

## The Homeboy Bias: Evidence For and Determinants Of

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### Abstract

We document a new investor bias we call the homeboy bias. Whereas the *home* bias is a preference for domestic or local assets, the *homeboy* bias is a preference for domestic fund managers. Using the choices of mutual funds for retirement accounts of the Swedish population, and after controlling for past returns, fees, and fund styles, we find that funds offered by Swedish institutions received over 21 times more money than similar funds offered by foreign institutions. In cross-fund regressions, we show that the *homeboy* bias is distinct from the home bias and is not driven by economic explanations based on information asymmetries or foreign exchange risk. In cross-individual regressions, we show that the homeboy bias is strongest among financially-unsophisticated investors and that explanations for the homeboy bias may be based on behavioral preferences related to familiarity and nationalism. Thus, the homeboy bias is empirically distinct from the home bias but may have the same behavioral roots.

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## 1. Introduction

We document and study a new investor bias that we call the homeboy bias. Homeboy is a slang term, from the Hip-Hop culture of North America, for a close friend from ones' own neighborhood, hometown, or region.<sup>1</sup> For our purposes, the homeboy bias refers to the tendency of investors to invest with financial institutions from their own country.

At least since Levy and Sarnat (1970) and clearly since French and Poterba (1991), finance researchers have known that investors have a preference for assets in their own country. Coval and Moskowitz (1999) and Huberman (2001) extend this preference for domestic assets to local assets. Massa and Simonov (2006) suggest that investors are biased toward familiar assets because of they have better information about them; in contrast, Grinblatt and Keloharju (2001) suggest that the bias is based on a familiar language or culture. Whereas the *home* bias is a preference for domestic or local assets, the *homeboy* bias is a preference for domestic fund managers. We show that the homeboy bias is empirically distinct from the home bias. For example, investors prefer international funds offered by local institutions to international funds offered by foreign institutions.

In an article documenting the degree of and the mechanism by which advertising affects an individual's choice of mutual fund, Cronqvist (2006) finds that mutual funds run by domestic (Swedish) fund families received more money than their foreign-run counterparts. We explore, in greater detail, this homeboy bias by first, presenting its potential causes, second, documenting its size and significance, third, testing potential explanations, and fourth, measuring its determinants.

We posit five potential explanations for the homeboy bias; the first three are economic explanations and the last two are behavioral explanations. First, the preference for domestic managers could be the consequence of an information advantage they have about domestic assets. Second, the selection of domestic managers could be driven by a preference for funds

denominated in the domestic currency. Third, the choice of local institutions could be associated with benefits to the local economy in terms of employment and tax revenue. Fourth, the homeboy bias could be another manifestation of the general bias toward the familiar (see Zajonc (1968) and Huberman (2001)). Fifth, the bias toward domestic managers could be evidence of behaviors such as national identity or pride and xenophobia (see Muller-Peters (1998) and Rygren (2004)). Our tests contradict the first three economic explanations and support the latter two behavioral explanations.

We document the homeboy bias using two compressive data sets from Sweden's introduction of a partially-privatized social security system where participants were required to invest in individually-directed retirement accounts. Approximately half of the mutual funds available in this new retirement system were offered by Swedish institutions. Yet, when we aggregate the choices of all 4.4 million participants, over 96 percent of the money went to funds managed by Swedish institutions. The average foreign-managed fund received only 10.8 million Swedish Crowns (SEK); in contrast, the average Swedish-managed fund received 155.4 million SEKs—over 14 times more.<sup>2</sup> Foreign-managed funds were virtually shut out. Of course, the preference for Swedish-managed funds could arise if they had lower fees, higher past returns, or less risk than their foreign counterparts. Our *cross-fund* regressions use our first data set of 416 mutual funds and show that, after controlling for determinants of fund flows such as past return and fees, the evidence of a homeboy bias strengthens; a typical Swedish-managed fund received 21 times more money than a similar foreign-managed fund.

We explore the determinants of homeboy bias in individuals' portfolios using our second data set and *cross-individual* regressions of a random sample of 17,951 participants in the Swedish retirement system. For this sample, we have individual portfolio choices along with a rich set of demographics including the usual variables such as gender, age, marital

status, wealth, and income, as well as information on characteristics such as level of education, employment sector, nationality, and holdings of foreign assets. We perform cross-individual regressions where the dependent variable is a measure of the degree of homeboy biasedness. These regressions find that the homeboy bias is inversely correlated with proxies for financial sophistication and positively correlated with proxies for familiarity and nationalism, suggesting that behavioral explanations, rather than information, foreign exchange exposure, or economic stimulation, are at play.<sup>3</sup>

For five reasons, our Swedish pension data is uniquely suited for modeling the flow of money to mutual funds and testing for a homeboy bias. First, we have the portfolio choices of the complete working population of Sweden rather than a sample. We have investment data on all 4,413,831 participants in 2000 and participation was mandatory. Thus, our data is free from self-selection biases common in data that comes from one financial institution or several companies' 401(k) programs. Second, since our data corresponds to the initiation of a system, all participants made a choice at approximately the same time. In contrast, most financial data reflect individual choices over time as people enter, exit, rebalance, or make new contributions. Third, all participants chose from the same finite list of funds, were given the same catalog, and had access to the same information on each fund. Furthermore, this common catalog contained detailed information on each fund and its family. Fourth, each fund was on equal information, simplicity, and convenience footing with other funds. Each fund had the same coverage in the catalog and online system, reported the same fund and fund-family information, and charged no 12b1 fees or loads. Furthermore, the choices are free from channel bias as all funds were offered and selected in the same way as the other funds. For all intents and purposes, the only difference a participant would notice between a domestic- and a foreign-managed fund was that the former's name was Swedish. This level playing field is particularly important in documenting the homeboy bias. Fifth, for a sample

of investors, we have a rich set of demographic and economic variables that document why some individuals have a greater homeboy bias than other individuals. The demographic data were gathered during the same time period in which the initial investment choices were made.

Our article is organized as follows. In Section 2 we present various potential explanations for the homeboy bias. In Section 3 we document the size and significance of the homeboy bias in cross-fund regressions using the choices of all 4.4 million participants. In Section 4 we present tests of the various explanations of the bias. In Section 5, we test for the determinants of the homeboy bias using a sample of participants in cross-individual regressions. Section 6 concludes.

## **2. Potential Theories for Homeboy Bias**

An obvious reason for a Swede to pick a local institution to manage their money is ease; it is more convenience to deal with an institution that has nearby offices and employees that speak your language. However, in the Swedish system, Premie Pensions Myndigheten (Premium Retirement Authority, PPM hereafter) insured a level playing field for domestic (Swedish) and foreign fund managers. Each fund received equal space in the catalog and was literally one mouse click or one darkened bubble away. The catalog was a prospectus-like 97 page document giving detailed information about the participating mutual funds and their sponsoring institutions. Although the Swedish Government encouraged participants to make a conscious choice, it did not promote any specific funds nor did it promote domestic-managed funds over foreign-managed funds. Domestic funds did not enjoy any special government guarantees or backing. Foreign-managed funds did not have any hidden 12b1 fees or loads (neither were allowed for funds in the PPM system). Swedish-managed funds did not get an early start and funds were listed alphabetically, by style, in the catalog. Post-choice reporting on performance, service, support for individuals, and opportunities for

reallocation, deposits, and withdrawals all went through the PPM system and followed identical procedures for foreign- and domestic-managed funds. Since the system itself rules out the convenience and ease explanation, we posit four alternatives.

First, the homeboy bias could be the consequence of asymmetric information. Karlsson and Nordén (2006) show that Swedes, like investors in other countries, have a home country bias, and consequently may prefer domestic managers who presumably know more about domestic assets. Thus, the amount of funds received by the mutual funds could be spuriously correlated to the nationality of the fund family by way of a preference for domestic assets. This information advantage is not necessarily limited to information about the expected returns of Swedish assets. Even when investing in foreign assets, Swedes could prefer a domestic manager who has superior information about the foreign assets' correlation with the Swedish economy. That is, a domestic manager may be able to form portfolios with lower correlation to a Swedes' non-financial income and domestic returns than a foreign manager.

Second, the homeboy bias could be driven by a preference for funds denominated in Swedish Crowns (SEK). Since Swedes' consumption is primarily in SEK, investments denominated in foreign currencies expose consumers to foreign-exchange risk, a risk with no commensurate reward and a risk avoided by choosing funds denominated in SEKs. Since Swedish-managed funds tend to be denominated in SEKs, a spurious correlation between the amount of money a fund receives and the nationality of the fund could result from the underlying correlation between Swedish managers and funds denominated in SEKs.

Third, participants could prefer domestic institutions because of the benefits to the local economy. If a locally-managed fund receives additional money to manage, the fund may hire extra employees, increase purchases from local vendors, and pay more income,

property, and sales tax. Such improvements to the local economy presumably would indirectly increase the participant's own utility.

Fourth, the homeboy bias could be another manifestation of the bias toward the familiar. The behavioral sciences have shown that as cognitive misers, humans may rationally take shortcuts when making decisions. Simon (1955) coined the term "bounded rationality" to describe the limits and costs associated with the time, effort, and mental energy needed to optimize decisions. Miller (1956) documents the limits in humans' ability to process and store information. Wright (1975) shows that these limitations cause individuals to simplify the decision-making process. Tversky and Kahneman (1974) show that heuristics simplify the process and that even sensible heuristics can result in systematic errors. Most relevant to our study are the findings of Alba and Chattopadhyay (1985) and Zajonc (1968) dealing with consideration sets and exposure, respectively.

Campbell (1969) documents that when making choices, consumers do not consider all alternatives; rather, they focus on a subset that Alba and Chattopadhyay (1985) call the consideration set. Hauser and Wernerfelt (1990) argue that by balancing the marginal cost of searching and analytical processing against the marginal expected benefits of finding a better product or service, consideration sets are rational. Nedungadi (1990) indicates that brands that are accessible to memory because of frequency and recency of exposure and the availability of retrieval cues are most likely to be included in the consideration set. For our purposes, this string of research suggests that participants may not consider all 455 mutual funds; rather, they may limit their consideration to familiar, and consequently, Swedish funds.

Related to consideration sets is Zajonc's (1968) finding that individuals' attitude about an object is enhanced by mere repeated exposure to the object. He finds that peoples' attitudes towards certain words and symbols improve after exposure to that word or symbol. Bornstein (1989, page 265) summarizes Zajonc's original finding as "familiarity leads to

liking,” then documents the follow-on studies, including papers dealing with the age of the subject and the sequence of exposure. Huberman (2001) shows that this preference for the familiar carries over to investments and notes that the home *country* bias is just one manifestation of the preference. Massa and Simonov (2006) find a bias toward familiar assets (even at the expense of smoothing consumption through hedging) and suggest this bias is based on investors having better information about the familiar. In support of the familiarity explanation, Cronqvist (2006) finds that exposure, through advertising and news articles, leads to an increase in the amount of money a mutual fund receives. A propensity for participants to favor familiar mutual funds could cause the homeboy bias if the Swedish funds are more familiar than their foreign counterparts.

