Full length article

Equity home bias—A global perspective from the shrunk frontier

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A B S T R A C T

Equity home bias research explicates the need for correct characterisation of benchmark (optimum) foreign equity investment weights required for the estimation of equity home bias. This paper improves upon the traditional mean–variance optimisation framework by utilising the Bayes–Stein shrinkage technique to obtain optimal equity weights and home bias estimates for 39 countries for the period, 2000–2009. A regression model estimated with system GMM identifies financial integration, trade openness (exposure), stock market capitalisation, idiosyncratic risk and Global Financial Crisis (GFC) as the significant determinants of equity home bias. Unlike earlier studies, the relationship between home bias and financial integration is found to be U-shaped.

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1. Introduction

Despite well-theorised and documented gains from international diversification, investors in international financial markets display a strong preference for domestic equities. In their seminal paper, French and Poterba (1991) find that 98 percent of Japanese equity holdings are domestic; the UK and the US investors hold respectively 82 and 94 percent of domestic equities. A recent survey conducted by Schroder Investment Management Germany reveals that amongst the 112 respondents (consisting of insurers, banks, family offices and pension funds), 90% want to purchase German assets (Schroder, 2012). This skewing in equity portfolio holdings, seemingly contravening the postulated benefits of financial globalisation and integration, is referred to as (equity) “home bias”.

A number of recent studies, e.g., Magi (2009), Barberis and Huang (2009), Barberis et al. (2006) and Barberis et al. (2001) have provided a plausible explanation for the observed home bias puzzle (aggregate portfolio behaviour) in a framework where economic agents have behavioural (narrow framing) preferences. A representative agent derives utility not only from consumption but also from risky financial wealth fluctuations. Individuals’ cognitive skills, as argued in Christelis et al. (2010), may strongly affect investors’ financial choices. These skills are closely related to the ability to process information, implying that cognitive skills act as an additional constraint that optimising individuals face when making their financial decisions. As a result of investor’s limited capabilities of processing information, the foreign asset (equity) is perceived

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less attractive than it would be if the investor had optimal information skills and were able to evaluate the domestic and foreign risky assets jointly. The investors with poor capabilities of processing information do not diversify their financial investments.

Despite this and other explanations, the equity home bias is still one of the most pervasive and unresolved empirical puzzles in financial economics. Needles to emphasise, the puzzle explicates the need for research on a correct characterisation of benchmark (optimum) foreign equity investment weights against which actual equity investment holdings can be compared. The existing approaches to estimating benchmark optimal weights can be classified into three analytical streams. The first is the International Capital Asset Pricing Model (ICAPM) driven approach which specifies benchmark weights as the proportion of each asset's (country's) share of the world equity market portfolio. The second is the data based mean–variance (MV) optimisation driven approach which uses sample estimates of the mean and covariance matrix of asset returns as inputs for estimating benchmark weights. The third is a mixed modelling approach which interfaces Bayesian inference with asset allocation models for benchmark weights estimation.

The ICAPM is often questioned on the basis of the restrictive assumptions like information symmetry and the absence of transaction costs that underlie capital asset pricing models (See, eg, Sendi and Bellalah, 2010). The data based approach of the MV optimisation framework is hindered by its reliance on the quality of the necessary inputs which are the sample moments of the returns data. Since the true values of these input parameters are seldom known, investors have to rely on estimates which are notoriously unreliable (Pungulescu, 2010). The mixed modelling Bayesian approach addresses the limitations of the ICAPM and mean–variance approaches through the portfolio allocation frameworks developed by Pastor (2000) and Garlappi et al. (2007). Pastor introduces varying degrees of mistrust in the ICAPM for investigating the extent of corresponding variance in optimal portfolio weights. As the degree of mistrust in the ICAPM increases, the resulting estimates of optimal weights move closer to the data based approach and away from that of the ICAPM. As compared to the purely data based approach of mean–variance framework, the optimal weights estimated through Pastor’s approach are more stable over time, although extreme and volatile weights are still possible. Garlappi et al. adopt a multi-prior approach to address the optimal weights volatility problem. They utilise estimation risk by restricting expected asset returns in the standard mean–variance framework to lie within a specified confidence interval around its estimated value.

This paper contributes to the mixed modelling approach by introducing the Bayes–Stein shrinkage to the standard mean–variance (MV) framework. The Bayes–Stein shrinkage approach to MV optimisation focusses on yielding improved portfolio allocation weights by statistically lowering estimation uncertainty through the “shrinkage” of sample averages towards a common value. This methodology is used to obtain optimal equity weights and thereby home bias estimates for 39 countries for the period 2000–2009. The estimates of equity home bias obtained through the shrinkage technique vary across countries and over the years. The estimates of home bias for some developed economies show a declining trend as opposed to an increasing trend observed for some emerging economies. The equity home bias averaged over the sample period is quite high (0.7475) for the emerging economies whereas for the developed economies it is low (0.4604).

The paper also makes an attempt to explain the observed home biases by relating them to a comprehensive set of explanatory variables in a regression model. The model is estimated with the System GMM. The model identifies financial integration, trade openness (exposure), stock market capitalisation, idiosyncratic risk and Global Financial Crisis (GFC) as the significant determinants of equity home bias. The relationship between home bias and financial integration is found to be U-shaped. Initially, when the correlation of returns across financially non-integrated geographical markets is low, financial integration provides opportunities for efficient international portfolio diversification and thereby reduces equity home bias. However, with increasing financial integration and higher covariance of domestic and global equity returns, the opportunities for efficient international equity investment diversification decline. This non-linear relationship between equity home bias and financial integration to our knowledge has not been explored in any of earlier empirical studies.

The paper is organised as follows. Section 2 formally defines equity home bias. Section 3 provides the analytical framework for implementing the Bayes–Stein shrinkage procedure for optimal equity investment weights estimation. Section 4 provides a brief description of data and discusses the estimates of optimal investment weights and equity home bias. Section 5 is devoted to estimation of a regression model to investigate the potential determinants of equity home bias. Section 6 brings together the conclusions.

### 2. Equity home bias—A definition

Equity Home Bias (EHB) is defined as the relative difference between the actual and optimal foreign equity portfolio weights, denoted by $ACT_i$ and $OPT_i$, respectively.

$$EHB_i = 1 - \frac{ACT_i}{OPT_i}$$

The share of foreign equity in the total equity portfolio of a country is the share of foreign equity holdings ($FA_i$) in the total (foreign and domestic) equity holdings. The domestic equity holdings are obtained as the difference between the market capitalisation of the country ($MC_i$) and the total domestic equity stocks held by foreign investors ($FL_i$). Thus,

$$ACT_i = \frac{FA_i}{FA_i + MC_i - FL_i}$$

Zellner (2010) notes that “Bayesian shrinkage à la Stein and others can improve estimation of individual parameters and forecasts of individual future outcomes”.

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