

Patriotism in Your Portfolio

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Abstract

More patriotic countries have greater home bias in their equity selection. In a panel of World Values Surveys covering 53 countries, measures of patriotism are positively related to home bias measures after controlling for transaction barriers, diversification benefits, information and familiarity. Within-country changes in patriotism vary with changes in the home bias. The results are robust to using ISSP measures of patriotism covering 24 countries and within-U.S. data from the Survey of Consumer Finances. Instrumenting patriotism with social variables uncorrelated with economic and political factors confirms that patriotism affects investment. The average country invests \$18 to \$30 billion more abroad (a 3 to 5 percent increase) with a one standard deviation drop in patriotism.

Consumer ethnocentrism is the well-documented phenomenon that consumers tend to favor domestic brands (Shankarmahesh, 2006). For example, both the French and the Americans buy 50 to 60 percent of new cars from domestic companies, despite the availability of high-quality imports.¹ How can we understand this behavior? Consumers may know that their product choices are sub-optimal but enjoy acting patriotically to benefit their society, or they may be blinded by patriotic loyalty into believing that their country's product is superior. In either case, ethnocentrism affects the worldwide production of goods, and thus the product market equilibrium.

Consumers are also investors. Does patriotism affect their equity purchases? Just as organizational loyalty² induces workers to choose to allocate too much of their 401(k)s to employer stock (Benartzi, 2001; Cohen, 2006) and sports fans to bet too heavily on their home team (Strumpf, 2003), patriotism may cause investors to concentrate their stock holdings at home. In this way, patriotism could alter the equilibrium in equity markets.

As an example of patriotic investing, we were relayed a story of the head of the central bank of an emerging economy rejecting an international diversification plan for the employee pension fund. The central bank head understood the benefits of diversification but conveyed to the pension manager that the country needed the capital at home.

Patriotic investing is not a new phenomenon. In the United States, the patriotic promotion of war bonds traces back throughout its history. The *Civil War Soldier Bonds* of 1865 and the post-Pearl Harbor *Liberty Bonds* of 1945 are just two examples. After the September 11th terrorist attacks in 2001, Series I and EE Treasury Bonds were renamed *Patriot Bonds*, and their sales rose 43% over the next year (Sulon, 2001).

¹Edmunds, 2005; BBC, 9 October 2002.

²We thank Nick Barberis for pointing out this parallel.

September 11th brought media attention to the idea that investing was a forum for expressing patriotism. The media encouraged equity investors to hold their positions, a losing proposition. A characteristic article from the time is the *Boston Globe's* story of an the individual who 'wondered what would happen if every red-blooded American... bought a few shares of their favorite stock' (September 18, 2001). In a November 2001 *Spectrem* survey of affluent investors, 52% of respondents said they would show their patriotism by making investments in U.S. companies.

The objective of this paper is to investigate whether patriotic investing affects the home bias. Obstfeld and Rogoff (2000) call the home bias in equities one of "the six major international macroeconomics puzzles," and Campbell, Viceira, and White (2003) call it "extremely hard to justify". Asset pricing theory predicts that investors should hold the world market portfolio, not a portfolio primarily of domestic stock. Country portfolios with small domestic holdings are, however, simply not observed.³ Prior work primarily emphasizes four explanations for the home bias: the presence of transactions barriers,⁴ a lack of attainable diversification benefits,⁵ information asymmetries,⁶ and familiarity bias.⁷ A large portion of the home bias, however, remains unexplained.

To measure patriotism, we employ a panel of three World Values Survey (WVS) waves covering 53 countries. The patriotism measures are the country average responses to the questions: how proud respondents are to be nationals of their countries, are respondents willing to fight for their countries, and whether respondents believe jobs should be given first to country nationals. We find that patriotism and familiarity are both important for explaining the home bias. The economic magnitude of patriotism's effect is large: an average country invests 3%-5% more of its aggregate

³Seminal home bias papers include French and Poterba (1991) and Tesar and Werner (1994).

⁴Stulz (1981), Dahlquist, Pinkowitz, Stulz and Williamson (2003), Bekaert and Harvey (2000).

⁵Errunza, Hogan, and Hung (2000).

⁶Brennan and Cao (1997), Coval and Moskowitz (1999), Coval and Moskowitz (2001), Ahearne, Grier, and Warnock (2001), Choe, Kho, and Stulz (2001).

⁷Huberman (2001), Grinblatt and Keloharju (2001), Bhattacharya and Groznic (2007), Boyle, Uppal, and Wang (2005), , Chan, Covrig, and Ng (2005), Loughran and Schultz (2005).

portfolio abroad with a one standard deviation drop in patriotism. This amounts to countries investing \$18 -\$30 billion more in foreign markets.

A series of tests confirms the robustness of our findings. Survey of Consumer Finances data reveal that within the U.S., more patriotic regions hold more foreign stocks. Using a cross-sectional International Social Survey Program (ISSP) study with different measures of patriotism from those of the WVS, we show that patriotism is consistently positively related to home bias measures. Our results are robust to tests for omitted political and economic correlates including institutional quality, per capita income and pension restrictions on outward investment. In addition, Cochrane-Orcutt regressions, controlling for other omitted effects, show that the home bias varies with patriotism within countries.

One might argue that patriotism and investment choices are simultaneously determined. We show that patriotism, instrumented with social variables uncorrelated with economic and political factors, remains positively and significantly related to the home bias. Our instruments come from a sociological aspect of group identity. In particular, individuals in societies conditioned to local group identity have an easier time identifying with groups at a more aggregate level (in our case, a nation). Following this theory, our instruments are ethnolinguistic diversity, the land mass size of the country, and an index of survey responses to WVS questions asking about belonging to cultural groups. The significance of instrumented patriotism in explaining the home bias allows us to conclude that beyond simple association, patriotism impacts investment decisions.

Our research contributes to the growing evidence that investment decisions depend on societal characteristics other than aggregate expectations and risk preferences. In particular, informational advantages affect investment through individuals' ability to garner information either locally or through social means.⁸

⁸Coval and Moskowitz (2001), Hong, Kubick and Stein (2004), Ivkovic and Weisbenner (2005)

In addition, familiarity, the most closely related concept to our work, has been documented to affect investment⁹ Huberman (2001) shows familiarity drives people to invest heavily in their local phone company. Boyle, Uppal, and Wang (2005) model how proximity to the home firm may enable the investor to understand the distribution of expected returns, thus lessening ambiguity aversion for home entities and creating familiarity bias toward home assets. Grinblatt and Keloharju (2001) find that Finnish investors prefer assets controlled by Finnish-speaking managers.

The Grinblatt and Keloharju (2001) paper illustrates that familiarity and patriotic loyalty can be difficult concepts to distinguish. It may be that the Finns prefer such companies because they are more familiar with them and can understand their risk-reward characteristics better. Or, it may be that they are simply more patriotic towards Finnish firms. The cross-sectional aspects of our data allow us to distinguish patriotism from familiarity, and we document that both behavioral biases impact the magnitude of the home bias.

Finally, in a concurrent paper and the only other paper documenting loyalty bias in investing, Cohen (2007) identifies investor loyalty in organizations. He shows that employees invest less in their firm if it is a conglomerate, which fosters less loyalty than a pure-play firm.

The paper proceeds as follows. The first section describes our measures of patriotism and of the home bias and outlines our empirical methodology. Summary statistics and graphical evidence are presented in Section 2. Section 3 contains our main results that patriotism and instrumented patriotism are positively significant in explaining the home bias, both in levels and using a Cochrane-Orcutt specification. The last section concludes with implications for our findings.

⁹Huberman (2001), Grinblatt and Keloharju (2001), Bhattacharya and Groznik (2003), Boyle, Uppal and Wang (2003), Chan, Covrig, and Ng (2005), Loughran and Schultz (2005).

I Data & Summary Statistics

The objective of the paper is to test whether patriotism can explain part of the equity home bias. In the subsections below, we describe our measures of patriotism and the home bias, and introduce variables for other explanations of the home bias.

A Measuring Patriotism

Our main source of data is the World Values Survey (WVS). The survey is administered by the ICPSR at the University of Michigan and has given rise to more than 400 publications. It consists of a questionnaire of approximately 250 questions that is completed in face-to-face interviews. Questions asked range from extensive demographic information to how the respondent feels about a wide variety of political, religious, family, and other issues. To ensure that country surveys are comparable, a social scientist in each country is responsible for guiding the interview process. The questions are translated by at least two translators into the native tongues, and the translations are compared before being put into print. There are very specific instructions to carry out the Survey including a script for everything that the interviewer says.

The goal of the Survey is to obtain complete responses from at least 1000 people per country studied, regardless of population size. This is because, for large populations, representativeness is determined by sample size only and is unrelated to population size. Investigators randomly select respondents in order to form a representative sample of the country's public. Response rates are above 60% from the original selected sample, which amounts to an average of 1,264 individuals per country in 78 countries over the four waves of surveys: 1981, 1990-1992, 1995-1997, and 1999-2001. We utilize only the last three surveys and a total of 53 countries in our analysis due to limitations from other data.

Our primary measure of patriotism uses the definition of patriotism as an incarnation of national pride (Smith and Jarkko, 1998). The WVS asks the question: “*How proud are you to be [substitute nationality]?*”. The survey responses are coded from 1 to 4, and we use mean country scores.¹⁰

Since data points are precious in our analysis, we create a second measure of patriotism by using the 1981 survey to interpolate missing values for missing values in the 1990-1992 survey wave when we have the 1995-1997 score for the same WVS question. We call this *Interpolated patriotism*.

Table 1 presents the country patriotism scores by survey wave. A few observations are worth highlighting. Patriotism is relatively stable. For countries with observations in both 1990-1991 and 2000-2001 waves, the average score is statistically equal at 3.25-3.26. However, the within-country score moves on average (up or down) 5% between survey waves. Thus, there is within country time differences as well as across country score differences and differences in the country composition in each wave of the panel. The standard deviation of patriotism across countries increases over time, mainly due to the changing country mix across survey waves.

Regional patriotism scores display two nodes: Europe and Asia are less patriotic than the Americas, Africa and the Middle East. At the country level, Germany and Japan are the least patriotic countries in our sample, and Venezuela is the most patriotic.