Fifth, the homeboy bias could be an economic manifestation of Tajfel (1978 and 1979) and Tajfel and Turner’s (1979) social identity theory. Tajfel and Turner suggest that individuals derive psychic utility by being part of a distinctive group such as a successful team, tribe, religion, race, or country and by inflating the abilities and character of one’s own group while denigrate those of other groups. This need to belong often results in economic choices that are biased in favor of members of one’s own group. Sharma, Shimp, and Shin (1995) list a plethora of publications documenting a consumer bias in favor of domestically-produced products over their imported counterparts. They find that this nationalistic economic behavior is strongest in groups with patriotic, conservative, and collectivist tendencies and negatively correlated with cultural openness. Social Identity Theory may also explain the rise of nationalistic parties such as the French Front National, and the Austrian Freedom Party and the attempts by politicians to disallow the purchase of domestic businesses by foreign companies.<sup>4</sup>

Foreshadowing our cross-individual regression results, Sharma, Shimp, and Shin (1995) find that nationalistic consumer behavior grows weaker with income and education

and stronger with age. Closer to home, Hjerm (2005) finds that the degree of xenophobia among Swedish adolescents is strongest in boys who are born in Sweden to less educated fathers and who live in the countryside. We also note that Müller-Peters (1998) and Smith and Kim (2006) both find that the degree of nationalism in Sweden is low relative to other countries. Consequently, the homeboy bias we find in Sweden may be much stronger in other countries.

### **3. Macro Evidence of Homeboy Bias**

#### **3.1 Swedish Pension System**

The Swedish government, like its U.S. counterpart, allowed those retired when the national pension system was instituted to receive benefits even though they did not pay into the system. In 2000, demographics changes toward more retirees and fewer workers forced the Swedish government to make changes to this pay-as-you-go pension program. In the first part of the new system, 16 percent of a worker's annual income funds a common pool that, like the Social Security System, is (a) used to pay current retirees, and (b) is used to determine the worker's future pension benefits. In the second part of the new system, called "Premiepensions" (Premier Pension), workers contribute 2.5 percent of their income into a self-directed 401(k)-like account. Whereas ongoing contributions are 2.5 percent of salary, the initial funding was 2.5 percent of the prior four years of an individual's income.<sup>5</sup>

All participants were provided with a catalog called "Fondkatalog för dit premiepensionsval" (Fund Catalog for the Premium Pension Choice) containing 455 mutual funds. Participants could choose up to 5 funds.<sup>6</sup> These 455 funds were grouped into 4 major categories: Equity, Mixed (stocks and bonds), Preset Mix (generational funds), and Fixed Income. Funds were further categorized into 29 different styles as reported in Table 1. After the catalog was printed, 39 funds withdrew from the system leaving only 416. Table 1 shows

that 56 percent (231 out of 416) of the funds were offered by Swedish institutions. Of these 416 funds, 3 did not report their market capitalization; consequently, we use 413 funds in our following analysis.<sup>7</sup>

For each fund, the catalog reports the name of the fund, the name of the fund family, a brief description of the fund's objective, the size of the fund (market capitalization) at the end of 1999, the management fee, annual returns for years 1995 to 1999, if existing, and two measures of risk explained below. We use the name of the fund family to categorize a fund as being offered by a domestic (Swedish) institution. We use the objective of the fund and its style to assign each fund the proportion of assets invested in Sweden. For example, all funds in the "Swedish small cap" style, by definition, had 100 percent of their assets invested in Sweden and all funds in the "Japan" equities style had 0 percent of their assets invested in Sweden.

The catalog, after reporting on each fund, then reports information about the fund family. Fund family information includes the number of employees, number of funds in the PPM system, market capitalization of the family of funds, and the country where the fund is registered. Although not reported in the catalog, the currency in which returns are denominated was available on-line. Although the majority of the funds are denominated in SEK, some are denominated in Swiss francs, Euros, British pound, Japanese yen, Norwegian crowns, and US dollars. We gathered data on currency from PPM's online source.

Table 2, Panel A, reports summary statistics for the mutual fund data collected from the catalog. Domestic institutions managed 56 percent of the funds and the average fund's exposure to Swedish assets is 25 percent. Thus, the catalog itself reflects a *home* bias since Sweden constitutes only approximately 1 percent of the world equity market as measured by capitalization. Management fees averaged just less than 1 percent and ranged from a low of 15 basis points (a bond fund) to a high of 3.97 basis points (an emerging markets fund). The

average annual return in 1999 was high, 41.39 percent, for two reasons: first, 1999 was a good year for global equity returns and second, fund families apparently selected their better performing funds to be included in the PPM system. Only 268 of the funds were in existence at the beginning of 1999 and only 202 at the beginning of 1998. The average fund had an annualized standard deviation (calculated from the 36 monthly returns between the beginning of 1997 to the end of 1999) of 18 percent, and, since standard deviations were rounded to the nearest whole percent; several short-term bond funds had *reported* standard deviations of 0. The age of the fund is based on the number of complete years of return history and is right-censored at 5 years in the catalog. Given the right-censoring of age, the average fund was 2 years old with some funds being new; specifically, created sometime after January 1999 and before September 2000. Fund market capitalizations ranged from 410,913 million SEK (Indocam's Mosais Japanese Equities fund) to brand new funds with no assets under management. Like fund capitalization, family size, as measured by the number of employees, had a wide range.<sup>8</sup> The average fund family offered 10 funds in the PPM system with two families offering 16 funds and many offering only one. 57 percent of the funds were denominated in Swedish crowns.

In addition to the fund and fund family data from the catalog, we obtained data on each participant's initial choice from PPM. All workers in Sweden were required to participate. 4,413,832 participants made their initial selection of funds in the last 4 months of 2000 with over 60 percent making their choice in November 2000. We aggregated the choices of all participants to calculate the amount of money each fund received and the number of individuals that put money into each fund. Summary statistics for these two series are reported in Table 2, Panel B. The average fund received 91 million SEK and 22,872 investors. The relatively large standard deviations and the range between the maximum and

minimum numbers in Panel B both suggest substantial variations in a fund's ability to attract money and investors.

Whereas Tables 1 and 2 describe the population of potential *choices* (mutual funds), Table 3 describes the population of *choosers* (individuals). In Table 3, Panel A, we give summary statistics on all 4.4 million individuals who made their first allocation in 2000; in Panel B we describe the 2.8 million individuals who did not end up in the default fund. We treat the default alternative as an entirely passive choice even though an individual could have considered the default fund to be the optimal choice.<sup>9,10</sup>

Table 3 Panel A reports that the average amount invested by an individual was 12,651 SEK. Participants ranged in age from 18 to 62 years, with the average participant being 42 years old. The average individual had over 96 percent of their money in funds managed by Swedish institutions and ended up with 2.6 funds.

Consistent with Engström and Westerberg (2003), Panel B of Table 3 indicates that participants who made a conscious choice tended to have slightly higher incomes (as measured by the amount invested) and were slightly younger than those in the default fund. Since the default fund was managed by a Swedish institution, the proportion allocated to domestic managers in Panel B is less than in Panel A by definition. However, even among choosers, the homeboy bias is evident; over 94 percent of their money went to Swedish institutions. The home country bias is also evident in Table 3, with the typical Swede investing 34.3 percent of their money in Swedish assets. Consistent with Huberman and Jiang (2006), who found that U.S. 401(k) participants typically choose between 3 and 4 funds, Swedes chose 3.4 funds, on average.

### 3.2 Variable Descriptions

To measure the size and significance of the homeboy bias, we report on regressions where the dependent variable is a measure of participants' preference for a fund and one of the independent variables measures whether the fund is managed by a domestic or foreign manager. We use two measures of preference: one based on how much money each fund received and the other based on the number of individuals that chose the fund. The following four dependent variables are transformed using natural logs to help correct for the skewness reported in Table 2.

$Ln(AmtMM)$  = Natural log of the amount, in millions of SEK, the mutual fund received from investors in their initial allocation of money in 2000.

$RelAmt$  =  $Ln(AmtMM/MeanAmtMM)$ , the relative amount the mutual fund received, where  $MeanAmtMM$  is the mean amount of money received by funds with the same style.  $RelAmt$  is approximately the percent above or below the average amount received by funds of the same style.

$Ln(Investors)$  = Natural log of the number of investors who chose the fund in their initial allocation of money in 2000.

$RelInvestors$  =  $Ln(Investors/MeanInvestors)$ , the relative number of investors the mutual fund received, where  $MeanInvestors$  is the mean number of investors who chose the funds with the same style.

To test for the homeboy bias, we not only need a measure of domestic management, but also measures of other covariates believed to influence the investors' choice of mutual funds. Potentially, the real reason for the domestically-managed funds' success in attracting money could be their lower fees, higher past returns, or their prominence in the catalog--not their nationality. Consequently, in our regressions we control for past performance, fund characteristics, fund family characteristics, and behavioral variables that have been shown to influence investors' choice of funds. We motivate our list of control variables after first defining them as follows:

*Measure of the homeboy bias:*

*Domestic* = 1 if the fund is managed by a Swedish institution and zero otherwise. The catalog sent to participants did not explicitly report data on *Domestic*. Rather,

the catalog reported the name of each fund and the fund family; we use the name to categorize funds as domestic or foreign.

*Past performance measures:*

*ExRet00* = Excess return for the fund in the first 8 months of 2000. Participants started investing in September of 2000 so returns after August of 2000 may not have been known when funds were chosen. Monthly returns for 2000 were not in the catalog sent to participants; however, they were available on-line. *ExRet00* is calculated by continuously compounding the first 8 monthly returns in the year for each fund, then subtracting *MeanRet00*.

*MeanRet00* = The mean continuously-compounded return for the first 8 months in 2000 for funds of the same style.

*ExRet99* = Excess percent return for the fund in 1999. Excess return is the difference between the annual percentage return on the fund. Newer funds that did not exist in 1999 received an excess return of zero. Data on a fund's total return in 1999 is reported, to the nearest percent, in the catalog sent to participants.

*MeanRet99* = The mean percent return in 1999 for funds of the same style.

*ExRet98* = Same definition as *ExRet99* except for 1998.

*MeanRet98* = Same definition as *MeanRet99* except for 1998.<sup>11</sup>

*StdDev36* = The annualized standard deviation of the prior 36 monthly returns measured as a percent. *StdDev36* is reported to the nearest whole number in the catalog for funds at least three years old. We assign funds without 36 months of history the average standard deviation of competitor funds of the same style.<sup>12</sup>

*Fund characteristics:*

*Ln(ExFee)* = Natural log of the excess annual management fee, where excess management fee is the difference between the fund's fee, measured as a percent of assets, and *MeanFee*. Information on fees, reported to the nearest basis point, was included in the catalog sent to participants.

*Ln(MeanFee)* = Natural log of the mean fee of all funds with the same style.

*RelFee* = Natural log of the relative management fee,  $\ln(\text{Fee}/\text{MeanFee})$ . *RelFee* is approximately the percentage above or below the average fee of the competition.

*FundAge* = Binary variables indicating a fund's age. The catalog reports historical returns which indicate the age of the fund up to 5 years and rounded to the nearest year. Since *FundAge* is right-censored and discrete, we create the following binary variables: *FundAge0*, *FundAge1\_2*, *FundAge3\_4*, and *FundAge5*, where, for example, *FundAge1\_2* = 1 if the catalog reports the fund as having 1 or 2 years of return history, and 0 otherwise. We drop *FundAge0* from our

regressions so that coefficients on the remaining age-related binary variables are interpreted as the increase in money or investors relative to a new fund.

$Ln(FundCap)$  = Natural log of 1 plus a fund's market capitalization measured in SEK as of December 31, 1999. Information on  $FundCap$  is reported in the catalog. The log transformation helps to correct for the skewness in the raw data reported in Table 2. We add 1 before taking logs because several funds were completely new and, consequently, had no money under management when the catalog was printed.

