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The home bias is here to stay

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ABSTRACT

Over the last 15 years, dramatically decreasing foreign investment costs have not reduced the home bias. We show that the home bias induced by a given cost is proportional to the factor $\rho/(1-\rho)$, where ρ is the average correlation between markets. This factor is very sensitive to the correlation, especially when the correlation is high. Empirically, correlations have been steadily increasing from 0.4 in the 90's to about 0.9 today. Thus, the decreasing extra costs are increasingly magnified, explaining the persistence of the home bias, and predicting its continuation.

1. Introduction

It is well documented that investors exhibit a tendency to grossly overweight the proportion they invest in their domestic market. This phenomenon, known as the home bias, has been shown to hold for both individual and institutional investors, for stocks and for bonds, and for virtually all countries examined (see, for example, French and Poterba (1991), Lewis (1999), Chan et al. (2005), and Vanpée and De Moor (2012)). The home bias seems to imply investment inefficiency, as investors forgo the benefits of international diversification.[2] Several explanations have been suggested for this phenomenon. The main ones are based on various types of extra costs, direct and indirect, associated with foreign investments. These include transaction costs, regulatory constraints, exchange rate risk, and information asymmetries due to barriers to information flow, different accounting standards and corporate culture, and even language barriers[3].

While there is an ongoing discussion about whether the home bias can be fully rationalized by the above extra costs for foreign investments[4], we would like to focus attention on the following puzzling phenomenon. Over the last 15 years the foreign investments costs have decreased dramatically. Direct transaction costs have declined significantly[5], and the internet has revolutionized both the volume and speed of information flow. In addition, there is a continuing trend of unification of accounting standards[6]. Surprisingly, this dramatic reduction in costs has not reduced the home bias. In fact, the home bias has remained remarkably steady, and it is as large today as it was 15 years ago. Fig. 1 documents the magnitude of the U.S. home bias over time. Since 1998 the home bias has leveled-off to about 40%. This persistence of the home bias despite of the dramatic decline in costs seems enigmatic, and it is the focus of the present study.[7]

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[2] The potential gain from international diversification was first discussed by Grubel (1968) and Levy and Sarnat (1970).

[3] See, for example, Black (1974), Solnik (1974), Stulz (1981), Bohn and Tesar (1996), Tesar and Werner (1995), Brennan and Cao (1997), Coval and Moskowitz (2001), Huberman (2001), Chan et al. (2005), Ivkovic and Weisbenner (2005), Kalev et al. (2008), Van Nieuwerburgh and Veldkamp (2009), Beugelsdijk and Frijns (2010), Philips et al. (2012), Cooper et al. (2013), and Fedenia et al. (2013).

[4] For two excellent reviews and analysis, see Lewis (1999), and Karolyi and Stulz (2003).

[5] For example, Cooper and Kaplanis (1994) estimate the extra fees for foreign investments in 1989 as 0.68% per year. Today, the extra foreign investment fees are about one third of this value, at 0.22%. See section 5A for more detail.

[6] As of August 2008, 85 countries around the world require International Financial Reporting Standards (IFRS) reporting (see "SEC Proposes Roadmap Toward Global Accounting Standards to Help Investors Compare Financial Information More Easily", U.S. Securities and Exchange Commission press release, 28 August 2008.). There is also convergence between IFRS and US GAAP standards. See Ball (2006) for a discussion of the convergence of accounting standards and their implications.

[7] Another explanation that has been suggested for the home bias is based on keeping-up with the Joneses preference. If investors care not only about their wealth, but also about their relative standing with respect to the domestic market, it *seems* that this may induce them to increase their exposure to the local market (Lauterbach and Riesman, 2004). While this logic may hold in the case that the correlation between

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Fig. 1. The home bias over time. The figure shows the development of the U.S. home bias over time. The home bias is calculated following the standard practice of using a country's weight in the world market portfolio as the benchmark (see, for example, Chan et al. (2005), Fidora et al. (2007), and Chen and Yuan (2011)). The home bias is taken as $w_i - w_i^*$, where w_i is the average investment proportion of investors from country i in country i, and w_i^* is the weight of country i in the world market portfolio. The proportion of the U.S. market in the world market is obtained from the World Development Indicators of the World Bank (http://data.worldbank.org/indicator). The average domestic investment proportion in the U.S. is taken from the Board of Governors of the Federal Reserve System (http://www.federalreserve.gov/datadownload). It is calculated as the holdings of U.S. investors in the U.S. market (total U.S. market capitalization minus foreign investments in the U.S.) divided by the total investments of U.S. investors (including investments outside the U.S.).While the home bias has decreased from about 65% in the 80's to about 40% in 1997, it has since persisted at this high level, despite of the dramatic reduction in foreign investment costs. A similar pattern of a persisting home bias is obtained if one employs alternative measures of the home bias, such as w_i/w_i^* or $\log(w_i/w_i^*)$.