Our analysis checks robustness to mismeasurement by including alternative patriotism variables. These measures specifically build on the survey work of Smith and Jarkko (1998). Using *International Social Survey Program (ISSP)* survey data, Smith and Jarkko find that a third of their respondents believe citizens have the duty to support the home country. As a measure of this duty patriotism, we use country scores to the yes or no question: “*Would you be willing to fight for your country?*”. In

¹⁰Since survey responses are discrete, the mean carries more information than the median. Most countries have a median score of 3.

the same study, the authors find that half of respondents are nationalistic, believing that their country is superior to others. Our nationalistic patriotism measure is the country score to the question: *“Do you think employers should give jobs to nationals first over immigrants?”*.

Table 2 summarizes the patriotism variables and presents correlations among the measures. Duty, nationalism and national pride patriotism are all significantly correlated with coefficients in the 0.20 to 0.30 range, confirming the notion that pride, duty and nationalism measure different aspects of people’s patriotism. For our purposes, the divergence in these measures forces our tests to a higher standard, working against arguments that our primary measure is simply correlated with missing explanatory variables.

A second source of patriotism data is the ISSP National Identity Survey for 1995, which asks individuals in 24 countries about feelings toward their country. Because the ISSP survey lacks a time series and has only a limited cross section, we primarily focus on a visual analysis of these data. The ISSP offers corroborating evidence from a data source independent of the WVS. Four measures of patriotism are used from the ISSP: (i) *“How close do you feel toward your country?”*, (ii) *“How much do you agree that you would rather be a citizen of [insert country]?”*, (iii) *“How important is it to feel a member of a country?”*, and (iv) *“Would you support your country even if it is in the wrong?”*. The correlations among these variables, presented on the lower panel of Table 2, suggest that the ISSP measures are more strongly positively correlated (in a 0.33 to 0.66 range) than those from the WVS.

B Home Bias Measurement

Our dependent variable, the home bias, is a well-defined concept without a perfect measure. It should be calculated as the percentage of domestic equity holdings held in

residents' portfolios minus the optimal percentage of domestic holdings. The problem is in knowing what the optimal should be.

There are two econometric reasons why mis-measurement of a dependent variable could be a concern. The minor concern is that mis-measurement of the home bias will inflate the standard errors on all of our estimates. This just induces conservatism in finding significant results. The main econometric concern is that if the home bias is mis-measured in a way that is systematic related to any of the independent variables, the coefficient estimates can be biased. Since we cannot solve the measurement error by constructing the perfect optimal holdings model, we take a different tactic. We use multiple measures of the home bias and argue that the direction of the bias (if any) induced by each measure should be unrelated to the bias induced by the others. Hence, if our results hold for all three measures, we can argue that our results are not driven by systematic measurement error of home bias.

The CAPM predicts that the optimal portfolio domestic and foreign equities should be the percentage of world market capitalization issued in each country. Thus, the *CAPM home bias %* is calculated as the difference between the optimal CAPM domestic weight in the portfolio and observed holdings of domestic equities.

$$CAPM\ home\ bias\ \% = domestic\ holdings\ \% - \frac{home\ capitalization}{world\ capitalization} \quad (1)$$

Although the *CAPM home bias %* is appealing because it is model-based, the CAPM proportions have been criticized primarily on three grounds. First, exchange rate risk could make optimal domestic holdings different from CAPM proportions, depending on the covariance structure of country returns and interest rates. Second, the *CAPM home bias %* calculation does not incorporate the positive correlation of income and domestic market performance. Such correlation should encourage, all else equal, a

greater international diversification of their portfolios, since individuals value portfolio income the most in low income states of the world. Third, historically, the correlation across markets increases in bad states of the worlds (e.g., crashes). This argument predicts that the gains from diversification are overstated in the CAPM.

As a second measure of the home bias, we use the model-free variable *Domestic holdings %*, calculated as the percentage of a country's aggregate equity portfolio invested domestically. A country's aggregate equity portfolio is calculated as the market capitalization plus foreign equities held by residents minus domestic equities held by foreigners.¹¹

$$Domestic \% = 1 - \frac{foreign\ assets}{market\ cap + foreign\ assets - foreign\ liabilities} \quad (2)$$

Foreign equity assets and liabilities are drawn from the IMF-IFS database.¹² Market capitalization data are from the World Bank's World Development Indicators (WDI) database.

This model-free gauge of the home bias addresses the lack of foreign holdings rather than imposing a perhaps misspecified model. More specifically, *Domestic holdings %* as a home bias measure assumes that the home bias is always increasing (in a linear fashion) with the proportion of equities held at home. In practice, the simplicity of assuming just an increasing relation is appealing and can be viewed as using *Domestic holdings %* as a proxy variable solution to measure the home bias.

¹¹Our results remain if we simply normalize foreign equity holdings by market capitalization.

¹²Each year, IFS publishes a yearbook containing a country-by-country breakdown of the sources of all of its data, which are usually individual governments or national banks. Our data on a particular country are, thus, only as good as the data gathering and estimation abilities of these entities. A possible concern is that the accuracy of the home bias measures is systematically related to the development level of the country. However, our region random effects should correct for problems in home bias measurement if the home bias recording across countries is systematically higher or lower.

Of course, the measure is not immune to criticism. However, any biases of *Domestic holdings %* seem to be related in the opposite direction (if anything) to the bias of *CAPM home bias %*. For example, in 1996 the Japanese and Spanish residents both hold approximately 96% of their equity portfolios in domestic firms. Because Japan has more diversification within its own market than Spain, more of the portfolio should be held in domestic assets, thereby rendering their *Domestic holdings %* (96%) an upwardly biased measure of Japan's home bias vis-a-vis Spain. In particular, domestic holdings as a measure of the home bias may be too large for large market capitalization countries.

Conversely, according to the CAPM model, the Spanish should be holding 1.2% of their portfolio at home. By contrast, the Japanese should be holding a much larger 21% at home. Thus, *CAPM home bias %* indicates that Japan has a much smaller home bias ($96\% - 21\% = 75\%$) than Spain ($96\% - 1.2\% = 95\%$). However, if the gains to diversification are less than predicted by the CAPM because of exchange rates and correlated bad market states, then the CAPM probably overstates the home bias of Spain relative to Japan.

A benefit of the CAPM measure is that the model rests on the appealing assumption that the return covariances across world markets are incorporated into the observed capitalization proportions. *Domestic holdings %* naively ignores return covariances. Because we know that covariances should matter in forming the optimal portfolio, we can construct a third measure of home bias, admittedly, in a somewhat ad hoc manner.

For country i at time t , we project *Domestic holdings %* on the covariance of each country's market index with a world market index. We take the residual as our *Covariance-adjusted home bias %* measure of home bias, removing the predictive power of covariance on the home bias.¹³

¹³Covariance is calculated with monthly data from Datastream using the five years leading up to each observation of *Domestic holdings %*. The coefficient on covariance is -0.296 and is significant at a 1% confidence level.

$$\text{domestic } \%_{it} = \alpha_0 + \alpha_1 \text{Cov}(r_i, r_{\text{world}})_t + \mu_{it}$$

$$\text{Covariance-adjusted domestic } \%_{it} := \widehat{\alpha}_0 + \widehat{\mu}_{it} \quad (3)$$

We do not assert that this is an optimal portfolio. Rather, we claim that as a proxy variable for home bias, it is increasing in the underlying true home bias, and it corrects for a lack of sensitivity of *Domestic holdings %* to covariance with the world.

Table 3 presents the basic summary statistics and correlations for the home bias variables for the sample of countries for which there is a corresponding World Values Survey. In all cases, the mean and median home biases are very large. Domestic assets comprise 89% of a mean country's portfolio. The minimum *CAPM home bias %* is 41%, for the United States. Many countries hover at the maximum *CAPM home bias %* of over 99% including Bangladesh, Poland, Russia and Turkey. The maximum home bias is unconstrained for the covariance adjusted measure. Therefore, in addition to removing the effect of world covariance from the domestic holding proxy for the the home bias, the *Covariance-adjusted domestic %* also frees the dependent variables from the clustering at 99%.

Included in the table are also the properties for the change in each of the home bias measures over time. Momentarily, we will directly address the potential for serial correlation within countries. This is important here since in our small sample world, we do not want to rely on asymptotic properties to rule out the potential for bias in our estimates due to autocorrelation. For now, it is worth noting that the average and median home bias decrease during the period, driven by double-digit declines in home bias across all measures in Denmark, Germany, Italy, Iceland, Peru, Spain and Sweden.

C Other Home Bias Explanatory Variables

There are four standard explanations for the equity home bias – transaction barriers, improperly measured diversification benefits, information advantages and familiarity. This study’s goal is to test whether patriotism can explain variation in the home bias beyond that for which the standard explanations account. Hence, we need aggregate measures for each of the standard explanations.

Transaction barriers should negatively affect foreign investment, somewhat like a tax paid on the absolute value of the holdings of foreign stocks (Stulz, 1981). Barriers may be restrictions on capital outflows or frictions in repatriation of capital gains and dividends. Prior research suggests that transaction barriers are significant but not economically large in explaining the home bias.¹⁴ We measure transactions costs with an indicator of capital account restrictions from the *IMF Exchange Arrangements and Exchange Restrictions Annual Reports*. One could measure barriers in terms of liberalization of capital markets, but studies on the topic usually date only the opening of a market to flows from abroad, not to outflows of investment. Additionally, Bekaert and Harvey (2000) document that most financial liberalizations pre-date our first survey period of 1990-1992.

The second standard home bias explanation is the lack of an effective diversification benefit. In theory, an investor should invest abroad to diversify away financial risk, and the benefits to doing so should vary by country (French and Poterba, 1991). We measure the risk-reward tradeoff with country Sharpe ratios. The Sharpe ratio is constructed as the mean risk premium divided by the standard deviation of returns using five years of prior monthly returns for country indices and one-month LIBOR as the risk-free rate. All data are from Datastream.

¹⁴Cooper and Kaplanis (1994), Tesar and Werner (1994), Errunza, Hogan, and Hung (2000), Glassman and Riddick (2001), Ahearne, Grier, and Warnock (2004).

The third common explanation for the home bias is that investors may either have incomplete knowledge of foreign equities or informational advantages on the home market. The differential information models of Merton (1987), Brennan and Cao (1997), Rauch and Casella (2003), and Brennan, Cao, Strong, and Xu (2005) lay theoretical foundations of how information affects investment. Using Korean data from 1997-1998, Choe, Kho and Stulz (2001) find that domestic individuals, but not domestic institutions, have a small information advantage over foreign investors. Choe et al.'s finding is at odds with Froot, O'Connell, and Seasholes (2001), who show that daily international flows can forecast future equity returns, suggesting that foreign investors may have superior information. For U.S. data, Coval and Moskowitz (2001) show that mutual funds earn abnormal returns when they invest in nearby firms. Goetzmann, Massa, and Simonov (2003) provide evidence that investors in professional city centers have more information about specific stocks.