*Fund family characteristics:*

$Ln(NumEmp)$  = Natural log of 1 plus the number of employees for the fund family. In the catalog, each fund family reported the number of employees. We add 1 employee before taking logs because several fund families reported zero employees.

$NumFunds$  = Number of funds the fund family had in the catalog.  $NumFunds$  is reported in the catalog.

$Breadth$  = Number of styles in which the fund family offered a fund as calculated from data in the catalog.

*Behavioral Variables:*

$Rank1$  = 1 if the fund is listed first among competitors of the same style in the catalog and zero otherwise.

$Count$  = Number of funds with the same style.

$Swedish$  = Proportion of assets in the fund that are invested in Sweden as estimated from the fund's description.

*Style Control Variables:*

$Style$  = Binary variables indicating the funds style. The catalog assigns each fund into one of the 29 investment styles reported in Table 1. We exclude style 1, Swedish normal equities, from regressions so the coefficients on style binary variables 2 to 29 represent the funds' ability to attract money and investors relative to Swedish equities.

### 3.3 Homeboy Bias Test Results

Table 4 reports the coefficients, p-values, and adjusted  $R^2$  for six different specifications of our regression model. In the first three specifications the dependent variables are based on the amount of *money* a fund received and in the last three specifications

the dependent variables are based on the number of *investors* a fund attracted. For each of these two dependent variables, money and investors, we estimate three specifications that differ in how they control for the 29 styles. Potentially, the domestically-managed funds could have received more money or investors than their foreign counterparts because they were in relatively popular styles—styles with high demand but few suppliers. In the first empirical specification, we control for styles by including each style’s average return for 2000, 1999, and 1998, average fee, and the number of funds in the style.<sup>13</sup> In the second specification, we follow Cronqvist (2006) and include 28 style dummy variables. In the third specification, we use the relative (to funds of the same style) amount of money or number of investors as the dependent variable. Thus, the coefficients in the third and sixth empirical specifications explain why a fund got more or less money and investors than the competing fund, not the absolute amount the fund received.

Our particular interests are the *Domestic* coefficients in Table 4 that are positive and significant (p-values less than 0.0001) in each of the six regressions. For the first regression, the coefficient on the domestic variable is 3.09 with a t-statistic of 18.56 (not reported) that is higher than any other t-statistic in the regression. Thus, even after controlling for past returns, fund, fund family, and behavioral characteristics, participants are more likely to choose a fund managed by a domestic institution (Swedish) than a fund managed by its foreign counterpart. The interpretation of the coefficients indicates that a domestic manager is economically meaningful. Because the dependent variables are natural logs, the coefficients can be transformed using:  $(e^{3.09} - 1) = 20.8$ . That is, the typical fund managed by a domestic institution received nearly 21 times more money than a similar fund managed by a foreign institution. Note that when just comparing raw amounts of money, an average Swedish-managed fund received 14 times more money than the average foreign-managed funds. However, after controlling for returns, size, fees, etc., this multiple jumps to 21 times.

Before discussing the robustness of the *Domestic* coefficient, we comment on the overall significance of the regression, on the signs and significance of the control variables, and on various specifications of the model. Table 2 indicates that one fund received over 2,254 million SEK whereas another only 0.1 million; thus there is a lot of variation for the model to explain. The adjusted  $R^2$  on Model 1 in Table 4 indicates that collectively our covariates explain nearly 76 percent of the variation in the natural log of the money received by each fund. We note that in Model 1, if the *Domestic* binary variable is dropped from the regression, the adjusted  $R^2$  falls to 54 percent. No other variable, when omitted, causes such a large drop in explanatory power. For comparison purposes, we note that the adjusted  $R^2$  of a regression that omits all six return variables, but maintains *Domestic*, only drops to 64 percent. Formally, the p-value from an F-test restricting the six return coefficients to equal 0 is larger than the p-value from a t-test restricting the domestic manager coefficient to equal 0.

In Model 1, the six coefficients on the past returns indicate that, contrary to the efficient markets theory and evidence that alphas tend to be serially uncorrelated, participants “chased” hot styles and hot hands.<sup>14</sup> With regard to hot styles, *MeanRet00* and *MeanRet99* both have positive and significant (p-values less than 0.0001) coefficients indicating that the higher the returns for a particular style leading up to the allocation decision, the more money funds of that style received. The coefficients indicate investors may remember back only two years since the coefficient on *Mean98* (and *Mean95* to *Mean97*, not shown) is not significant. With regards to hot hands, investors apparently also looked at fund alphas, as measured relative to a style benchmark. The coefficients on the excess return variables (returns less the mean return of funds with the same style) are all positive and for 2000 and 1999 they are highly significant (p-values less than 0.0001). The *ExRet98* coefficient is also significant, but at the 90 percent confidence level (p-value = 0.093). This weakening may not only be due to lack of recency, but also to the data incompleteness. Approximately half of the funds did not

exist on January 1, 1998 and, consequently, were assigned a zero excess return. Since the catalog did not contain 2000 return data, the significant coefficients on *ExRet00* and *MeanRet00* indicate that some participants viewed and considered online data when making their decision.

The coefficient on *StdDev36* indicates a significant preference for riskier funds, presumably because they are expected to have returns high enough to compensate for the risk. The negative and significant coefficients on  $\ln(\text{ExFee})$  and  $\ln(\text{MeanFee})$  indicate that participants shied away from funds with fees greater than their competitors' and from styles with high fees. The coefficient on the three fund-age binary variables indicated a monotonic preference for older funds. The coefficient on *Age5* indicates that funds established before 1994 received  $(e^{0.92} - 1) = 1.5$  times more money than a brand new fund with similar characteristics. Due to economies of scale, or perhaps broader awareness (see Cronqvist (2005)) and lower search costs (see Sirri and Tufano (1998)), the larger the fund the more money it received. Like fund size, fund family size, as measured by the number of employees, has a significant and positive effect on the amount of money a fund receives. The coefficients on  $\ln(\text{NumFunds})$  and  $\ln(\text{Breadth})$  may stem from both a preference by individual investors for a specific fund family and a preference for diversification across styles. As a fund family increases the number of its funds in the PPM system, the amount of money flowing to each fund decreases. In general, more family funds dilute the amount of money any one fund within the family received. However, if the family's funds are spread across the different styles, then an investor could obtain the needed diversification all within one family. The two coefficients suggest a family strategy: offer a broad range of funds, but don't offer multiple funds within the same style.

The positive and significant coefficient on *Rank1* indicates that being listed first in the catalog among funds of the same style results in  $100(e^{0.43} - 1) = 54$  percent more money than

otherwise. Evidence from psychology and marketing suggests that being first on the list may be an advantage. Lund (1925) first documents the primacy effect, Asch (1946) and Rosnow (1966) document the role of primacy in memory, and Glanzer and Cunitz (1966) find a related serial position effect.<sup>15</sup> Of course, choosing the first on a list is also evidence of what Choi, Laibson, Madrian, and Merick (2001) call “the path of least resistance” and what Madrian and Shea (2001) call “inertia.” The positive and significant coefficient on *Count* supports the finding by Benartzi and Thaler (2001) and Karlsson, Massa, and Simonov (2006), but not Huberman and Jiang (2006), that participants may interpret a large number of funds with the same style as a signal of the importance of that style or as a signal of the appropriate weight in a portfolio.

The negative and significant coefficient on *Swedish* does not constitute evidence against the home bias anomaly. Swedes invested 15 to 30 times more money in Swedish *assets* than would be called for by a value-weighted internationally diversified portfolio. International diversification would call for 1 or 2 percent exposure to Swedish assets, yet the average active participant had over 34 percent exposure. That is, Swedes exhibited home country bias by investing in funds restricted to Swedish assets (see styles 1 to 4, 20, 21, 26, and 27 in Table 1). At the same time, when choosing among, say Nordic or European funds, the Swedes preferred the funds with fewer Swedish assets.<sup>16</sup>

In Model 2 of Table 4, 28 style dummies are included; style 1, Swedish equities, is omitted. Although not reported, the style dummies indicate that funds in styles 17, 18, and 24 (IT/ Communications, Pharmaceuticals, and Retirement in Less than 20 Years, respectively) received the most money and funds in styles 26 and 28 (Swedish short-term fixed income and European fixed income) received the least. Since Model 2 includes the style binary variables, we exclude two independent variables, *Sweden* and *StdDev36*, because of multicollinearity—the majority of the styles are defined by the proportion of Swedish assets and degree of risk.

For example, fund style dummies segregate funds by risk categories (i.e., a style called Fixed Income, Short Maturity and one called Emerging Markets) and by the proportion of Swedish assets (i.e., styles called Swedish equities, Japan equities, and UK equities). Given that styles are created using risk and asset-location differences, it is not surprising that when the style binary variables are included together with *Swedish* and *StdDev36*, the variance inflation factor (VIF) for *Swedish* is over 25 and, for *StdDev36*, over 16.<sup>17</sup> In Model 3, the style dummies are excluded and the dependent variable is the relative amount, *RelAmt*. Thus, regression 3 models the percent above or below the typical amount of money received by funds of the same style. In Models 2 and 3, the size of the *Domestic* coefficient decreases relative to Model 1, but the coefficient remains significant.

Models 4, 5, and 6 in Table 4 repeat Models 1, 2, and 3 using the number of investors in a fund in lieu of the amount of money a fund received. Redefining the dependent measure of a fund's success has little effect on the model's coefficients and the change in the dependent variables has no effect on the strong evidence in favor of the homeboy bias.

### 3.4 Robustness of the Homeboy Bias

In Model 1 of Table 4, we made several choices regarding the measurement and inclusion of the dependent variables. Our choices were guided by theory, prior empirical work, and utility—when faced with alternative metrics for a variable, we chose the measurement that was most significant. We now examine the robustness of the *Domestic* coefficient using Model 3 as the basis case since it had the lowest coefficient, 2.47. That is, we stack the deck against finding robustness by choosing the weakest model to perturb. We change the number of observations by (1) excluding the independent variable measuring market cap that was missing data for three funds, (2) excluding the premix or generational funds, (3) including only equity funds, and (4) including only non-equity funds. These

changes cause the *Domestic* coefficient to vary between a low of 2.33 and a high of 3.30 with p-values always less than 0.0001. Switching measurements by (1) using the five risk categories rather than return standard deviations, (2) using a fund's reported age rather than the age-based binary variables, (3) dropping  $\ln(\text{Breadth})$  and  $\ln(\text{NumFunds})$  because of their correlation with each other, (4) using the family market cap to measure size rather than the number of employees, (5) dropping the number of employees (because some families reported no employees), and (6) using total fee rather than relative fee causes the *Domestic* coefficient to vary between 2.25 and 2.57 with p-values always below 0.0001. Finally, omitting the 2000 returns (because they were not in the catalog) leaves the coefficient on *Domestic* unchanged at 2.47.

We also modified our definition of a domestically-managed fund. Our definition in Table 4 is based on name recognition. However, the following five Swedish institutions established subsidiaries that were registered outside of Sweden: Carlson Fund Management (2 funds), Carnegie Fund Management (5 funds), Handelsbanken Fondbolag (1 fund), H&Q Fund Management (2 funds), and Moderna Fonder (3 funds).<sup>18</sup> Defining a domestic fund based on the country of registration, rather than its name, causes the coefficient on *Domestic* to fall slightly to 2.23 with a p-value still less than 0.0001. Given that around 95 percent of the money went to Swedish institutions and that controlling for covariates actually increases the size of the homeboy bias, it is not surprising that the *Domestic* coefficient is robust.