We show that the effect of foreign investments extra costs (or reciprocally, the home-advantage of domestic investments) on the optimal portfolio allocation depends crucially on the average correlation between markets. The additional foreign investment costs relative to the domestic investment cost can be manifested as lower net expected returns to investments in foreign markets (due to transaction costs or information asymmetries, for example), as a higher variance of these returns (due to lower information quality and exchange-rate risk, for example), or as a combination of both. We show that the effect of both of these types of extra costs on the home bias is proportional to the factor $\rho/(1-\rho)$, where ρ is the correlation between markets. We therefore call this term the "Home Bias Magnification" (HBM) factor:

$$\text{HBM} \equiv \rho/(1-\rho).$$

This result implies that a given cost will have a home bias effect proportional to $0.5/(1-0.5) = 1$ if the correlation is $\rho = 0.5$, but an effect that is 9 times larger if the correlation is $\rho = 0.9$ $(0.9/(1-0.9) = 9)$, and 19(!) times larger if the correlation is $\rho = 0.95$ $(0.95/(1-0.95) = 19)$. This extreme correlation dependence is practically very relevant to the home bias persistence puzzle, as the average correlation between international markets has risen from about 0.4 in 1990 to about 0.9 today. This increase is systematic, and is primarily due to the liberalization of foreign investment regulation and capital account openness (Quinn and Voth, 2008). Fig. 2 depicts the growth of the average correlation over time (panel A), and the corresponding growth of the HBM factor, $\rho/(1-\rho)$, in panel B. We argue that this increased magnification offsets the decreasing foreign investment extra costs, resulting in the persistence of the home bias. We will show that the persisting 40% U.S. home bias can be rationalized by the increasing correlations, even with the prevailing low extra foreign investment costs.

The findings in this paper complement and extend the results of Quinn and Voth (2008) and Levy (2013), who show that the increasing correlations imply a significant reduction in the benefits of international diversification. Quinn and Voth who study the reasons for the increasing correlations note:

> "If markets fluctuate in parallel, the advantages of moving money into overseas markets will be much smaller than previously thought – the "home bias" may be smaller than advertised." (p. 535)

Levy (2013) quantifies this statement and shows that a bounded-rational investor who does not diversify internationally does not lose much when correlations are as high as they are today. However, one could argue that a rational investor should take advantage of the international diversification benefits, even if they are not very large. Here we show that even perfectly rational investors *should* optimally invest much more domestically, because of the small home-advantages (due to even minor extra foreign investment costs) that are magnified by the high correlations.

A comment about terminology: the observation that investors tilt their portfolios toward their domestic market is typically termed a "home bias". Studies suggesting rational explanations for this phenomenon, including the present paper, imply that the increased domestic investment is actually *not* a bias at all – it is the result of rational optimization by investors who face various economic advantages to investing domestically. Yet, it is common in the literature to use the term "home bias" to describe the increased domestic investment, whether this is rational or not. To avoid confusion, we will use the standard term "home bias" for the empirically observed phenomenon, but will use Increased Domestic Investment (IDI) for the theoretically rationalized domestic tilt. The main message of this paper is that the IDI has remained high, even though the extra costs associated with foreign investments have dramatically reduced, and this is because of the increase in the correlations. Thus, one *should* rationally tilt investment toward his domestic market.

The structure of the paper is as follows. In the next section we derive analytical results for the magnification factor in the simplified case of two markets. The two market case is important as there is only one correlation and there is no need to make any assumption about the correlation matrix. In Section 3 we extend the results to the more general case of N markets. To convey the main idea of this study and to simplify the mathematical analysis, in this section we make the assumption of equal correlations

the domestic and foreign markets is low, it no longer generally holds when the correlation between the markets is high, and the foreign market is more volatile than the domestic market (which is the realistic case, because of the effects of exchange-rate risk, see Section 5). To see this, consider Galí's (1994) classic keeping-up preference $u(c,C) = \frac{1}{1-\alpha}c^{1-\alpha}C^{\alpha\gamma}$ where c is the person's own consumption, C is the consumption of the reference group ("the Joneses"), and $0 < \alpha, \gamma < 1$. For the case $\gamma = 0$ this reduces to the standard univariate CRRA function, and the keeping-up with the Joneses motive disappears. In the context of international investments, the reference group is taken as the total return in the investor's domestic market, $\widetilde{R}_D$, and the expected utility can be written as: $EU = \frac{1}{1-\alpha}E[\widetilde{R}_P^{1-\alpha} \cdot \widetilde{R}_D^{\alpha\gamma}]$, where $\widetilde{R}_P$ is the total return on the investor's portfolio. If the investor invests a proportion x in the domestic market and a proportion $1-x$ in the foreign market, then $\widetilde{R}_P = x\widetilde{R}_D + (1-x)\widetilde{R}_F$. The following numerical example illustrates that keeping-up with the Joneses preferences can actually *decrease* the home bias, rather than increase it. Suppose that in one state of the world the return in the domestic market is −10%, and the return in the foreign market is −50%. In the second state of the world the return in the domestic market is 20%, and the return in the foreign market is 80%. The two states are equally likely. Assume that $\alpha = 0.8$. If $\gamma = 0$, the investor has no keeping-up motive, and his optimal proportion in the domestic market is numerically found to be 77%. However, if the investor does have a keeping-up motive and $\gamma = 0.8$, the optimal proportion in the domestic market is only 53%. Thus, keeping-up preferences can actually decrease the proportion invested domestically. While in the above simplified example the correlation between the two markets is 1, the same result holds in the case of $\rho < 1$ and with more than two markets.

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