Since the literature studies both foreign information disadvantages and local information advantages, we employ two information variables. Drawing from the international trade concept of gravity pulls, the first measure of information is the sum of the market capitalizations of contiguous countries. Larger neighboring markets imply that domestic investors have access to broader information opportunities following Coval and Moskowitz (2001).

The second measure of information asks whether superior knowledge about home markets is vindicated with higher performance. All countries in our study are extremely home biased, and all markets cannot be above average in performance. Yet, we can still ask whether the most home biased investors have superior information about their market. If part of the home bias is due to investors' privileged information about their own country's returns, the home bias should be positively related to the one year future returns. The motivation for this measure draws from Choe, Kho, and Stulz (2005), among others.

The final standard explanation for the home bias is a lack of familiarity with foreign investment opportunities. The home bias could simply reflect the fact that people dislike ambiguous situations and underweight choices with unknown distribution of outcomes as in Heath and Tversky (1991). Grinblatt and Keloharju (2001) find that Finnish investors prefer assets governed in the Finnish language. Bhattacharya and Groznik (2007) find that U.S. outward investment into a country increases with the income of the U.S. immigrant population from that country. Interestingly, the authors find that the level of investment in foreign countries is unrelated to language or physical distance, which should affect information acquisition. Following Bhattacharya and Groznik (2007), our familiarity measure is the percentage of the population that is foreign born, taken from the World Development Indicators (WDI) database.

Table 3, panel B shows the summary statistics for the explanatory variables of the home bias measures. The average country has 65% probability of having barriers, a Sharpe ratio of 0.112, neighbors with market capitalization summing to \$841 billion, markets whose forward returns will be 12.7%, a population that is 7% foreign-born, and a patriotism score of 3.347.

II Methodology

We use a tobit specification for two reasons. First, our home bias measures cannot take on negative values, and tobit naturally truncates at zero. More importantly, the tobit specification generates a curvature when the observations approach the bounds, in this case, a perfect home bias score of 1.00. As we later discuss, our results are robust to estimation using OLS, but we fear that OLS estimates are identifying off only those observations not nearing the perfect home bias boundary. A baseline empirical model regresses one of our home bias measures (y) on patriotism ($Patr$) and variables capturing the standard explanations for the home bias (X) for country i at time t .

$$y_{it} = \alpha \text{Patr}_{it} + X_{it}\beta + \varepsilon_{it} \quad (4)$$

The challenge is to make the claim that α is estimated consistently. There are a number of reasons why strict exogeneity, $E(\varepsilon_{it} | \text{Patr}_{i1}, \dots, \text{Patr}_{iT}, X_{i1}, \dots, X_{iT}) = 0$ for $t = 1, \dots, T$, may not hold. Specifically, ε_{it} may contain country-level heterogeneity not controlled for in X due to some systematic measurement error or omitted variables, and/or ε_{it} may be serially correlated within countries. We proceed in three steps to ascertain that our results are robust.

Step 1 tackles the omitted variable bias by estimating a fuller model. We can improve upon equation (4) by including other home bias explanatory variables Z , and by making an assumption on the error structure.

$$y_{it} = \alpha \text{Patr}_{it} + X_{it}\beta + Z_{it}\Gamma + \varepsilon_{it} \quad (5)$$

For control variables Z , we are particularly interested in political and economic variables whose omission may induce bias through a correlation with patriotism. For example, more insular-minded, patriotic countries may have stricter regulations on capital outflow. If so, regulations may be associated with both patriotism and the home bias, upwardly biasing the coefficient on patriotism. To control for regulation in foreign investment, we use a variable, *Pension cap*, indicating the percentage cap on foreign investment for pension plans from the *OECD Factsheet* on pension foreign investment.

Next, we include the Economic Intelligence Unit variable measuring the ease of foreign access to investment, *ForAccess*. Although this measures the regulation of foreigners operating in a host country, *ForAccess* should capture the overall extent capital flow regulation.¹⁵ As another measure of international integration, we include

¹⁵We can also use measures of expropriation risk or governance. All of these measures are highly correlated.

Goodstrade_GDP, the ratio of goods trade, both exports and imports, to the GDP of a country calculated from WDI data.

Economic prosperity might be an important latent variable. If a country provides its citizens with a good life, the citizens could have more allegiance to it. The home bias might also be related to economic prosperity. The disposable income of average investors in poorer countries is likely to be invested with savings and pension institutions, which are often themselves very home biased in their portfolios. It is possible that wealthy individuals in poorer countries diversify their portfolios more out of the country, but only to the extent that they are not the large blockholders of domestic companies capturing private benefits of control. To control for the possibility that income determines the home bias and patriotism, we include the log of per capita *LnGNIpop* from WDI data.

Finally, an economic behavior variable might be important. Following the arguments of Benartzi (2001), both the home bias and patriotism may also be related to excessive extrapolation from prior returns. Using LIBOR as the risk-free rate, we construct the one-year *ReturnLag* for each country in our sample to control for extrapolation of past returns.

An interesting point is whether short sales constraints might also be an omitted variable constraining the free flow of portfolio choices. We construct a short selling variable from Bris, Goetzmann, and Zhu (2007). The variable is 1 in the years when short selling is practiced in the country, and zero in years when short selling is not practiced. In Singapore, short selling is forbidden but has been commonly practiced offshore for a long time, so the variable is 1 for all of the years. When we include this measure of whether a country has a market in short selling, we find that the effect of this measure in proxying for a developed market dominates any effect that the ability to short the home market might have on portfolio decision.

A drawback in just adding controls is that even if we had a very large sample of observations such that we could add a kitchen sink full of control variables Z , much of the home bias remains unexplained by observable controls, and hence it is impossible to prove that the potential for omitted variable bias has been fully removed. Ideally, we would like to fit a country fixed effects model with equation (5) and use the within-country variation over time to identify the effect of patriotism on the home bias. The survey data provide insufficient observations to estimate the average country level of home bias since many countries have only one or two survey observations. Instead, after controlling for omitted variables Z , we include region fixed effects. The key assumption is that once we have included Z in the specification, the error term ε_{it} can be written as a region-level term $\gamma_{region(i)}$ that varies by country i , plus a residual ζ_{it} that is iid as in equation (6) below.

$$\varepsilon_{it} = \gamma_{region(i)} + \zeta_{it} \tag{6}$$

We define regions as Africa, North America, South and Central America, Asia and Oceania, the Middle East, Eastern Europe and Western Europe. An example of the importance of regional heterogeneity is the case of Western Europe, where the common market facilitates the diversification of investment portfolios across national borders. The region fixed effects specification allows us to ask whether differences in foreign holdings between neighboring countries like France and Germany can be explained by patriotism over and above the effect of being a part of the European Union.

Step 1 worked toward removing the effect of omitted variables. However, even if we have achieved contemporaneous exogeneity, there is the concern that the country heterogeneity is serially correlated. Although we cluster errors at the country level, clustering may not be effective at removing bias in a finite sample. Step 2 uses the within-country autocorrelation to transform our estimating equation, thereby

removing the reliance on clustering and providing an improved method to estimate the effect of patriotism on the home bias.

We assume that persistence in unobserved country heterogeneity of the home bias follows an AR process, i.e.:

$$\varepsilon_{it} = \rho\varepsilon_{i,t-1} + \zeta_{it}, \quad (7)$$

where ζ_{it} are distributed iid. We can use the Cochrane and Orcutt (1949) two-step procedure that first estimates ρ with a simple time series correlation on errors and then applies the rho as a constant to estimate (8), in which the serial correlation has subtracted out.

$$y_{it} - \rho y_{i,t-1} = \alpha \text{Patr}_{it} - \rho \alpha \text{Patr}_{i,t-1} + X_{it}\beta - X_{i,t-1}\rho\beta + u_{it} \quad (8)$$

If the estimate for ρ is equal to one, then the model collapses to a first differences specification. The benefits of using the Cochrane-Orcutt procedure are twofold. If ρ is less than unity, Cochrane-Orcutt will be more efficient than first differences while still identifying off within-country variation. This is an important point; Cochrane-Orcutt, like first differences, identifies the effect of the explanatory variables from the time-series variation in the panel. Second (and more importantly), we can use the Prais and Winsten (1954) maximum likelihood derivation to recover the first observations for each country i ; namely, $y_{i1}^* = y_{i1}(1 + \rho^2)^{1/2}$ and similarly for Patr_{i1}^* and X_{i1}^* , where the asterisk denotes the transformed first observation ($t = 1$) for each country.

Although we believe that Steps 1 and 2 handle the potential for any biases in the patriotism coefficient caused by omitted variables and serial correlation, we take one further step to be able to assert that patriotism actually impacts investment decisions and is not just correlated with them. We want to ensure that our measurement of patriotism is not systematically related to other factors. Step 3 presents results with

patriotism measured by a few different survey variables, and, even more demanding, we instrument patriotism in a way that is orthogonal to economic and regulatory factors. Such a task is normally very difficult for economic variables; however, patriotism is not purely an economic concept. In particular, we can appeal to the social belonging and group orientation aspects of patriotism to find appropriate instruments for patriotism that are randomly applied across different economic settings.

Our instruments for patriotism draw from the sociological aspect of patriotism. Huddy (2005) shows that people who identify with groups at a micro level are conditioned to feel a part of an entity. Thus, cultures and societies with a greater micro sense of belonging are more likely to be patriotic. We use three instruments for patriotism along this line of thought. First, *Ethnolinguistic fractionalization* from Easterly and Levine (1997) captures the size of the group with which individuals in a country may identify. Second, *Country size* from the WDI database captures the squared kilometer land mass size of the country, again a measure of how close people feel to their nationality. Third, *Belong cultural* is the sum of the WVS scores to the question “Tell me whether you are an active member, an inactive member or not a member of (i) an art organization? (ii) a music organization? (iii) an educational organization?” *Belong cultural* measures community participation.