### 3.4 Causes of the Homeboy Bias

We now focus on what the cross-fund regressions tell us about the potential economic explanations (information asymmetry, foreign exchange preference, and local economy stimulation) and the behavioral explanations (familiarity and nationalism).

One potential explanation for the homeboy bias is the home bias itself. If, for whatever reason, participants have a strong preference for domestic assets, they would also have a preference for domestic managers who presumably would know more than foreigners about Swedish assets. We can reject this explanation by re-estimating the models of Table 4 after conditioning on the proportion of Swedish assets in the fund, *Swedish*. We use Model 3 as a basis for comparison. Re-estimating Model 3 with just the 285 funds that could hold only foreign assets, the domestic coefficient is 2.51. This significant coefficient (p-value less than 0.0001) clearly indicates that the homeboy bias is distinct from the home bias. That is, in a group of funds that were prohibited from holding domestic assets--making a home bias impossible--participants still had a strong preference for domestically-managed funds.

We can also rule out the information asymmetry explanation for the homeboy bias. Estimating Model 3 using the 128 funds that had some exposure to Swedish assets results in the coefficient on *Domestic* dropping to 1.23. The drop in coefficients from 2.47 for funds with only foreign assets to 1.23 is not consistent with the information asymmetry explanation. The tendency to seek out domestic managers is smaller when those managers are most likely to have a knowledge advantage--when Swedish assets are involved. Perhaps because investing in foreign assets seems riskier or is viewed with mistrust, Swedes may have been biased toward local or familiar managers who could be more easily monitored or trusted. In a regression that allows the coefficient on *Domestic* to vary conditional on whether the fund has exposure to any Swedish assets, this interactive coefficient is significantly (p-value less than 0.0001) negative, meaning the bias is statistically weaker when domestic managers have a potential information advantage.

In Table 5 we report information about the *Domestic* coefficient from regressions of  $\ln(\text{FundAmtMM})$  on fees, past excess returns, fund age, and our measure of the homeboy bias, *Domestic*, by style. Although there are 29 different styles of mutual funds, only 16

regressions are of full rank.<sup>19</sup> The domestic coefficient is positive in all 16 regressions and is significant at the 90 percent confidence level in 14 of the regressions. The two non-significant coefficients are from regressions with few observations: The Europe index style has only 2 foreign-managed funds and the Pharmaceutical style only has 3 foreign-managed funds. Again, counter to an information explanation, the three largest *Domestic* coefficients are for styles where Swedish managers may be at an information disadvantage: Europe small cap, Foreign equity and fixed income, and Other (non-Swedish) fixed income. Table 5 indicates that the homeboy bias is evident when the home bias is not a factor, and that participants are most biased when the local manager may be at an information disadvantage.

Hindsight also suggests that an information advantage is not the reason participants prefer domestic institutions. We compared the returns on two equally-weighted portfolios created on December 31, 2000, after the first choice was made. The portfolio of domestically-managed funds underperformed the portfolio of foreign-managed funds from January 2001 to August 2004. The average compound return on the domestic-managed funds was -24.4 percent, whereas, the average for the foreign-managed funds was -19.1 percent. The 5.3 percent difference is statistically significant at the 5 percent level using either pooled variances or unequal variances. That is, if the bias towards domestic managers was motivated by a belief in their superior skills, the participants have been sorely disappointed.

The bias toward Swedish institutions could be explained by an information asymmetry regarding diversification rather than expected return. Investors, with their employment tied to the Swedish economy, may have preferred retirement portfolios with low correlation to Swedish assets. When choosing, for example, global assets, Swedish managers may have an advantage over foreign managers in creating a global portfolio with low correlation with the Swedish stock market. However, such was not the case. We calculated the monthly return correlation coefficients relative to the Swedish All Shares index between January 1997 and

August 2000 after sorting by style and then by domestic/foreign manager. For the 16 equity fund styles that had both Swedish and foreign managers (styles 5 to 22, excluding styles 15 and 20), the Swedish-managed funds had higher return correlation coefficients with the Swedish index than the foreign-managed counterparts. For example, the 18 foreign-managed Global funds had an average correlation coefficient with the Swedish index of 0.56, whereas the 13 Swedish-managed funds' average coefficient was 0.60.

One could argue that the apparent preference for a domestic manager could actually be driven by a preference for funds denominated in Swedish crowns (SEK). That is, to avoid exposure to foreign-exchange risks, participants chose funds denominated in SEK resulting in a spurious correlation between the amount of money a fund receives and the nationality of the fund family. However, when we estimate Model 3 for the 178 funds denominated in foreign currencies, the domestic coefficient is still positive and significant (p-value less than 0.0001). Thus, in a sample where a local currency preference is eliminated, the homeboy bias still exists.

The economic stimulation argument (jobs for locals and income tax from institutions) seems unlikely. First, the 416 funds in the catalog received less than 38 billion SEK, (less than 4 billion U.S. dollars), an amount that would have little material effect on Swedish employment rates or income taxes. Second, although fund managers make investment decisions, PPM handles processing and reporting to individuals; that is, a portion of the economic benefits from additional investments into the system are captured locally regardless of where the fund manager sits. Third, the stimulation argument cannot explain why the bias is larger in styles dealing with foreign assets than domestic assets. Presumably, the boost in local employment or tax receipts associated with a fund manager getting a job is independent of whether the manager analyzes Swedish or non-Swedish assets.<sup>20</sup> Fourth, evidence in the

following section suggests that the homeboy bias is stronger in rural areas than in urban areas (the three largest cities) where the domestic fund managers tend to work and live.

The three homeboy bias explanations based on economic reasoning (information asymmetry, foreign exchange risk, and economic stimulation) are also indirectly contradicted by evidence presented in the next section using cross-individual regressions. Specifically, in the next section we find that the homeboy bias is strongest in participants characterized as financially unsophisticated and inexperienced; the type of individuals more likely to be effected by behavioral, rather than economic, motivation.

The familiarity explanation receives support from two potential proxies for familiarity: size and age. Presumably, larger and older fund families are more likely to be household names and to have established relationships with participants. Thus, the positive coefficients on size and age in Table 4 indicate support for the familiarity explanation.

To further test the familiarity explanation, following Cronqvist (2005), we included advertising as independent variable. MarketWatch is a Swedish institution that tracks advertising expenditures in Sweden's print (newspapers, magazines, journals, billboards, and banners, but not on-line advertising) and broadcast media (television and radio). In 1999, 26 financial services institutions spent a total of 278 million SEK on advertising, and in 2000, 36 institutions spent 461 million. By contrast, from 2001 to 2005, financial services companies spent only 117 million SEK in a typical year. The unusual amount of advertising by financial services in 1999 and 2000, the year the new social security system was initiated, indicates that fund managers believed that familiarity increased the flow of money to a fund. Our measure of a fund's pre-investment advertising is the total amount spend by a fund's family and, where appropriate, by the family's parent company in 1999 and 2000. For example, Folksam is a parent company to LO/Folksam. The amount Folksam spends on advertising is therefore added to the amount spent by LO/Folksam. We thereby assume that advertisement for the

parent company, Folksam affects investment in both Folksam and LO/Folksam but advertisement in the fund family, LO/Folksam, only affects investments in LO/Folksam.

To illustrate the effects of advertising, we use Regression 2 of Table 4 since it closely matches Cronqvist's specification. Specifically, Cronqvist uses  $\ln(AmtMM)$  as the dependent variable and the 28 style dummies as independent variables. When we add advertising amounts and the square of the advertising amounts to specification 2, the *Domestic* coefficient falls slightly from 2.74 to 2.36 (p-value still less than 0.0001). The coefficient on advertising is positive and significant (p-value = 0.005) confirming Cronqvist's conclusion that advertising matters. The coefficient on advertising squared is negative but, unlike Cronqvist, it is not significant (p-value 0.351).<sup>21</sup> Since advertising is one method of increasing familiarity, its significant coefficient indicates support for the hypothesis that investors chose funds they were familiar with. However, the significant  $\ln(AmtMM)$  coefficient does not necessarily indicate that the *Domestic* coefficient is significant because of familiarity. The significant *Domestic* coefficient, even after controlling for familiarity factors of age, size, and advertising, does not rule out the familiarity explanation for the homeboy bias; *Domestic* could be capturing aspects of familiarity other than those incorporated by age, size, and advertising. On the other hand, *Domestic* could be significant for nationalistic explanations.

The main point of the cross-fund regressions are: (1) the homeboy bias is large, significant, and robust, (2) the economic explanations of information, foreign exchange, and economic stimulation seem unlikely, and (3) behavioral explanations based on familiarity or nationalism are at least possible.

#### **4. Micro Determinants of Home Bias**

##### 4.1 Data

Whereas in Section 3 we presented evidence of the homeboy bias in cross-fund regressions modeling the success of 416 mutual funds, in Section 4 we switch our focus to the determinants of the homeboy bias in regressions modeling the degree of bias in 15,497 individuals. The intention is to relate the share of domestically-managed money (*Homeboy*) to a set of explanatory variables including demographic characteristics related to investor sophistication, familiarity, and nationalism.

For these 15,497 individuals, investment choices are linked with individual demographics for the year 2000. Data on individuals come from Statistics Sweden, the Swedish version of the U.S. Census Bureau. Data sources include HEK 2000 (a report on household economics), IoF 2000 (a report on individual and household measures of income), and SUN 2000 (a report on educational status). Data from these three population reports are linked to an in-depth survey of 15,000 households, also made by Statistics Sweden, which represents a cross section of the Swedish population. This survey reports more detailed information, including the amount of foreign assets held by each individual in the households.

From the survey of 15,000 *households*, 17,591 *individuals* map into the PPM data. However, as shown in Panel A of Table 6, 2,454 of these individuals were either too young or unemployed and did not make a selection in the PPM system during 2000 leaving 15,497 individuals who invested. Of these, 5,124 individuals did not make an active investment decision and were assigned to the default fund.

To test which demographic and economic characteristics lead to a homeboy bias, we define our dependent variable, *Homeboy*, as the weighted (by the amount of money an individual invested in each fund) average of each fund in the portfolio's measure of *Domestic*. For example, if an individual put 3,000 SEK in a domestically-managed fund and 1,000 SEK in a foreign-managed fund, the level of *Homeboy* would be:  $\frac{3}{4}(1) + \frac{1}{4}(0) = 0.75$ ; meaning that 75 percent of the money is managed domestically. Panel B of Table 6 indicates the

magnitude of the homeboy bias in our sample and confirms the evidence in the population. 83.1 percent of the individuals in the sample invested all their money with domestic managers (*Homeboy* = 1). In contrast, only 0.4 percent invested all their money with foreign managers—even though almost half of the funds had foreign managers and investing with a foreign manager was just as simple and convenient as investing with a domestic manager. The remaining 16.5 percent split their money between domestic and foreign managers ( $0 < \textit{Homeboy} > 1$ ).

Summary statistics for the dependent variable, *Homeboy*, are reported in Table 7. Consistent with prior evidence, the average individual in our sample allocated 95 percent of their investment to funds run by Swedish institutions.

