	Imm Share	Em Share	Distance	Language	Border	R_{t-1}	ERV
Imm Share	1.00	0.18	-0.08	0.34	0.33	-0.03	-0.09
Em Share	0.18	1.00	-0.05	0.36	0.34	0.09	-0.04
Distance	-0.08	-0.05	1.00	0.05	-0.29	-0.20	0.35
Language	0.34	0.36	0.05	1.00	0.24	-0.01	-0.04
Border	0.33	0.34	-0.29	0.24	1.00	0.11	-0.15
Rt-1	-0.03	0.09	-0.20	-0.01	0.11	1.00	-0.51
ERV	-0.09	-0.04	0.35	-0.04	-0.15	-0.51	1.00

Correlation coefficients between the key explanatory variables in equations 12 and 13. Imm share is defined as the share of the reporting country's population that migrated from the partner country. Em share is the share of the partner country's population that migrated from the reporting country. Distance, the presence of a common language and the presence of a border between the reporting and partner countries are all from the CEPII Geodesic distance database. R_{t-1} is the lagged average annual excess return on partner country equity (relative to reporter equity) from 2001-2004, computed from the Morgan Stanley Capitalization Index for each country. ERV is the volatility of the exchange rate between the reporter and partner countries, computed as the average monthly exchange rate variance over the period 2001-2004.

Table 6: The Effects of Migration across Levels of Development

	Immigrants		Emigrants	
	ImPop Share	HighIm Dummy	EmPop Share	HighEm Dummy
MC	0.111	0.154	0.155	0.166
	[0.000]	[0.000]	[0.000]	[0.000]
MC*IM	34.723	0.196	8.164	1.157
	[0.000]	[0.000]	[0.239]	[0.000]
MC*IM*RR	9.889	1.062	332.614	-
	[0.207]	[0.579]	[0.031]	-
MC*IM*RP	-78.165	-1.518	5335.766	-
	[0.709]	[0.799]	[0.902]	-
MC*IM*PR	-77.125	-	-14.274	-1.334
	[0.000]	-	[0.038]	[0.000]
MC*IM*PP	-438.299	-	-17082.100	-
	[0.702]	-	[0.936]	-
Ln(Distance)	-0.002	-0.002	-0.002	-0.002
	[0.000]	[0.000]	[0.011]	[0.012]
Language	0.002	0.007	0.013	0.010
	[0.231]	[0.000]	[0.000]	[0.001]
Border	0.004	0.005	0.007	0.003
	[0.082]	[0.074]	[0.068]	[0.390]
R_{t-1}	-0.087	-0.099	-0.160	-0.149
	[0.095]	[0.073]	[0.067]	[0.072]
ERV	-0.840	-0.975	-2.559	-2.538
	[0.081]	[0.049]	[0.008]	[0.006]
Constant	0.022	0.022	0.021	0.020
	[0.000]	[0.000]	[0.003]	[0.003]
Observations	1014	1014	690	690
R^2	0.528	0.360	0.351	0.388

Heteroskedasticity consistent p-values are given in brackets. RR is equal to one if both the reporting and partner countries have GDP more than 1 standard deviation above the sample average. RP equals one if the reporter's GDP is more than 1 SD above the average and the partner GDP is more than 1 SD below the sample average. PR and PP are defined analogously. See the footnote to Table 4 for definitions of all other variables