III Graphical Evidence

The central finding of the paper is depicted in Figure 1, which plots *CAPM home bias %*, *Covariance-adjusted home bias %* and *Domestic holdings %* against patriotism, pooling the three survey waves. This figure removes the effects of barriers, diversification benefits, information and familiarity, so that the plot can be interpreted as an association between patriotism and yet unexplained variation in domestic holdings.

We also remove a survey wave fixed effect to capture world-wide incidents that may effect investments.¹⁶

Figure 1 suggests an increasing relation between patriotism and home bias measures. The regression lines depicted are all statistically significant at the 5 percent level; more patriotic countries have higher home bias. Deviations from this pattern that persist across the measures of home bias lie primarily in the Baltics and Russia, where low patriotism and high domestic holdings are observed, and in Northern Europe, where domestic holdings are low, irrespective of patriotism. Because there may be potential outliers in the figures, we later test to ascertain that the results are not attributable to a few country observations.

An alternative measure of patriotism is found in the 1995 ISSP survey. Since data are limited to 24 countries, we focus on graphical inference rather than over-interpreting formal estimations. Figure 2 plots *Domestic holdings %* against the country scores of the four ISSP patriotism variables: (i) “*How close do you feel toward your country?*”, (ii) “*How much do you agree that you would rather be a citizen of [insert individual’s country]?*”, (iii) “*How important is it to feel a member of your country?*”, and (iv) “*Would you support your country even if it is in the wrong?*”. All of the plots show a positive and highly significant linear relation between the home bias measures and the patriotism measures. The plots are similar for the other measures, except one insignificant plot for the relation between *CAPM home bias %* and question (ii).

The tightest fit (R-square = 0.416) among the figures is for the nationalism variable, *Support country even if in the wrong*. Northern European countries are the least nationalistic and have the lowest levels of domestic holdings. Eastern European countries, which have only moderate patriotism by other measures, are some of the most nationalistic. The observed clustering by region, with the regions seeming to

¹⁶The simple univariate relationship between the home bias measures and patriotism is similar and not presented.

line up in an increasing pattern, highlights the importance of using a region effects model in the formal specification. By forcing our data to identify a within-region relation between the home bias measures and patriotism, we are demanding a higher level of test for our theory.

Even stronger evidence for our hypothesis would be that variation of patriotism within a country impacts domestic holdings. The World Values Survey provides regional geocodes for the United States, allowing us to match patriotism with regional domestic investment data. Figure 4 plots patriotism from the 1995-97 WVS for nine U.S. regions against domestic equity holdings percentage reported in the 1997 Survey of Consumer Finances. We normalize domestic holdings by household income as a proxy for net worth. Although the nine observations can only offer graphical, suggestive analysis, there is a clear positive relation between domestic holdings and patriotism. The West South Central is the most patriotic and invests more domestically than does the least patriotic region, the Pacific. The plot would be identical if we constructed it in terms of *CAPM home bias %*.

IV Estimation Results

A Tobit Model Results

Table 4 reports the estimation results corresponding to Figure 1. In the first three columns, the dependent variable is *CAPM home bias %*, in columns 4-6, the dependent variable is *Covariance-adjusted home bias %*. In the following three columns, the measure is *Domestic holdings %*. In columns 1, 4, and 7, we regress our home bias measures on the four standard explanations, controlling for survey wave and region fixed effects and ignoring patriotism. Standard errors are clustered by country.

The tobit estimates provide some evidence for three of the four standard explanations for the home bias. Home bias variables are positively and significantly associated

with the existence of capital barriers, as would be expected. These results are weak, partly due to the coarse way in which barriers must be measured.

The Sharpe ratio is not significantly related to the home bias measures. This may be because investors are looking at other time frames than the three to five years we investigated, or that they perceive no diversification benefit to investing abroad. Also, investors might be looking at downside correlations only, as in Ang and Chen (2002).

There is support for a role for both types of information advantage; as the future 1-year return on each country increases, *Covariance-adjusted home bias %* and the *CAPM home bias %* increase. The first information variable, the market size of neighboring countries, is positively related to *CAPM home bias %* and negatively related to the *Covariance-adjusted domestic %*. The positive sign is contrary to our prediction and suggests that an omitted variable may affect our home bias measures differently.

Finally, as the percentage of population that is foreign born increases, all three home bias variables decrease, consistent with the explanation that if the citizens of a country know more about other countries, they will invest more abroad (Bhattacharya and Groznik, 2002). This result is very strong throughout the paper.

The remaining columns of Table 4 add patriotism and interpolated patriotism to the specifications of columns 1, 4 and 7. Because there are fewer observations for patriotism than for the other variables, the number of observations drops by more than half to 69 using ordinary patriotism, and 78 using interpolated patriotism. The main result of the paper is that even after controlling for the standard home bias variables, the coefficient on patriotism is positive and statistically significant. It is also economically significant. Using the *CAPM home bias %* specification in column 2 and adjusting the tobit conditional estimation to an unconditional marginal effect, we can calculate that a one standard deviation change in patriotism is associated

with a 4.8 percentage point increase in foreign holdings for the aggregate portfolio. A similar calculation for the *Covariance adjusted home bias %* and *Domestic holdings %* coefficients from columns 5 and 8 results in an increase in foreign holdings equal to 3.1 and 3.0 percent of total country holdings, respectively. These increases are large; a one standard deviation change in patriotism is associated with an \$18 to \$31 billion change in investment abroad.

It is also interesting to see what happens to the coefficients on the other home bias explanatory variables when patriotism is added to the model. When patriotism is added to the model, we find some support for the role of barriers. The significance of *Barriers* remains for the case of the home bias measures with interpolated patriotism, but is negated in the other estimations. In addition, we find no support for the information hypotheses in the smaller observation regression models. We do not take from this that transaction barriers and information are not important; rather, our measures may be limited in its ability to explain the home bias in aggregate measurement.

Turning to familiarity, as the percentage of population that is foreign born increases, the home bias decreases significantly, but patriotism retains its significance. It is important to distinguish between patriotism and familiarity. Although patriotic loyalty and familiarity might be difficult concepts to disentangle in a single nation or an organizational setting, this is not so in a cross-country analysis. It is clear that domestic-born citizens of all countries are most familiar with their home countries, irrespective of their level of patriotism which vary across countries. The correlations in Table 2 show that patriotism and foreign population are insignificantly correlated. This suggests that while immigration is important, it will be so independently from patriotism.

Before summarizing our results from Table 4, a few statistical comments are worth mentioning at this point. First, we re-do all of the outlier tests from our analysis of

Figure 1. We find no outliers able to influence the positive slope between the home bias variables and patriotism.

Second, it might be that there is bias in the selection and accuracy of the equity holdings data. Measures of equity holdings often are residual calculations in national accounts and may be interpolated to the best ability afforded by central bankers' data. It would be difficult, however, to conceive of a story in which the measurement error of equity holdings greatly biases our patriotism coefficients. A related concern is that the availability of domestic equity holdings percentage data is systematically biased toward larger economy countries. If anything, a bias toward selection of the larger or richer countries would bias against finding a role for patriotism in that the bigger economies should be the ones with more sophisticated investors. More formally, a Heckman selection test fails to reject that country selection is independent of GDP and market capitalization.

A third statistical concern is that we are ignoring that the calculation of the country scores of patriotism are generated statistics and thus have variation across surveys. To ensure that uncaptured variation from using mean country patriotism scores would not negate our results, we bootstrap the mean patriotism scores 1,000 times using the individual survey responses.¹⁷ The scores and resulting regression coefficients change very little. In addition, using OLS does not change the significance of our results.

To further confirm that the choice of specification is not driving our results, we divide the sample into upper and lower halves of each home bias variable and run a tobit model on each of the six subsets of the data. In untabulated results, the coefficients on *Patriotism* are positive in each case and significant in five out of six cases. In the case of the larger half of *Covariance adjusted home bias %* measure, the t-statistic on *pscore* is 1.16.

¹⁷Petrin and Train (2005) show that bootstrapping generated regressors corrections in a two-stage estimation has favorable properties.

Two main conclusions arise from this section. First, patriotism is significant in explaining all of our home bias measures, controlling for measures capturing the standard explanations. Its effect is economically large. Second, the results present additional evidence in the growing literature documenting the role of familiarity and some evidence for the role of barriers in explaining the home bias measures.

B Additional Variables

To make the claim that patriotism affects investment decisions, we must be confident that patriotism's correlation with political and economic factors is not the underlying driver of the home bias. As described in the methodology section, we cannot control for country fixed effects, and the region fixed effects may leave country factors that are correlated with patriotism. In Table 5, we include omitted institutional and economic factors in our regressions.

We find weak to no evidence for the effect of these institutional and economic factors on the home bias measures. Pension caps seem to not be binding in pension portfolio decisions. The ease of foreign access to investment, lagged returns and income per capita are also not determinants of the home bias measures. Only goods trade to GDP is negative and significant in predicting *Covariance-adjusted home bias %* and *Domestic holdings %*, as theory would predict. Similarly, lagged one year returns and gross national income per person do not drive any of our measures of the home bias.

C Tests with Alternative Measures of Patriotism

If the World Values Survey scores are imprecise measures of patriotism, our results should be subject only to attenuation bias and thus conservative in testing our hypothesis that patriotism influences portfolio selection. There is little reason to believe the

error would be correlated with other explanatory variables; however, we can increase the confidence that our results are valid by utilizing other measures of patriotism in the estimation scheme of Table 4. Our alternative measures for patriotism, drawing from political science theory, are the WVS measures of country duty (willingness to fight) and nationalism (job priority given to nationals).

Table 6 presents estimates using these alternative measures for patriotism and the standard home bias explanations. The jobs priority question was asked to a larger set of countries, providing double the observations. Countries with a higher response rate that jobs should be given to nationals of the country before immigrants are likely to have higher percentage of their national portfolio invested at home, after controlling for region and survey effects and for the other explanatory controls. For the *CAPM home bias %* measure, both willingness to fight and job priority given to nationals are positively significant at the 1% level. These two variables, like our main patriotism variable, are also economically significant. A one standard deviation change in the fight variable is associated with a 6 percent increase in the *CAPM home bias %*, and a one standard deviation change in the job priority variable is associated with a 4 percent increase in both the *CAPM home bias %* and *Domestic holdings %*. Using the other home bias measures, only jobs priority is significant.