To model the homeboy bias, we need measures of other covariates believed to influence investors' choice of domestic manager. Our list of covariates are informed by the work of Karlsson and Nordén (2006), Dhar and Zhu, (2002), and Engström and Westerberg (2003) who test whether sophistication, experience, and other demographic characteristics influence the home bias, the disposition bias, and the degree of active management, respectively.

We do not have individual demographic information that distinguishes between the three economic explanations (asymmetric information, foreign exchange exposure, and economic stimulation). However, we have several measures associated with the degree of financial sophistication. If the homeboy bias is due to rational economic reasons, one would expect that more financially sophisticated investors (wealthier, more educated, live in a big city, and trade a lot) would exhibit a stronger preference for domestic managers than the less financially sophisticated. In contrast, unsophisticated individuals are more likely to choose local managers for behavioral reasons such as familiarity or nationalism. Presumably, unsophisticated investors have smaller consideration sets (see Alba and Chattopadhyay,

(1996)) or have less exposure (see Zajonc (1968)) to foreign institutions. Furthermore, unsophisticated investors may be more likely to derive psychic utility from the social identity associated with nationalism. We have several indirect proxies for an individual's familiarity with international fund families and their degree of national pride. If the homeboy bias is driven by familiarity, then an individual who already owned foreign investments at the time of the PPM choice should be less homeboy biased than someone who did not own foreign assets. Likewise, a worker in Sweden who is an immigrant or married to an immigrant may be more familiar with international institutions and/or less concerned about national (Swedish) identity. Finally, evidence in Sharma, Shimp, and Shin (1995), Hjerm (2005), and Smith and Kim (2006), among others, suggests that younger individuals (perhaps do to advances in communications, travel, economic unions, common currencies, and the archaic nature of world wars) tend to be more comfortable with international people and institutions and less nationalistic. Following are the definitions of the dependent variables in our cross-individual regressions:

*Measures associated with investor sophistication:*

- Income* = Gross income in 2000. *Income* may be negative since our measure includes capital losses.
- Wealth* = Net wealth in 2000. *Wealth* may be negative since our measure includes debt.
- Urban* = 1 if an individual lives in one of Sweden's three largest metropolitan areas (Stockholm, Göteborg, and Malmö) and zero otherwise.
- Town* = 1 if an individual lives in a city other than Stockholm, Göteborg, or Malmö and zero otherwise. We drop *Town* from our regressions so that coefficients on the *Urban* and *Rural* are interpreted relative to living in a city.
- Rural* = 1 if an individual lives in the countryside and zero otherwise.
- EDL* = Binary variables indicating an individual's educational attainment. *EDL1*, *EDL2*, and *EDL3* indicate whether an individual has less than a high school education, a high school diploma, or more than high school education,

respectively. We drop *EDL2* from our regressions so that coefficients on the *EDL1* and *EDL3* are interpreted relative to a high school education.

*PPMTrades* = Average number of trades per year within the PPM system from 2000 to 2004. Unlike the above independent variables, *PPMTrades* is not measured in 2000 at the time of the portfolio decision, rather is measured in the four years since the decision.

*Measures associated with familiarity and nationalism:*

*ForeignA* = 1 if an individual held foreign assets (stocks, fixed income, derivatives, mutual funds, or real estate) outside of the PMM system in 2000 and zero otherwise.

*Age* = The individual's age in 2000.

*Immigrant* = 1 if the individual was not born in Sweden and zero otherwise.

*ImmigrantW* = 1 if a Swedish man is married with an immigrant wife and zero otherwise.

*ImmigrantH* = 1 if a Swedish woman is married with an immigrant husband and zero otherwise.

*Demographic variables:*

*Male* = 1 if the individual is male and zero otherwise.

*Married* = 1 if the individual is married and zero otherwise.

*OCC* = Binary variables indicating an individual's occupation. *OCC1* = 1 if the individual is employed in the public sector, *OCC2* = 1 if in the private sector, *OCC3* = 1 if self employed, and *OCC4* = 1 if the individual has an unknown occupation. We drop *OCC1* from our regressions so that coefficients on the *OCC2* to *OCC4* are interpreted relative to employment in the public sector.

*Control variables for portfolio characteristics:*

*PastReturn* = Historical return on the individual's portfolio of chosen mutual funds from 1997 to 1999. If a fund was not in existence during this period, the fund's return was the average of extant fund of the same style.

*StdDev* = Annualised standard deviation of an individual's monthly returns on portfolio of chosen mutual funds from 1997 to 1999. Funds without returns received the average return of funds with the same style.

*AveFee* = Weighed average fee of the funds chosen by the individual.

*AveCap* = Weighed average market cap of the funds chosen by the individual.

## 4.2 Determinants of Homeboy Bias

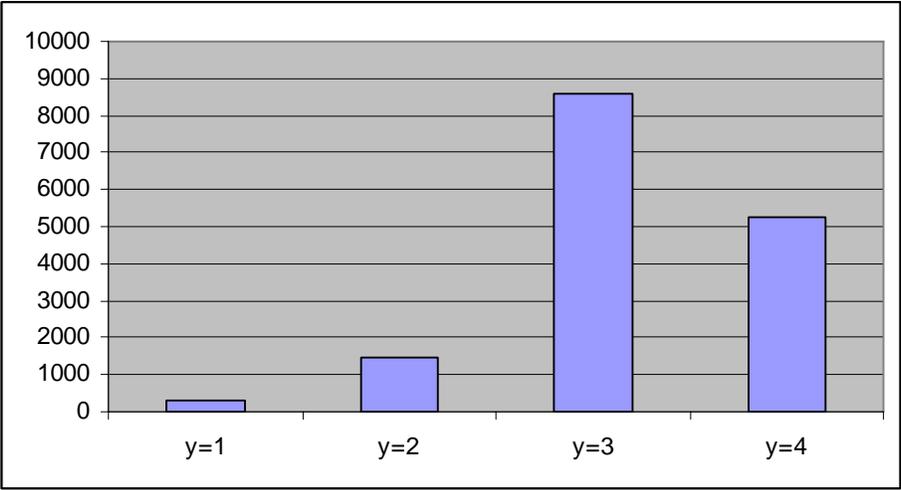
The distribution of the dependent variable, *Homeboy*, makes standard OLS or Probit/Logit models problematic. On one hand, only 16.5 percent of the individuals chose a degree of *Homeboy* on the continuum between 0 and 1 (some, but not all, domestic managers), with the remaining 84.5 percent looking like a binary choice model best analysed using Probit or Logit model. On the other hand, a Probit or Logit model would ignore 16.5 percent of the data and have little power due to the fact that only 42 individuals chose only foreign-managed funds. That is, the degree of the homeboy bias is so strong that we have relatively few observations below 1 and almost no observations at 0.

We test for the determinants of the homeboy bias using a multinomial logit model by dividing the portfolio choice,  $y$ , into the following four categories:<sup>22</sup>

$y=1$  if  $0.0 \leq \textit{Homeboy} < 0.5$   
 $y=2$  if  $0.5 \leq \textit{Homeboy} < 1.0$   
 $y=3$  if  $\textit{Homeboy} = 1.0$   
 $y=4$  if no choice (default fund)

In order to avoid a selection bias, we jointly model the likelihood of homeboy bias and the likelihood of making an active choice. By including the default choice, we presume that each individual simultaneously considers two investment choices: the choice of whether to be active or passive and the choice of how much to allocate to domestic managers. We split the sample at *homeboy* equals 0.5 and 1.0 (rather than, say, at 0.33 and 0.66) because the bias is so strong that at split at 0.5 is need to get more observations in the first bin,  $y=1$ . Figure A shows that even after expanding the first bin to 0.5, we still have relatively few  $y=1$  observations.

Figure A, Distribution of the proportion of domestic managers



The results of the estimation of the multinomial logit model are presented in Table 8. For each explanatory variable, three coefficients are estimated. Each coefficient represents the effect of the variable on the probability of obtaining the outcome  $y = m$  relative to the probability of obtaining  $y = 1$ , i.e., a low level of homeboy bias, *Homeboy*  $< 0.5$ .  $Y = 4$  is added to control for the selection bias in our sample. We therefore make no attempt to interpret the meaning of its coefficients. Table 8 also reports a Wald test statistic for each explanatory variable, which is  $\chi^2$ -distributed under the null hypothesis that the variable does not affect the allocation between domestic and foreign managers.

The multinomial results in Table 8 indicate that investor sophistication measures help explain an individual's choice regarding the proportion of funds allocated to domestic managers. The Wald tests indicate significance for income levels, urban dwellers, education levels, and trading frequency. Furthermore the signs of the coefficients are in the direction predicted by behavioral explanations—the unsophisticated are more biased. For example, as income increases, individuals who are less likely to end up in outcomes 2 and 3 are more likely to have consciously chosen some foreign managers. Increased wealth also reduces the likelihood of ending up in outcome 2. City dwellers and individuals with post-high school education have relatively lower probability of ending up in outcomes 2 and 3 and higher probability of a substantial amount of money in foreign-managed funds. The more an individual trades, the less likely they are to be completely homeboy biased,  $y = 3$ .<sup>23</sup> Overall, our proxies for sophistication indicate that financially-sophisticated individuals are more likely to make a conscious choice and less like to choose domestically-managed funds. This negative correlation between the homeboy bias and financial sophistication suggests that

behavioural reasons, such as familiarity and nationalism, rather than economic reasons drive the homeboy bias.<sup>24</sup>

The variables associated with familiarity and nationalism generally add to the explanatory power of the model. Specifically, the Wald tests for prior exposure to foreign assets, age, and a Swedish man married with an immigrant, are all statistically significant in the model. If the homeboy bias is caused by an unobserved convenience or simplicity in choosing a domestically-managed fund or even by an information asymmetry or desire to boost the local economy, then the coefficients on *Immigrant*, *ImmigrantW*, *ImmigrantH*, *ForeignA* and *Age* should all be insignificant. In contrast, we find that individuals that may be more familiar with or open to international influences are less likely to be homeboy biased. Specifically, Swedish men married with an immigrant and holders of foreign assets are less likely have outcomes 2 and 3 and more likely to have consciously chosen to have at least 50 percent of their money managed by a foreign institution. Similarly, to the extent that older individuals are less familiar with or open to foreign influences, the positive coefficients on *Age* lend support to causes relating to familiarity and nationalism

Our findings relating the homeboy bias to measures of unsophistication, familiarity, and nationalism do not necessarily rule out economic explanations in favour of behavioural explanations. Massa and Simonov's (2006), for example, distinguish between "information" familiarity and "pure" familiarity and find that the home bias caused by the former--an economic response to information constraints is to invest in assets that are geographically and professionally close. Information familiarity suggests that, when faced with 455 funds, a cognitive miser may economically limit the number of

funds in what Alba and Chattopadhyay (1985) call the consideration set by focusing on funds with familiar names. However, our cross-fund regressions in Section 3 and to poor post-choice performance of the Swedish-managed funds argue against an information explanation.

Our Table 8 results are consistent with behavioural preferences based on pure familiarity and nationalism—the type of preferences found by Grinblatt and Keloharju (2001), who relate language and culture to the home bias. A behavioural preference is not irrational. Psychic utility, although not derived from consumption, is still utility. If, investors gain psychic utility when they deal with the familiar, as found by Zajonc (1968), or from social identity, as found by Tajfel and Turner (1979), then a behavioural preference for domestic-managers is rational.