A possible concern with the measurement of patriotism is in identifying who invests in equities. Even during the bull market in the United States, only 24% of wage earners under \$30,000 held stock, while 84% of Americans with income over \$75,000 maintained equity portfolios.¹⁸ The divergence would be even larger for poorer countries in which disposable income for the poorer half of the population is limited. Since the more affluent account for the majority of stock holdings, it may be that our patriotism score does not capture the sentiment of upper income respondents. We re-run our analysis restricting the WVS responses to reflect only the upper half of

¹⁸Market gyration brings jitters, ABCNews.com, July 17 2001.

income earners in each country. Our results are not materially different except that the magnitude of the patriotism coefficient is slightly larger.

D Cochrane-Orcutt Estimation

Table 7 presents the results of the Cochrane-Orcutt estimation with the Prais-Winsten correction to recover the first observation. We use interpolated patriotism to add to our observation count, but the results hold using the raw patriotism score as well. As Table 7 shows, all three measures of the home bias are explained by patriotism in this model. It is also important to note that the first order autocorrelation coefficient, ρ , is solidly between zero and one for all three cases. The R-squares lie between 0.82 and 0.89. We note that our measure of familiarity is again significant in explaining the home bias in all three cases, and a measure of information and barriers are able to explain the *Covariance adjusted home bias %*.

E Instrumental Variables

Our last piece of evidence is from instrumenting patriotism with measures capturing the degree to which citizens might identify with a local group. The sociology literature suggests that individuals conditioned to identify with the local group may better be able to identify with larger groups as well (Huddy, 2001). In our case, local group interaction might condition individuals to identify with the country at large, and thus be positively associated with patriotism.

It is difficult to construct an argument in which local group identification is correlated with any part of patriotism subject to concerns of endogenous determination with the home bias measures. Local group interaction is not systematically related to economic well-being. Many very wealthy countries (e.g., Italy) have low community involvement and identification, favoring instead more social interactions within

the extended family. Individuals in other wealthy countries (e.g., the United States) may have high identification with local community groups for historical, religious, ethnic or linguistic reasons. The same is true for poorer countries. Tribal countries (e.g., Nigeria) may find local identification very important. Whereas lower income, more family-based countries (e.g., the Philippines) are less likely to see community group involvement. The same type of arguments can be made for concerns about the endogenous determination of patriotism and the home bias measures because of the quality of government. During the time period of our sample, both Nigeria and the Philippines experienced periods of tumultuous political leadership, but their local group interactions are very different.

Because of these arguments, we are able to use the sociology-based concepts to instrument patriotism. The local group identification instruments are ethnolinguistic fractionalization or *Ethnoling*, which measures how many disparate groups are present in an area, *Country size*, and *Belongcultural*, the rate at which individuals participate in cultural groups. The standard 2SLS procedure allows us to ask whether the relationship between patriotism and home bias measures is more than just an association. Our objective is to offer evidence that patriotism actually affects investment decisions.

The first column of Table 8 shows the first stage estimation of patriotism. We have normalized the measures to be able to compare magnitudes. We note that our instruments have explanatory power in determining patriotism, but only for large countries. The interactions of *Ethnoling* with size and of *Belongcultural* with country size are significant in explaining patriotism. More ethnolinguistic diversity and more social belonging are associated with greater patriotism in places where land mass is large. This is reasonable, because in smaller countries, diversity may imply greater integration or more conflicts.

The remainder of Table 8 shows the second stage of the estimation in which instrumented patriotism is used to explain the three measures of home bias through linear and tobit estimation. In all three columns, patriotism is positively significant.

We conclude that patriotism, instrumented with social variables which should not be correlated with political or economic country settings, affects portfolio allocations. We are able to identify the effect of instrumented patriotism on the home bias with a naive *Domestic holdings %* measure and two measures that relate the domestic portfolio observed to an optimal world portfolio holding.

V Conclusion

In the first study documenting the effect of patriotism on investment, we find that investors in more patriotic countries hold more domestic equity in their portfolios. Supporting this finding, investors in more patriotic U.S. regions choose to invest more in domestic companies. A one standard deviation decrease in patriotism is associated with a rise in foreign holdings equal to 3-5 percent of the total country equity portfolio (\$18 - \$30 billion more of portfolio outflow) for the average country in the sample.

All of our results are after controlling for the standard home bias explanations – transactions barriers, risk, information, and familiarity. We also find strong evidence for a role of familiarity in explaining the home bias measures. Our study uniquely distinguishes familiarity from patriotism, finding that both familiarity and patriotism can impact economic decisions, but that the previously undocumented effect of patriotism may have been partially attributed to familiarity.

Our results are robust to bootstrapping the average country response scores and to tests of endogeneity. Other measures of patriotism capturing duty and nationalism are predictors of domestic holdings. Our evidence shows that changes in patriotism are associated with changes in foreign holdings. Finally, using social instrumental

variables capturing the conditioning to group identification, we offer evidence that patriotism is more than just associated with the home bias measures. Rather, we can conclude that patriotism affects investment decisions.

This study helps us to understand why relatively similar countries like Switzerland and Sweden, which have relatively low barriers to investment and plentiful information sources, would invest such different proportions of their money abroad. These allocation choices represent billions of dollars and ultimately affect the world economy.

Two implications can be drawn from this study, both of which are potentially fruitful avenues of research. The first implication is that any additional demand that patriotism generates for domestic equity is unrelated to objective expected return and risk. Patriotism results in a winner's curse in the sense that the person valuing a stock most highly will be the highest bidder. The citizens of a country will likely bid the highest prices for their own country's assets, possibly raising the capitalization of their own market and lowering its expected returns.

Across countries, people may invest disproportionately at home, but a portion of this over-investment is offset by the home biased choices of other countries. These transactions could possibly push prices up and expected returns down in more patriotic countries relative to less patriotic countries, but the larger effect would likely be seen in the global loss in portfolio income from diversification. Since this trading is unrelated to the overall mean-variance characteristics of the stock, portfolios that are home biased due to patriotism will have lower-than-optimal portfolio properties. Additionally, the home bias can keep capital from flowing to its most productive use if that use lies in unpatriotic countries. Helkie and Steckler (1991), among others, have shown that this effective "protectionism" can raise interest rates, hurt the housing market, and cause a host of economic problems.

Price distortion does not necessarily point to a welfare loss. Holding domestic equities may enter directly into the utility function. Thus, if a patriotic person were

to hold the mean-variance efficient portfolio in lieu of a home biased portfolio, her expected utility may be lower. The pattern is similar for 401(k) portfolio allocations. For example, Benartzi (2001) finds that Coca-Cola employees allocate 76% of their discretionary contributions to Coca-Cola shares. Employer stock is the asset most correlated with an employees's human capital, and thus a rational agent should short employer stock, not hold large quantities of it.

Until recently, the vast majority of discussion on non-optimal portfolio allocations (e.g., in pension plans) has focused on distorting policies set by governments (in this case, protectionism). Our results suggest that calls for further liberalization of capital markets may be overstating their claims; diversification benefits will not accrue in as much as investors do not choose to diversify. A difficult question for policy makers is how they might reduce behavioral biases like patriotic investing, if they were so inclined (see, for example, Cronqvist and Thaler, 2004). Unlike firms, which can mandate diversification of individual pension accounts, governments cannot optimize their citizens' portfolios. Answers to these questions would be important not just for diversification decisions, but also for decisions of real economic investing, where the implication to widespread loyalty biases at the firm and financier level might be large.

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Table 1: Patriotism Scores from the World Values Survey

Patriotism Score refers to the averaged responses of residents of a country to the question: “How proud are you to be [insert nationality]?”, ranging from not proud (1) to very proud (4). The average number of respondents per country is 1264.

Country	Survey Wave			
	1980-1982	1990-1992	1995-1998	1999-2001
Albania				3.66
Algeria				3.68
Argentina	3.30	3.38	3.44	3.56
Armenia			3.21	
Australia	3.68		3.70	
Austria		3.45		3.44
Azerbaijan			3.57	
Bangladesh			3.75	3.69
Belarus		3.11	3.05	2.90
Belgium	3.00	3.07		2.91
Bosnia			3.40	2.98
Brazil		3.44	3.46	
Bulgaria		2.99	3.32	3.02
Canada	3.55	3.53		3.61
Chile		3.38	3.42	3.62
China		3.23	3.27	3.04
Colombia			3.81	
Croatia			3.24	3.23
Czech		2.79		3.06
Denmark	3.00	3.27		3.40
Dominican Republic			3.67	
Egypt				3.81
El Salvador				3.80
Estonia		3.11	2.88	2.81
Finland	3.21	3.17	3.35	3.48
France	3.00	3.18		3.26
Georgia			3.48	
Germany	2.73	2.75	2.55	2.89
Ghana			3.91	
Greece				3.40
Hungary	3.60	3.33		3.38
Iceland	3.49	3.48		3.64
India		3.67	3.63	3.62
Indonesia				3.41
Iran				3.86
Ireland	3.61	3.74		3.72
Israel				3.35
Italy	3.12	3.25		3.26
Japan	2.91	2.92	2.85	2.78
Jordan				3.67
Latvia		3.39	2.78	3.18
Lithuania		3.27	2.81	2.66
Luxembourg				3.32
Macedonia			3.58	3.34
Malta				3.72
Mexico	3.52	3.44	3.67	3.74
Moldova			3.10	2.81
Morocco				3.84
Netherlands	2.70	2.93		2.94
New Zealand			3.61	
Nigeria		3.52	3.47	3.61

Norway	3.11	3.26	3.18	
Pakistan			3.82	3.78
Peru			3.75	3.69
Philippines			3.66	3.82
Poland		3.65	3.66	3.68
Portugal		3.31		3.74
Russia		2.78	2.95	2.94
South Africa	3.16	3.55	3.77	3.59
South Korea	3.26	3.24		2.93
Serbia & Montenegro			3.11	3.06
Singapore				3.45
Slovakia		3.03		2.95
Slovenia		3.46	3.51	3.44
Spain	3.33	3.28	3.55	3.42
Sweden	2.99	3.22	3.34	3.27
Switzerland		3.15	2.93	
Taiwan			2.82	
Tanzania				3.74
Turkey		3.57	3.70	3.46
Uganda				3.55
Ukraine			2.80	2.71
United Kingdom	3.38	3.38		3.36
Uruguay			3.68	
United States	3.72	3.73	3.77	3.68
Venezuela			3.92	3.91
Vietnam				3.77
Zimbabwe				3.65
Africa	3.16	3.53	3.72	3.65
North America	3.60	3.57	3.67	3.67
Central & South America	3.30	3.40	3.64	3.72
Middle East		3.57	3.70	3.63
Asia & Oceania	3.28	3.26	3.40	3.38
Eastern Europe	3.63	3.17	3.19	3.18
Western Europe	3.13	3.25	3.26	3.33
Grand Total	3.26	3.29	3.38	3.40
Standard Deviation	0.299	0.247	0.351	0.342

Table 2: Measures of Patriotism

World Values Survey Measures of Patriotism				
Patriotism:	<i>How proud are you to be [substitute nationality]?</i>			
Duty Patriotism:	<i>Would you be willing to fight for your country?</i>			
Nationalism:	<i>Do you think employers should give jobs to nationals first over immigrants?</i>			
Number of Countries:	78			
Survey Waves:	1990-1992, 1995-1997, 1999-2001			
Correlations	Patriotism	Duty	Nationalism	
Patriotism	1			
Duty	0.299 ***	1		
Nationalism	0.285 ***	0.198***	1	
International Social Survey Program Measures of Patriotism				
ISSP Patriotism 1:	<i>How close do you feel to your country?</i>			
ISSP Patriotism 2:	<i>How much do you agree that you would rather be a citizen of [insert country].</i>			
ISSP Patriotism 3:	<i>How important is it to feel a member of a country?</i>			
ISSP Patriotism 4:	<i>Would you support your country even if it is in the wrong?</i>			
Number of Countries:	25			
Survey Year:	1995			
Correlations	ISSP 1	ISSP 2	ISSP 3	ISSP 4
ISSP 1	1			
ISSP 2	0.503 **	1		
ISSP 3	0.664 ***	0.578***	1	
ISSP 4	0.461 **	0.333	0.631***	1

Table 3: Summary Statistics and Correlation Tables

Domestic holdings % denotes the percentage of a country's holdings that are invested domestically. A country's aggregate equity portfolio is calculated as the market capitalization plus foreign equities held by residents minus domestic equities held by foreigners. *Covariance-Adjusted Home Bias %* is the error term taken from the regression of domestic holdings on covariance of the market with the world market. *CAPM Home Bias %* is calculated as the difference between the optimal CAPM foreign country weight in the portfolio and observed holdings of foreign holdings. *Barriers* is an indicator of Capital Account Restrictions from the *IMF Exchange Arrangements and Exchange Restrictions Annual Reports*. The *Sharpe* ratio is constructed using five years of prior monthly returns for market indices from Datastream. *Info 1* is the sum of contiguous countries market capitalization. *Info 2* is the one-year ahead returns on the country index. *Familiarity* is the percentage of the population that is foreign born, taken from the World Development Indicators (WDI) database. *Patriotism* is the patriotism score from the World Values Survey, detailed in Table 1. *, **, and *** signifies significance at the 10% 5% and 1% levels.

<i>Panel A: Summary Statistics</i>						
Home Bias Variables	Mean	Median	StDev	Min	Max	Observations
CAPM Home Bias %	85.82	88.76	14.38	40.70	99.95	85
Covar-Adj Domestic %	89.59	92.71	11.39	54.66	110.7	68
Domestic Holdings %	88.54	91.70	11.83	57.04	99.99	85
Changes in Home Bias						
Δ CAPM Home Bias %	-3.91	-1.50	6.16	-17.74	8.22	41
Δ Covar-Adj Domestic %	-6.18	-7.04	7.73	-23.58	5.72	35
Δ Domestic Holdings %	-3.78	-1.39	5.76	-16.99	8.29	41
Explanatory Variables						
IMF Barriers	0.648	1	0.479	0	1	182
Sharpe ratio	0.112	0.136	0.294	-2.24	0.941	138
Info 1: Contingent Mkt	0.841	0.177	2.01	0	15.1	179
Info 2: Future Returns	0.127	0.009	0.414	0.358	2.14	95
Familiarity: Foreign Pop	6.68	3.80	7.82	0.116	37.4	97
Patriotism Score	3.35	3.38	0.324	2.55	3.92	179

<i>Panel B: Correlations</i>						
Home Bias Variables	CAPM	Covar-Adj	Domestic %			
CAPM Home Bias%	1					
Covar-Adj Domestic %	0.681***	1				
Domestic Holdings %	0.847***	0.919***	1			
Explanatory Variables	Barriers	Sharpe	Info 1	Info 2	Familiarity	Patriotism
IMF Barriers	1					
Sharpe ratio	-0.008	1				
Info 1: Contingent Mkt	-0.130*	0.095	1			
Info 2: Future Returns	-0.152	0.200*	-0.067	1		
Familiarity: Foreign Pop	-0.233**	0.243**	0.165	0.081	1	
Patriotism Score	0.211***	0.095	0.028	0.135	-0.193*	1

Table 4. Tobit specification.

Domestic equity holdings % denotes the percentage of a country's holdings invested domestically. A country's aggregate equity portfolio is calculated as the market capitalization plus foreign equities held by residents minus domestic equities held by foreigners. *Covariance-Adjusted Home Bias %* is the error term taken from the regression of domestic holdings on covariance of the market with the world market. *CAPM Home Bias%* is calculated as the difference between the optimal CAPM foreign country weight in the portfolio and observed holdings of foreign holdings. *Barriers* an indicator of Capital Account Restrictions from the IMF *Exchange Arrangements and Exchange Restrictions Annual Reports*. The *Sharpe* ratio is constructed using five years of prior monthly returns for market indices from Datastream. *Info 1* is the sum of contiguous countries market capitalization. *Info 2* is the one-year ahead returns on the country index. *Familiarity* is the percentage of the population that is foreign born, taken from the World Development Indicators (WDI) database. *Patriotism* is the patriotism score from the World Values Survey, detailed in Table 1, and *Interpolated Patriotism* is the patriotism variable interpolated when there is a missing intermediate survey patriotism score for a country. P-values are in parentheses and clustered by country. *, **, and *** signifies significance at the 10% 5% and 1% levels.

	CAPM Home Bias %			Covariance-Adjusted Home Bias %			Domestic Holdings %		
Patriotism Score	14.51*** (0.01)			10.04** (0.04)			8.780* (0.06)		
Interpolated Patriotism	13.41** (0.01)			9.344** (0.03)			8.854* (0.07)		
IMF Barriers	4.19 (0.14)	4.98 (0.14)	5.86* (0.08)	4.30* (0.09)	3.81 (0.11)	4.06* (0.09)	4.56* (0.08)	4.10 (0.15)	4.43 (0.12)
Sharpe Ratio	-1.90 (0.84)	-1.67 (0.77)	-4.94 (0.45)	-7.53 (0.26)	-7.42 (0.31)	-9.22 (0.25)	1.92 (0.84)	1.88 (0.78)	-1.58 (0.84)
Info 1: Contingent Mkt	2.47** (0.01)	1.88** (0.02)	2.08** (0.02)	-0.991* (0.06)	-0.812* (0.09)	-0.838* (0.07)	0.475 (0.54)	0.191 (0.76)	0.172 (0.77)
Info 2: Future Returns	11.89*** (0.00)	6.00 (0.43)	6.83 (0.23)	-0.469 (0.86)	-3.67 (0.25)	-2.14 (0.48)	9.10*** (0.00)	5.64 (0.42)	5.03 (0.31)
Familiarity: Foreign Pop	-0.676** (0.01)	-0.323* (0.07)	-0.334** (0.05)	-0.405** (0.02)	-0.388** (0.03)	-0.410** (0.02)	-0.828*** (0.00)	-0.501*** (0.01)	-0.478*** (0.01)
Region Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	168	69	78	67	59	67	168	69	78
Pseudo R-squared	0.090	0.117	0.112	0.106	0.121	0.119	0.090	0.108	0.107

Table 5: Potentially Omitted Variables – Tobit Specification

Pension cap is the percentage cap on foreign investment for pension plans from the *OECD Factsheet* on pension foreign investment. *Goodstrade_GDP* is goods trade divided by GDP. *ForAccess* is taken from the Economist Intelligence Unit (EIU) and is the ease of foreign access to investment and goods trade. *LNGNIpop* is Gross National Income per capita as measured by the World Bank's WDI database. The coefficients on *GNI per capita* are divided by 1,000. *ReturnLag* is the lagged one-year return on the country's index from Datastream. Other variables are as in Table 4. Robust p-values are in parentheses. *, **, and *** signifies significance at the 10% 5% and 1% levels.

	CAPM Home Bias			Covariance-Adjusted Home Bias			Domestic Holdings %		
Interpolated Patriotism	28.24*** (0.00)	18.17*** (0.00)	16.31*** (0.00)	14.83*** (0.01)	7.66* (0.09)	9.85* (0.06)	22.14*** (0.00)	12.18** (0.02)	11.85** (0.03)
IMF Barriers	0.942 (0.76)	7.17** (0.03)	6.84* (0.08)	0.501 (0.83)	4.07* (0.08)	4.37* (0.09)	1.54 (0.59)	5.58** (0.03)	6.06* (0.08)
Sharpe Ratio	-27.38* (0.06)	-1.28 (0.79)	4.45 (0.45)	-31.04** (0.02)	-4.60 (0.35)	-9.09 (0.24)	-19.28 (0.11)	2.52 (0.60)	6.61 (0.41)
Info 1: Contingent Mkt	3.03*** (0.00)	2.62*** (0.00)	2.31** (0.01)	-0.457 (0.35)	-0.275 (0.46)	-0.784* (0.09)	1.18*** (0.00)	0.943*** (0.01)	0.368 (0.57)
Info 2: Future Returns	-4.24 (0.62)	3.07 (0.57)	14.10** (0.04)	-0.114 (0.99)	0.928 (0.77)	-2.19 (0.48)	-6.23 (0.37)	1.54 (0.72)	11.11* (0.06)
Familiarity: Foreign Pop	-0.938** (0.01)	-0.491 (0.12)	-0.288 (0.10)	-0.747** (0.01)	-0.595*** (0.00)	-0.434** (0.02)	-1.24*** (0.00)	-0.767*** (0.00)	-0.476** (0.01)
Pension Cap	-0.092 (0.18)			-0.031 (0.55)			-0.040 (0.57)		
ForAccess		-2.37 (0.19)			-0.649 (0.62)			-1.59 (0.23)	
Goodstrade_GDP		-0.083 (0.31)			-0.122* (0.05)			-0.133* (0.06)	
LNGNIpop			-3.46 (0.32)			0.674 (0.79)			-0.428 (0.89)
ReturnLag			1.38 (0.72)						-0.426 (0.90)
Region Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	51	70	65	50	66	67	51	70	65
Pseudo R-squared	0.129	0.13	0.142	0.142	0.148	0.118	0.147	0.151	0.125

Table 6 – Other Measures of Patriotism. *Domestic equity holdings %* denotes the percentage of a country's holdings that are invested domestically. A country's aggregate equity portfolio is calculated as the market capitalization plus foreign equities held by residents minus domestic equities held by foreigners. *Covariance-Adjusted Home Bias %* is the error term taken from the regression of domestic holdings on covariance of the market with the world market. *CAPM Home Bias %* is calculated as the difference between the optimal CAPM foreign country weight in the portfolio and observed holdings of foreign holdings. *Fight* is the country average answer to the World Values Survey question “Would you fight for your country?” and *Job Priority* is the answer to the question of whether jobs should be allocated to nationals before foreigners. *Barriers* is an indicator of Capital Account Restrictions from the *IMF Exchange Arrangements and Exchange Restrictions Annual Reports*. The *Sharpe* ratio is constructed using five years of prior monthly returns for market indices from Datastream *Info 1* is the sum of contiguous countries market capitalization. *Info 2* is the one-year ahead returns on the country index. *Familiarity* is the percentage of the population that is foreign born, taken from the World Development Indicators (WDI) database. *Patriotism* is the patriotism score from the World Values Survey, detailed in Table 1. P-values are in parentheses and clustered by country. *, **, and *** signifies significance at the 10% 5% and 1% levels.