The last four variables in Table 8 control for the characteristics of the funds chosen other than the domicile of the fund manager. Possibly, individuals in, say, outcome  $y = 3$  were really expressing a preference for high past return, low risk, low fee, small-cap funds, rather than a preference for domestically-managed funds. The inclusion of the last four variables control for this possibility and indicated that individuals with a relatively strong homeboy bias tend to choose funds with high past returns, low risk and fees, and smaller market caps. Furthermore, our findings supporting explanations based on familiarity and nationality receive support from related literature such as papers that associate the home bias with familiarity and that find a domestically-manufactured bias in consumer choice.

## **5. Conclusions**

We find a strong bias for mutual funds offered by domestic institutions relative to those offered by foreign institutions. We call this preference for domestic institutions, as opposed to assets, the *homeboy* bias. *Cross-fund* regressions using Sweden's privatized retirement system data show that a domestically-managed fund receives 21 times more money than a similar (same fee, age, return history, and style) internationally-managed fund. The homeboy bias is empirically distinct from the home bias. Even when shopping for exposure to, say, Asian or North American assets, the Swedes still prefer a Swedish fund manager to an international manager.

The homeboy bias is not driven by economic explanations such as information asymmetries or foreign exchange risk. The bias is actually strongest when domestic managers are at an information disadvantage and the bias is evident even when foreign exchange risk is held constant. In contrast, behavioral explanations receive some support; more familiar funds, as measured by advertisement, received more money and more investors.

In support of behavioral explanations such as familiarity and nationalism, our *cross-individual* regressions find that financially unsophisticated and provincial (not familiar with or comfortable with international people and institutions) individuals are the most homeboy biased. We note that the bias is not necessarily irrational--investors may gain utility from dealing with domestic institutions as theorized by Tajfel and Turner's (1979) social identity theory or by limiting their consideration set as theorized by Alba and Chattopadhyaya's (1985).

Although we introduce the homeboy bias, many questions remain. Is the homeboy bias universal or limited to Sweden? Is the homeboy bias limited to mutual

funds, or does it extend to other financial institutions? Is the preference for the familiar driven by considerations sets (limiting search costs) or some form of social identity utility based on shared culture, language, nationalism, or xenophobia? Much work remains to be done.

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Table 1  
Number of Mutual Funds, by Style, In Sweden's Original 2000 PPM Catalog

Level 1	Level 2	Style Number	Style	Funds in Catalog	Dropped from System	Swedish Institution	Foreign Institution				
Equity	Sweden	1	Sweden (normal)	30	2	28	0				
		2	Sweden small cap	6	0	6	0				
		3	Sweden index	7	0	7	0				
	Regional	Regional	4	Swedish equity and foreign equity	9	0	9	0			
			5	Nordic countries	10	1	5	4			
			6	Europe	36	5	14	17			
			7	Euroland (EMU members)	9	1	3	5			
			8	Europe small cap	8	1	1	6			
			9	Europe index	7	0	5	2			
			10	North America and USA	26	3	9	14			
			11	Asia and Far East	18	3	5	10			
			12	Global	33	2	13	18			
			13	Emerging markets	17	0	6	11			
		Countries	Countries	14	Japan	21	3	6	12		
				15	UK	7	2	0	5		
				16	Other countries	13	0	2	11		
				Industry	Industry	17	IT and communication	15	0	9	6
						18	Pharmaceutical	6	0	4	2
						19	Other industries	14	0	4	10
Mixture	Mixture	20	Swedish equity and fixed income	3	0	3	0				
		21	Swedish equity, Swedish and foreign fixed income	28	1	27	0				
		22	Foreign equity and fixed income	24	2	2	20				
Preset mix	Preset mix	23	Retirement in less than 10 years	4	0	4	0				
		24	Retirement in less than 20 years	7	0	7	0				
		25	Retirement in more than 20 years	21	0	21	0				
Fixed inc.	Fixed income	26	Sweden, short maturity	17	2	15	0				
		27	Sweden, long maturity	17	2	15	0				
		28	Europe and Euroland	23	5	0	18				
		29	Others	<u>19</u>	<u>4</u>	<u>1</u>	<u>14</u>				
<b>All funds</b>				<b>455</b>	<b>39</b>	<b>231</b>	<b>185</b>				

The category levels and styles of the 455 mutual funds in Sweden's *Fund Catalog for the Premium Retirement Choice (Fondkatalog För Dit Premiépensionsval)* published by the Premium Retirement Authority (Premiépensionsmyndigheten or PPM) in 2000 as part of Sweden's reformed social security system. Between the times the catalog was printed and participants made their investments, 39 funds were dropped from the system. The remaining 416 funds were categorized, by the authors, as being offered by a Swedish or foreign institution using the name of the fund family.

Table 2  
Summary Statistics for Mutual Funds in Sweden's PPM Catalog

Variable	N	Mean	StdDev	Skew	Max	Min
<i>Panel A: Data on Funds from the PPM's Catalog</i>						
Domestic Manager = 1, 0 otherwise	416	0.56	0.50	-0.22	1	0
Proportion of Assets Invested in Sweden	416	0.25	0.40	1.10	1.00	0.00
Management Fee (%)	416	0.93	0.42	0.94	3.97	0.15
Return 2000 (% through August)	416	9.51	10.98	2.13	105.23	-16.99
Return 1999 (%)	268	41.39	41.53	1.83	272	-14
Return 1998 (%)	202	12.74	21.46	-0.61	86	-81
Standard Deviation of Return (%)	416	18.18	9.14	0.24	53	0
Age of Fund (discrete years, censored at 5)	416	2.08	2.05	0.41	5	0
Market Capitalization (millions of SEK)	413	2,808	22,867	15.65	410,913	0
# of Employees in Fund Family	416	2,058	9,034	4.96	48,623	0
# of Funds Family has in System	416	10.09	4.24	-0.42	16	1
Currency SEK = 1, 0 otherwise	416	0.57	0.50	-0.27	1	0
<i>Panel B: Data on Fund Allocation from PPM</i>						
Amount Invested in a Fund (Millions of SEK)	416	91.07	225.79	5.36	2,254.85	0.11
Number of Investors Choosing a Fund	416	22,872	55,767	6	665,303	36

Panel A reports summary statistics for the active (not dropped from the system) mutual funds in the 2000 catalog. All data comes from the catalog except for the 2000 return and the currency denomination that came from the Authority's online source. The Standard Deviation of Return is annualized and is calculated from the prior 36 monthly returns; funds without 36 months of data are assigned the average of the other funds with the same style. Panel B reports summary statistics measuring the amount of money given to and the number of investors attracted by a fund after all 4.4 million participants made their initial choice in 2000. A typical exchange rate in late 2000 when choices were made was 10 Swedish Crowns (SEK) per 1 U.S. dollar.

Table 3  
Summary Statistics for Individuals Investing in Mutual Funds in 2000

Variable	Mean	StdDev	Skew	Max	Min
<i>Panel A: Data on all 4,413,831 Participants</i>					
Amount Invested by Individual (SEK)	12,651	6,727		26,202	167
Age of Individual in 2000	42.1	11.3		62	18
Proportion Allocated to Domestic Managers	0.964	0.120		1	0
Number of Funds Held by Individual	2.6	1.6		5	1
<i>Panel B: Data on the 2,863,711 Non-Defaulters</i>					
Amount Invested by Individual (SEK)	13,506	6,580		26,202	167
Age of Individual in 2000	42.0	11.0		62	18
Proportion Allocated to Domestic Managers	0.945	0.145		1	0
Proportion Allocated to Swedish Assets	0.343	0.248		1	0
Number of Funds Chosen by Individual	3.4	1.4		5	1

Panel A reports summary statistics for all participants that invested money in Sweden's Premium Pension plan during 2000. Panel B summarizes the 2.8 million participants who did not end up in the default fund (made a conscious choice). The Proportion Allocated to Swedish Assets is not available in Panel A because the asset allocation of the default fund was not known in 2000.

Table 4  
Determinants of a Mutual Fund's Ability to Attract Money and Investors

Independent Variables	----- Model Number and Dependent Variable -----					
	1 <i>ln(AmtMM)</i>	2 <i>ln(AmtMM)</i>	3 <i>RelAmt</i>	4 <i>ln(Investors)</i>	5 <i>ln(Investors)</i>	6 <i>RelInvestors</i>
<i>Domestic</i>	3.09 (0.000)	2.74 (0.000)	2.47 (0.000)	2.93 (0.000)	2.65 (0.000)	2.42 (0.000)
<i>ExRet00</i>	0.025 (0.001)	0.027 (0.000)	0.025 (0.001)	0.026 (0.000)	0.027 (0.000)	0.025 (0.001)
<i>MeanRet00</i>	0.099 (0.000)	—	—	0.089 (0.000)	—	—
<i>ExRet99</i>	0.016 (0.000)	0.017 (0.000)	0.018 (0.000)	0.016 (0.000)	0.017 (0.000)	0.018 (0.000)
<i>MeanRet99</i>	0.014 (0.000)	—	—	0.013 (0.000)	—	—
<i>ExRet98</i>	0.009 (0.093)	0.008 (0.103)	0.007 (0.192)	0.009 (0.084)	0.008 (0.095)	0.007 (0.182)
<i>MeanRet98</i>	-0.005 (0.299)	—	—	-0.002 (0.579)	—	—
<i>StdDev36</i>	0.04 (0.006)	—	0.01 (0.854)	0.04 (0.004)	—	0.00 (0.536)
<i>ln(ExFee)</i>	-1.27 (0.000)	—	—	-1.28 (0.000)	—	—
<i>ln(MeanFee)</i>	-1.89 (0.000)	—	—	-1.44 (0.000)	—	—
<i>RelFee</i>	—	-1.57 (0.000)	-1.56 (0.000)	—	-1.49 (0.000)	-1.50 (0.000)
<i>FundAge 1_2</i>	0.08 (0.631)	0.01 (0.929)	0.10 (0.557)	0.08 (0.618)	0.00 (0.976)	0.10 (0.532)
<i>FundAge 3_4</i>	0.55 (0.010)	0.47 (0.017)	0.86 (0.001)	0.58 (0.004)	0.51 (0.006)	0.90 (0.000)
<i>FundAge 5</i>	0.92 (0.000)	1.06 (0.000)	1.25 (0.000)	1.00 (0.000)	1.11 (0.00)	1.28 (0.000)
<i>ln(FundCap)</i>	0.12 (0.000)	0.14 (0.000)	0.09 (0.004)	0.12 (0.000)	0.13 (0.000)	0.08 (0.007)
<i>ln(NumEmp)</i>	0.21 (0.000)	0.22 (0.000)	0.183 (0.000)	0.21 (0.000)	0.21 (0.000)	0.18 (0.000)
<i>ln(NumFunds)</i>	-0.68 (0.003)	-0.91 (0.000)	-0.90 (0.001)	-0.80 (0.001)	-0.95 (0.000)	-0.91 (0.000)
<i>ln(Breadth)</i>	0.55 (0.021)	0.83 (0.001)	0.86 (0.001)	0.67 (0.003)	0.87 (0.000)	0.86 (0.000)
<i>Rank1</i>	0.43 (0.051)	0.22 (0.266)	0.37 (0.107)	0.30 (0.135)	0.13 (0.478)	0.28 (0.187)
<i>Count</i>	0.02 (0.006)	—	—	0.01 (0.053)	—	—
<i>Swedish</i>	-0.65 (.001)	—	-0.92 (0.000)	-0.51 (0.003)	—	-0.95 (0.000)
<i>Style Dummies</i>	No	Yes	No	No	Yes	No
<i>Constant</i>	-3.31 (0.000)	-0.38 (0.228)	-3.87 (0.000)	2.86 (0.000)	5.42 (0.000)	-3.60 (0.257)
Adjusted R <sup>2</sup>	0.757	0.802	0.576	0.768	0.802	0.596
N	406	413	413	406	413	413

Entries in each cell are regression coefficients and p-values are in parenthesis. The dependent variables are the natural log of the amount of money measured in millions of SKEs, *AmtMM*, received by the mutual fund for regressions 1 and 2, the relative (to funds with a similar style) amount of money, *RelAmt* =  $\ln(\text{AmtMM}/\text{MeanAmtMM})$ , in regression 3, the natural log of the number of investors, *Investors*, attracted by a fund in regressions 4 and 5, and the relative number of investors, *RelInvestors* =  $\ln(\text{Investors}/\text{MeanInvestors})$ , in Regression 6. *Domestic* = 1 if the fund is managed by a Swedish institution and zero otherwise. *ExRet00* = excess return (relative to funds with the same style) for the fund in the first 8 months of 2000. *MeanRet00* = the mean return for the first 8 months in 2000 for funds of the same style. *ExRetYY* = excess percent return for the fund in year 19YY. Newer funds that did not exist in 19YY received an excess return of zero. *MeanRetYY* = the mean percent return in 19YY for funds of the same style. *StdDev36* = the annualized standard deviation of the prior 36 monthly returns measured as a percent; funds without 36 months of history are assigned the average standard deviation of competitor funds of the same style.  $\ln(\text{ExFee})$  = natural log of the excess annual management fee, where excess management fee is the difference between the fund's fee and the mean fee for funds of the same style, *MeanFee*. *RelFee* = natural log of the relative management fee,  $\ln(\text{Fee}/\text{MeanFee})$ . *FundAge0*, *FundAge1\_2*, *FundAge3\_4*, and *FundAge5* are binary variables for the age of the fund; for example, *FundAge1\_2* = 1 if the catalog reports the fund as having 1 or 2 years of return history, and 0 otherwise. *FundAge0* is omitted from the regression.  $\ln(\text{FundCap})$  = natural log of 1 plus a fund's market capitalization measured in SEK as of December 31, 1999.  $\ln(\text{NumEmp})$  = natural log of 1 plus the number of employees for the fund family. *NumFunds* = number of individual funds the fund family had in the catalog. *Breadth* = number of styles in which the fund family offered a fund. *Rank1* = 1 if the fund is listed first among competitors of the same style in the catalog. *Count* = number of funds with the same style. *Swedish* = proportion of assets in the fund that are invested in Sweden as estimated from the fund's description.  $\ln(\text{MeanAmt})$  = natural log of the mean amount of money received, in millions of SEK, by funds of the same style.  $\ln(\text{MeanInv})$  = is the natural log of the mean number of investors choosing funds of the same style. *Style* indicates the inclusion of 28 binary variables for the funds style (see Table 1); style 1, Swedish normal equities, is omitted from the regressions.

Table 5  
Results, by Style, for the Domestic Fund Manager Independent Variable from  
Regressions of  $\ln(\text{RelAmt})$  on Fees, Past Returns, Fund Age, and the Domestic Binary Variable.

Fund Style		-----Domestic Coefficient-----			
		N	Coefficient	t-value	p-value
Equities:	Nordic countries	9	3.47	4.73	0.009
	Europe	31	2.85	5.99	0.000
	Euroland (EMU members)	8	4.09	3.03	0.056
	Europe small cap	7	4.66	7.13	0.019
	Europe index	7	0.73	0.32	0.779
	North America and USA	23	2.22	4.80	0.001
	Asia and Far East	15	2.71	5.84	0.001
	Global	31	2.91	6.10	0.000
	Emerging markets	17	2.18	4.06	0.002
	Japan	18	2.25	3.84	0.002
	Other countries	13	2.78	2.17	0.062
	IT and communication	15	1.47	3.61	0.005
	Pharmaceuticals	6	2.00	4.58	0.137
	Other industries	14	2.32	4.38	0.002
Mixed:	Foreign equity and fixed income	22	4.93	4.93	0.001
Fixed Income:	Others	15	5.04	9.65	0.000

The independent variable is the natural log of the amount of money (in millions of SEK) received by the mutual fund in the first allocation of participants in 2000 divided by the mean amount for funds of the same style. The independent variables are the binary variable indicating a domestic manager, *Domestic*, the natural log of the relative fee, *RelFee*, the fund age (*FundAge*, not the fund age binary variables), and the excess returns in 2000, *ExRet00*, and in 1999, *ExRet99*. The table reports information on the *Domestic* coefficient only.

Table 6  
Accounting for Individuals in the Cross-Sectional Regressions

<u>Category</u>	<u>Number of Individuals</u>	<u>Percent of Individuals</u>
<i>Panel A: Accounting for Individuals in Regressions</i>		
Individuals uniquely identified in both Statistic Sweden's survey and PPM's database of participants investments	17,591	100.0
<u>Less: Invested sometime after 2000 (i.e., young or unemployed)</u>	<u>2,454</u>	<u>14.0</u>
Individuals in survey and invested in 2000	15,497	88.0
<u>Less: Invested in the default fund</u>	<u>5,124</u>	<u>29.1</u>
Investors in our cross-sectional regressions	10,373	58.9
<i>Panel B: Accounting for Individuals' Choices of Manager</i>		
100 percent domestic managers ( <i>Homeboy</i> = 1.0)	8,620	83.1
A proportion of domestic managers ( $0.0 < \textit{Homeboy} < 1.0$ )	1,711	16.5
100 percent foreign managers ( <i>Homeboy</i> = 0.0)	<u>42</u>	<u>0.4</u>
Investors in our cross-sectional regressions	10,373	100.0

*Homeboy* is the weighted average of the proportion of domestically-managed funds across the mutual funds in an individual's portfolio of funds.

Table 7  
Summary Statistics for the Sample of Swedish Investors  
That Invested in the PPM System in 2000

Variable	Mean	StdDev	Skew	Max	Min
<i>Homeboy</i> (independent variable)	0.949	0.137	-3.49	1	0
<b>Investor sophistication measures:</b>					
<i>Income</i> (SEK)	202,269	188,121	10.27	6,442,832	-989,783
<i>Wealth</i> (SEK)	444,108	3,174,320	90.08	355,000,000	-30,000,000
<i>Urban</i> = 1 if living in metropolitan area	0.354	0.478	0.629	1	0
<i>Town</i> = 1 if living in small or midsized city	0.356	0.479	0.601	1	0
<i>Rural</i> = 1 if living in the country	0.290	0.454	0.928	1	0
<i>EDL1</i> = 1 if less than HS education	0.181	0.385	1.655	1	0
<i>EDL2</i> = 1 if HS diploma	0.513	0.500	-0.053	1	0
<i>EDL3</i> = 1 if some post-HS education	0.306	0.461	0.844	1	0
<i>PPMTrades</i> , Average number of trades	0.284	0.327	19.526		
<b>Familiarity and nationalism measures:</b>					
<i>ForeignA</i> = 1 if owned foreign assets	0.148	0.355	1.981	1	0
<i>Age</i> in 2000	43.028	11.111	-0.151		
<i>Native</i> = 1 if born in Sweden	0.887	0.316	-2.449	1	0
<i>ImmigrantW</i> = 1 if Married to Immigrant Wife	0.017	0.131	7.386	1	0
<i>ImmigrantH</i> = 1 if Married to Immigrant Husband	0.014	0.116	8.376	1	0
<b>Demographic measures:</b>					
<i>Male</i> = 1 if male	0.509	0.500	-0.036	1	0
<i>Married</i> = 1 if married	0.779	0.415	-1.342	1	0
<i>OCC1</i> = 1 if employed in public sector	0.287	0.452	0.944	1	0
<i>OCC2</i> = 1 if employed in private sector	0.558	0.497	-0.234	1	0
<i>OCC3</i> = 1 if self-employed	0.048	0.213	4.249	1	0
<i>OCC4</i> = 1 if in unknown employment	0.108	0.310	2.533	1	0
<b>Control variables for portfolio characteristics:</b>					
<i>PastReturn</i> , return for portfolio from 1997 to 1999	1.429	0.519	1.525	6.70	-0.241
<i>StdDev</i> , Weighted average standard deviation	0.179	0.043	2.100	0.77	0.002
<i>AveFee</i> , Weighted average fee	0.734	0.300	0.442	1.98	0
<i>AveCap</i> , Weighted average market cap	3,419	11,178	7.983	208,666	0

Table 7 includes summary statistics for all variables used in the multinomial logit regression. *Homeboy*, the dependent variable, represents the portion of an investors assets managed by a domestic manager. *Income* represents gross income in 2000 including capital gains/losses. *Wealth* represents net wealth in 2000, which is comprised of the market value of all risky + non risk assets (cash) + an assessed value of real estate – market value of debt. *Urban*, *Town* and *Rural* are dummy variables indicating whether the investor lives in an urban, town, or rural setting. *EDL 1-3* represents level of education, where 1 = less than High School, 2 = High School and 3 = more than High School. *PPM Trades* represents the average number of trades per year within the PPM system from 2000 to 2004. *ForeignA* is a dummy variable indicating whether an investor holds foreign assets outside the PPM system in 2000. *Age* is the investor’s age in 2000. *Immigrant* = 1 if the investor is not born in Sweden. *ImmigrantW* = 1 if the investor is a Swedish man married with an immigrant woman and *ImmigrantH* = 1 if the investor is a Swedish woman married with an immigrant man, zero otherwise. *Male* = 1 if the investor is male and *Married* = 1 if the investor is married, zero otherwise. *OCC* contains four occupation dummies. *OCC1* = employed in the public sector, *OCC2* = employed in the private sector, *OCC3* = self employed and *OCC4* = unemployed or employment unknown and zero otherwise. *PastReturn* = weighted average past return for each investors initial portfolio. *StdDev* = the annualized standard deviation on the monthly returns for 1997 – 1999 on the initial portfolio of the investor. *AveFee* is the weighted average fee of the funds chosen in the initial portfolio of the investor. *AveCap* = Weighted average market cap of the funds chosen in the initial portfolio of the investor.