	CAPM Home Bias		Covariance-Adjusted Home Bias		Domestic Holdings %	
Fight	27.00*** (0.00)		6.78 (0.27)		5.22 (0.45)	
Job Priority		15.58* (0.05)		13.26** (0.03)		14.87** (0.03)
IMF Barriers	3.54 (0.21)	4.35 (0.22)	3.95* (0.08)	2.42 (0.37)	5.03* (0.06)	2.77 (0.34)
Sharpe Ratio	5.83 (0.48)	6.88 (0.24)	-2.79 (0.60)	0.835 (0.88)	14.45 (0.12)	10.35* (0.09)
Info 1: Contingent Mkt	3.68*** (0.00)	1.46* (0.09)	-0.510 (0.14)	-1.04** (0.03)	1.23*** (0.00)	-0.111 (0.85)
Info 2: Future Returns	9.53 (0.33)	5.30 (0.46)	-6.65* (0.10)	-2.01 (0.55)	8.81 (0.31)	4.48 (0.47)
Familiarity: Foreign Pop	-0.947*** (0.00)	-0.357 (0.24)	-0.496*** (0.00)	-0.507* (0.08)	-1.21*** (0.00)	-0.565** (0.04)
Region Fixed Effect	Y	Y	Y	Y	Y	Y
Observations	57	67	46	57	57	67
R-squared	0.164	0.113	0.155	0.132	0.141	0.119

Table 7 – Prais-Winsten Estimation

Domestic equity holdings % denotes the percentage of a country's holdings that are invested domestically. A country's aggregate equity portfolio is calculated as the market capitalization plus foreign equities held by residents minus domestic equities held by foreigners. *Covariance-Adjusted Home Bias %* is the error term taken from the regression of domestic holdings on covariance of the market with the world market. *CAPM Home Bias %* is calculated as the difference between the optimal CAPM foreign country weight in the portfolio and observed holdings of foreign holdings. *Barriers* is an indicator of Capital Account Restrictions from the *IMF Exchange Arrangements and Exchange Restrictions Annual Reports*. The *Sharpe* ratio is constructed using five years of prior monthly returns for market indices from Datastream. *Info 1* is the sum of contiguous countries market capitalization. *Info 2* is the one-year ahead returns on the country index. *Familiarity* is the percentage of the population that is foreign born, taken from the World Development Indicators (WDI) database. *Patriotism* is the patriotism score from the World Values Survey, detailed in Table 1. Rho is estimated first in the two step procedure with a simple time series correlation on errors. P-values are in parentheses and clustered by country. *, **, and *** signify significance at the 10, 5, and 1 percent levels.

	CAPM Home Bias	Covariance-Adjusted Home Bias	Domestic Holdings %
Interpolated Patriotism	12.09*** (0.01)	8.87** (0.03)	9.04** (0.03)
IMF Barriers	3.34 (0.22)	4.28* (0.08)	2.40 (0.29)
Sharpe Ratio	-4.75 (0.39)	-8.71 (0.13)	-3.294 (0.48)
Info 1: Contingent Mkt	1.23 (0.13)	-0.949** (0.03)	-0.178 (0.71)
Info 2: Future Returns	1.11 (0.70)	-0.855 (0.77)	0.174 (0.94)
Familiarity: Foreign Pop	-0.264* (0.07)	-0.390** (0.01)	-0.390*** (0.01)
Observations	78	67	78
Number of Countries	40	33	40
R-squared	0.817	0.847	0.889
Rho (Autocorrelation)	0.374	0.306	0.481

Table 8: Instrumenting the Patriotism Score

2SLS specification. *Ethnoling* is ethnolinguistic fractionalization from Easterly and Levine (1997), and captures the size of the group with which individuals in a country may identify. *Belongcultural* is the WVS score to the question "Tell me whether you are an active member, an inactive member or not a member of an art, music or educational organization?", a measure of social identification at a community level. *Countrysize* is country size from the WDI database captures the squared kilometer land mass size of the country, again a measure of how close people feel to their nationality. *Domestic Holdings %* denotes the percentage of a country's holdings that are invested domestically. A country's aggregate equity portfolio is calculated as the market capitalization plus foreign equities held by residents minus domestic equities held by foreigners. *Covariance-Adjusted Home Bias%* is the error term taken from the regression of domestic holdings on covariance of the market with the world market. *CAPM Home Bias%* is calculated as the difference between the optimal CAPM foreign country weight in the portfolio and observed holdings of foreign holdings. *Barriers* is an indicator of Capital Account Restrictions from the *IMF Exchange Arrangements and Exchange Restrictions Annual Reports*. The *Sharpe* ratio is constructed using five years of prior monthly returns for market indices from Datastream *Info 1* is the sum of contiguous countries market capitalization. *Info 2* is the one-year ahead returns on the country index. *Familiarity* is the percentage of the population that is foreign born, taken from the World Development Indicators (WDI) database. *Patriotism* is the patriotism score from the World Values Survey, detailed in Table 1. P-values are in parentheses and clustered by country. *, **, and *** signify significance at the 10, 5, and 1 percent levels.

<i>First Stage</i>	Coefficient	p-value		
IMF Barriers	0.109*	(0.06)		
Sharpe Ratio	0.190	(0.23)		
Info 1: Contingent Mkt	-0.014	(0.31)		
Info 2: Future Returns	0.039	(0.69)		
Familiarity: Foreign Pop	-0.002	(0.38)		
Ethnoling	0.016	(0.61)		
Belongcultural	-0.032	(0.42)		
Countrysize	0.030	(0.54)		
Ethnoling*Countryize	0.182***	(0.00)		
Belongcultural*Countryize	0.087***	(0.00)		
F – Statistic	8.11	(0.00)		
<i>Second Stage</i>	CAPM Home Bias	Covariance-Adjusted Home Bias	Domestic Holdings %	
Instrumented Patriotism	24.28** (0.02)	13.96* (0.08)	14.01* (0.08)	
IMF Barriers	1.89 (0.68)	3.73 (0.29)	2.12 (0.56)	
Sharpe Ratio	-1.84 (0.85)	-2.28 (0.79)	1.49 (0.83)	
Info 1: Contingent Mkt	1.93*** (0.01)	-0.419 (0.39)	0.26 (0.62)	
Info 2: Future Returns	0.667 (0.91)	-2.11 (0.64)	0.66 (0.89)	
Familiarity: Foreign Pop	-0.218 (0.53)	-0.743*** (0.01)	-0.54** (0.05)	
Observations	60	50	60	
R-squared	0.544	0.593	0.511	

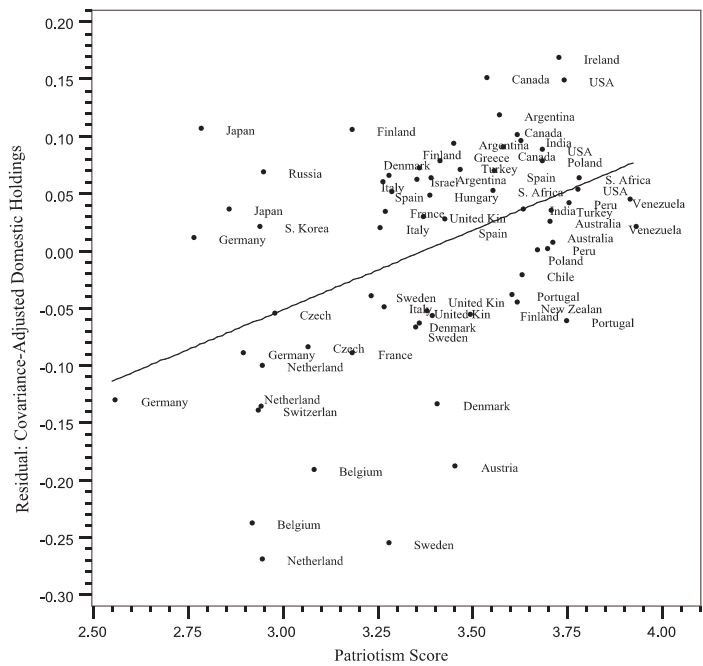
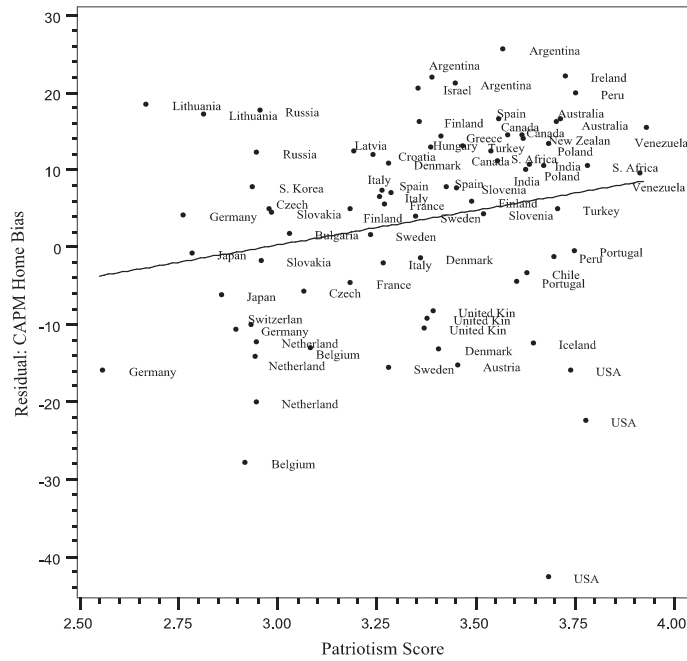


Figure 1. Residuals of *CAPM home bias %* (top) and *Covariance adjusted home bias %* against patriotism. The effects of barriers, diversification benefits, information and familiarity are removed. The plot pools the three survey waves with a survey wave effect also removed.