Table 8  
Multinomial Logit Model of and Individual's Degree of Homeboy Bias

	<u>Pr(y = 2)</u>	<u>Pr(y = 3)</u>	<u>Pr(y=4)</u>	<u>Wald</u>
<b>Variables associated with investor sophistication:</b>				
<i>Income</i>	-0.0973 0.030	-0.1208 0.004	-0.0845 0.402	8.9265 0.012
<i>Wealth</i>	-0.0290 0.066	-0.0246 0.113	-0.0285 0.450	3.5023 0.174
<i>Urban</i>	-0.3673 0.063	-0.7299 0.000	-0.2218 0.646	35.4200 0.000
<i>Rural</i>	0.0891 0.707	0.2456 0.294	0.1235 0.849	4.4775 0.107
<i>EDL1</i> , Education less than High School	0.0459 0.881	0.4045 0.175	0.3257 0.658	12.4951 0.002
<i>EDL3</i> , Education more than High School	-0.9580 0.000	-1.2587 0.000	-0.7143 0.142	58.2465 0.000
<i>PPMTrades</i>	-0.0373 0.780	-0.6497 0.000	- -	97.9223 0.000
<b>Variables associated with familiarity:</b>				
<i>ForeignA</i>	-0.6141 0.004	-0.7338 0.000	-0.6451 0.187	13.5724 0.001
<i>Age</i> , in 2000	0.0175 0.039	0.0339 0.000	0.0218 0.324	36.0506 0.000
<i>Immigrant</i>	-0.2036 0.427	-0.3721 0.138	-0.0104 0.986	4.0311 0.133
<i>ImmigrantW</i> , married to immigrant wife	-1.6077 0.000	-2.0603 0.000	-1.0161 0.219	24.9736 0.000
<i>ImmigrantH</i> , married to immigrant husband	1.4670 0.168	1.1200 0.288	0.9292 0.856	3.3160 0.191
<b>Control variables for investor characteristics:</b>				
<i>Male</i>	-0.0199 0.915	-0.1824 0.322	-0.0653 0.891	6.3026 0.043
<i>Married</i>	0.7271 0.000	0.7309 0.000	0.0833 0.863	13.7511 0.001
<i>OCC2</i> , Employed in private sector	0.0006 0.998	-0.0676 0.751	-0.1542 0.793	0.8272 0.661
<i>OCC3</i> , Self employed	-1.1228 0.002	-1.2680 0.000	-0.6403 0.393	13.0626 0.001
<i>OCC4</i> , Employment unknown	-0.8739 0.054	-0.7086 0.104	-0.3999 0.672	3.7632 0.152
<b>Control variables for portfolio characteristics:</b>				
<i>PastReturn</i> , return of portfolio from 1997 to 1999	0.1391 0.234	0.2812 0.007	- -	10.4205 0.005
<i>StdDev</i> , Weighted average standard deviation	-3.7862 0.005	-6.2865 0.000	- -	47.7122 0.000
<i>AveFee</i> , Weighted average fee	-1.2372 0.000	-2.7382 0.000	- -	261.7570 0.000
<i>AveCap</i> , Weighted average market cap	-0.0122 0.000	-0.0996 0.000	- -	150.0624 0.000
Constant	8.3681 0.000	11.8863 0.000	4.1645 0.013	-

Table 8 contains results from the estimation of the multinomial logit model. The dependent variable,  $y$ , has four possible outcomes ( $m = 1, 2, 3, 4$ ), where each of the first three corresponds to an “active” choice in the range of the individual’s domestically-managed share of invested pension funds, *Homeboy*, according to  $\{Homeboy < 0.5, 0.5 \leq Homeboy < 1.0, Homeboy = 1.0\}$ , and  $y = 4$  represents the “passive” default alternative. The estimated coefficients are presented for each probability and explanatory variable, with p-values below the coefficient. The Wald tests are distributed CHI-square with four degrees of freedom for the null hypothesis that each explanatory variable does not affect the likelihoods of outcomes  $y = 2$  through  $y = 4$ , relative to the first outcome,  $y = 1$ . *Income* represents gross income in 2000 including capital gains/losses. *Wealth* represents net wealth in 2000, which is comprised of the market value of all risky + non risk assets (cash) + an assessed value of real estate – market value of debt. *Urban*, *Town* and *Rural* are dummy variables indicating whether the investor lives in an urban, town or rural setting. We drop *Town* in our regressions so the coefficients for *Urban* and *Rural* are interpreted relative to *Town*. *EDL 1-3* represents level of education, where 1 = less than High School, 2 = High School and 3 = more than High School. We drop *EDL2* in our regressions so the coefficients for *EDL1* and *EDL3* are interpreted relative to *EDL2*. *PPM Trades* represents the average number of trades per year within the PPM system from 2000 to 2004. *ForeignA* is a dummy variable indicating whether an investor holds foreign assets outside the PPM system in 2000. *Age* is the investor’s age in 2000. *Immigrant* = 1 if the investor is not born in Sweden. *ImmigrantW* = 1 if the investor is a Swedish man married with an immigrant woman and *ImmigrantH* = 1 if the investor is a Swedish woman married with an immigrant man, zero otherwise. *Male* = 1 if the investor is male and *Married* = 1 if the investor is married, zero otherwise. *OCC* contains four occupation dummies. *OCC1* = employed in the public sector, *OCC2* = employed in the private sector, *OCC3* = self employed and *OCC4* = unemployed or employment unknown and zero otherwise. We drop *OCC1* in our regressions so the coefficients for *OCC 2-4* are interpreted relative to *OCC1*. *PastReturn* = weighted average past return for each investors initial portfolio. *StdDev* = the annualized standard deviation on the monthly returns for 1997 – 1999 on the initial portfolio of the investor. *AveFee* is the weighted average fee of the funds chosen in the initial portfolio of the investor. *AveCap* = Weighted average market cap of the funds chosen in the initial portfolio of the investor.

## End Notes

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<sup>1</sup> Homeboy can also be a slang term for a fellow member of a youth gang. Although Homeboy can refer to males, we use the term androgynously.

<sup>2</sup> In late 2000, a typical exchange rate was 10 Swedish Crowns to 1 U.S. Dollar.

<sup>3</sup> Although our focus is on the homeboy bias, the signs and significance of our control variables extend the understanding of how individuals choose mutual funds including insights into the role of past returns, menu effects, and fund family characteristics.

<sup>4</sup> Examples of political economic nationalism include the French government's blocking Siemens (German) purchase of Alstom and the thwarting of Enel's (Italian) merger with Suez, the U.S. government's blocking of Dubai Port's (United Arab Emirates) purchase of P&O, the Spanish government's effort to keep E.ON (German) from purchasing Endesa, and the Polish government's opposition to Unicredit's (Italian) takeover of Hypothekensund Vereinsbank.

<sup>5</sup> The third part of the new Swedish retirement system guaranteed a minimum pension to everyone regardless of how much money the individual contributed.

<sup>6</sup> If no choice was made, participants' money was put into a default fund, Sjunde AP-Fonden's Premiesparfonden, managed by the government.

<sup>7</sup> After the catalog was printed, an additional 40 funds were added to the system so that participants could choose between 456 different funds. When the default fund is added, 457 different funds received money in the initial allocations in 2000. We focus our analysis on the 413 funds that were in the initial catalog, did not drop out, and were not missing market capitalization information.

<sup>8</sup> The minimum number of fund family employees, reported by AXA Rosenberg Management Ireland Ltd. and two subsidiaries of the Aragon family, was 0. Our conclusions regarding the homeboy bias are not affected if we drop fund families with 0 employees or if we completely omit the number of employees as an independent variable.

<sup>9</sup> For a detailed analysis of default investors see Engström and Westerberg (2003). The high proportion of individuals in the default fund is consistent with the findings of Choi, Laibson, Madrian, and Metrick (2001) who find that many 401(k) participants take "the path of least resistance."

<sup>10</sup> 35.1 percent of the participants invested in the default fund. 9.5 percent choose only 1 fund. The proportion choosing 2, 3, 4, and 5 funds were, 8.8, 13.4, 13.2, and 20.3 percent, respectively. Unlike the finding of Huberman and Jiang (2006), an even distribution across funds ( $1/n$ ) was less common (35 percent of the individuals choosing 2 or more funds) than those who chose an uneven allocation (65 percent).

<sup>11</sup> The catalog included annual percent returns for 1995, 1996, and 1997. Our regressions generally found that the coefficients on these older returns were insignificant (but typically positive); consequently, we do not report regressions using the older return data in the paper. One explanation for the low significance of the older returns is the lack of recency (see Cromwell (1950) and Duncan and Murdock (2000)). However, an additional explanation is that the sample size decreases as one looks further into the past. 293 of the 416 firms reported a 1999 return; in contrast, only 125 firms reported a 1995 return.

<sup>12</sup> Perhaps because many participants did not understand standard deviations, the catalog included a second measure of risk based on 5 categories (1 = lowest risk to 5 = highest risk). Funds were assigned a category based on the prior 36 months return standard deviation. The five risk levels were reported using colored icons (a green flat line represented low risk and a red jagged line represented high risk).

<sup>13</sup> None of the 7 funds in style 8, European index, existed on January 1, 1998; consequently, *MeanRet98* is missing and the sample size falls to 406.

<sup>14</sup> Hendricks, Patel, and Zeckhauser (1983) document persistence in poor performing mutual funds; Carhart (1997) finds that fees explain some of this persistence. Grinblatt and Titman (1992) and Ibbotson and Goetzmann (1994) find some persistence in positive performance although Brown and Goetzmann (1995) caution that survivorship biases may impede

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tests of persistence. Sirri and Tufano (1998) show that, consistent with search costs, the relationship between past performance and fund flows is enhanced by marketing.

<sup>15</sup> In addition to testing for a primacy effect, we also tested for a recency effect (last on the list, see Cromwell (1950)) and a page position effect (first on a page, see Hanssens and Weitz (1980) and Finkel and Solov (1963)). Neither coefficient (not reported) was significant.

<sup>16</sup> Potentially, Swedes' preference for domestic managers could be driven up a relatively low turnover or by unusually consumer-friendly regulation of Swedish fund managers. However, the investors did not have access to turnover data and the turnover and regulation of Swedish-managed funds was not atypical.

<sup>17</sup> The relative (to other funds of the same style) fee  $\ln(Fee/MeanFee)$  is slightly more significant than the excess fee  $\ln(Fee - Mean Fee)$  in Models 2, 3, 5, and 6; however, using the excess fee has no effect on our measure of the homeboy bias.

<sup>18</sup> For example, Carlson Fondförvaltning AB is a Swedish institution that established a subsidiary, Carlson Fund Management Co. that is registered in Luxemburg. Carlson offered 11 funds in the PPM system that were registered in Sweden and 2 funds that were registered in Luxemburg.

<sup>19</sup> For example, the first style, Swedish Normal, has 28 funds, but all of them have a domestic fund manager ( $Domestic = 1$ ) and of the 5 funds in the seventh style, United Kingdom, all have a foreign fund manager ( $Domestic = 0$ ).

<sup>20</sup> The economic stimulation argument does receive limited support from a test involving the 13 "Swedish funds" that are registered outside of Sweden. When we estimated Model 3 from Table 4 with a coefficient for these 13 funds, the coefficient on this additional binary variable is -0.13 (p-value = 0.695). The sign is consistent with the economic stimulation explanation for the homeboy bias; participants put more money into Swedish institutions' funds registered in Sweden than in their funds registered outside of Sweden. However, the coefficient is not statistically significant. Given the small sample size, additional research is needed to determine if the homeboy bias is associated with a desire to keep tax revenues at home and whether registration locale could cause the homeboy bias.

<sup>21</sup> We also regress  $\ln(AmtMM)$  on the independent variables in Specification 2 for the 251 funds that did no advertising in 1999 or 2000. For this group of non-advertisers, the homeboy bias remains significant (the coefficient on  $Domestic$  is 2.57 with a p-value less than 0.0001).

<sup>22</sup> See Long (1997) and Theil., (1969), and Greene (2000) for information about the multinomial logit model.

<sup>23</sup> Data on the number of trades, as well as the other control variables at the bottom of Table 8, are only available for individuals who made a conscious choice (non-defaulters).

<sup>24</sup> In general, our evidence on sophistication and experience confirm the findings of Karlsson and Nordé (2006), Dhar and Zhu, (2002), and Engström and Westerberg (2003), who find that sophisticated and experienced investors are less biased.