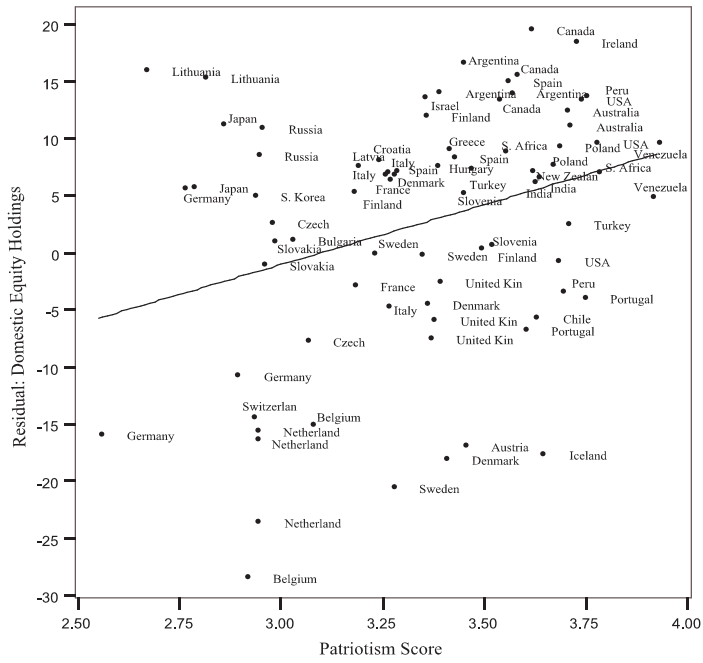
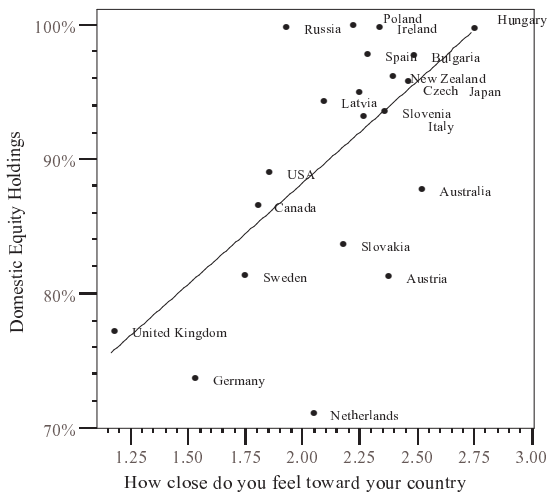
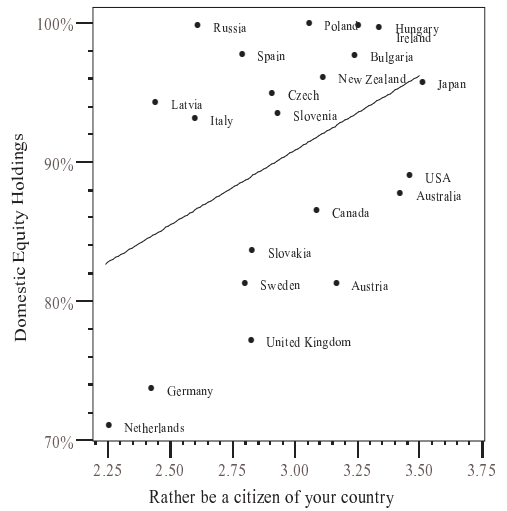


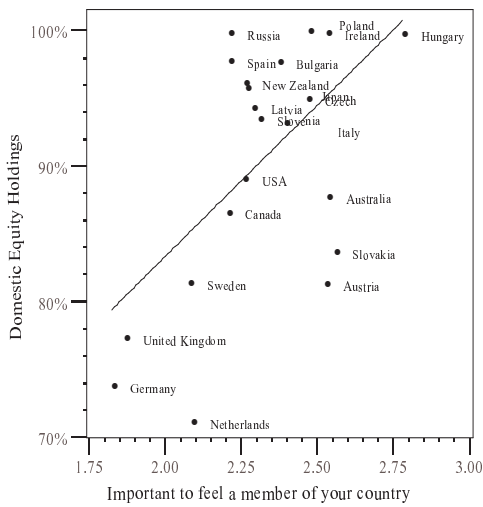
Figure 1. Cont'd: Residuals of *Domestic equity holdings %* against patriotism.



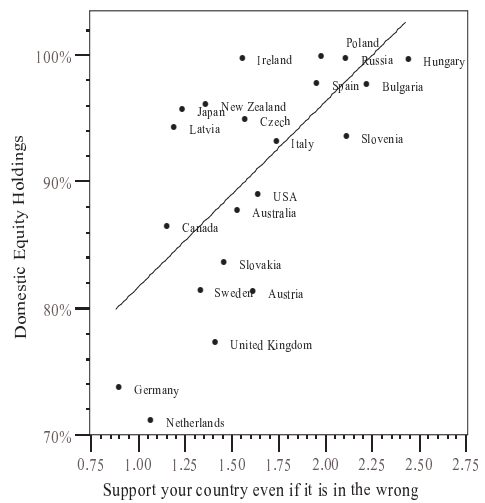
(d) ISSP question 1: “How close do you feel toward your country?”
 $Y = 42.3 + 20.5X$ $t_\beta = 2.79$ $R_{adj}^2 = 0.254$



(e) ISSP question 2: “How much do you agree that you would rather be a citizen of [insert country]?”
 $Y = 83 + 0.98X$ $t_\beta = 0.11$ $R_{adj}^2 = -0.052$



(f) ISSP question 3: “How important is it to feel a member of your country?”
 $Y = 4.6 + 35.2X$ $t_\beta = 3.11$ $R_{adj}^2 = 0.303$



(g) ISSP question 4: “Would you support your country even if it is in the wrong?”
 $Y = 67.0 + 14.7X$ $t_\beta = 3.9$ $R_{adj}^2 = 0.416$

Figure 2. Plot of domestic holdings against the country scores of the four ISSP patriotism variables. Each plot suggests a negative linear relation between domestic holdings and patriotism.

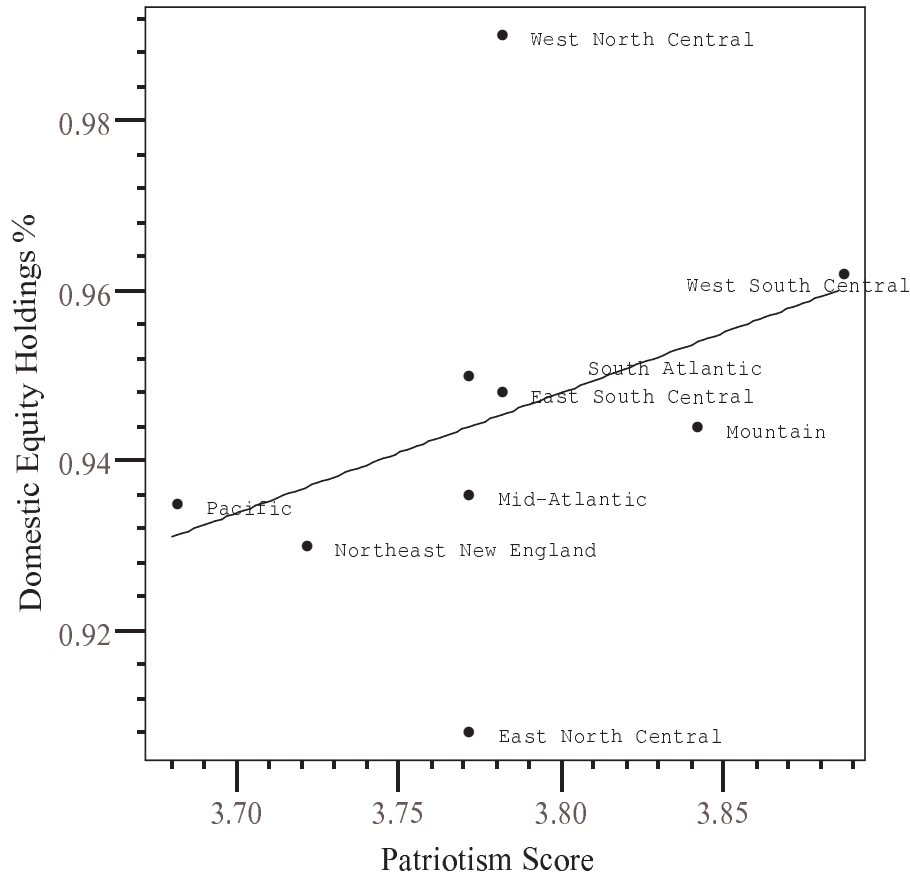


Figure 3. Evidence that varying patriotism within a country affects foreign holdings propensities. Patriotism data is from the 1995-97 WVS for nine regions in the United States and domestic equity holdings are reported in the 1997 Survey of Consumer Finances. We use household income as a proxy for net worth to normalize domestic holdings. The nine U.S. Census regions are:

1. New England Division: CT, ME, MA, NH, RI, VT
2. Middle Atlantic Division: NY, NJ, PA
3. South Atlantic Division: DE, DC, FL, GA, MD, NC, SC, VA, WV
4. East South Central Division: AL, KY, MS, TN
5. West South Central Division: AR, LA, OK TX
6. Midwest: East North Central Division: IL, IN, MI, OH, WI
7. West North Central Division: IA, KS, MN, MO, NE, ND, SD
8. Mountain Division: AZ, CO, ID, MT, NV, UT, WY, NM
9. Pacific Division: AK, CA, HI, OR, WA