Foreign bias in Australian-domiciled mutual fund holdings

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A R T I C L E   I N F O

A B S T R A C T

The paper employs International Capital Asset Pricing (ICAPM), Mean-variance, Global minimum variance, Bayes–Stein, Bayesian and Multi-prior models to develop foreign equity bias measures for 1414 Australian domiciled mutual funds, which invest in 41 countries worldwide. The Bayesian foreign equity measures, which take into account various degrees of mistrust in ICAPM, suggest that Australian domiciled mutual funds prefer investing in US, UK, Japan, France and Germany. The plausible sources of foreign equity bias are found to be GDP per capita, GDP growth rate, exchange rate volatility, tax, stock market development, familiarity, institution and stock characteristic variables.

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1. Introduction

In international finance there is a large literature on foreign bias,[1] the extent to which investors underweight or overweight foreign markets in their mutual fund holdings. This paper develops measures of foreign equity bias for Australian-domiciled mutual fund holdings in 41 countries,[2] using international capital asset pricing (ICAPM), mean-variance, global minimum variance, Bayes–Stein, Bayesian and multi-prior approaches.

In foreign bias studies, actual portfolio holdings are compared against a benchmark. Depending upon the benchmark weights, there are two approaches to foreign bias studies: model-based and return-based. In the first of these, the ICAPM benchmark is characterised by the weight of a country in world market capitalisation; it ignores returns. The data-based approach uses time series of returns and computes benchmark weights from a mean-variance optimisation.[3] These approaches give different benchmark weights, and accordingly foreign bias measures are quite different. The Bayesian framework considers both the ICAPM asset-pricing and the mean-variance data-based approach.

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[1] See Cooper et al. (2012) for an excellent review on foreign bias.

[2] Argentina, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Israel, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Pakistan, Philippines, Poland, Portugal, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UK and US.

[3] Hasan and Simaan (2000) show that home bias is consistent with rational mean-variance portfolio choice.

In 2014 Australia's major portfolio equity investment destinations were US (46%), UK (10%), Japan (4.5%).[4] Australia's dispro-portionate investment in these three countries may be interpreted as foreign bias. Australia's A$2.4 trillion investment managed industry is third largest in the world and largest in the Asian region.[5] This is the first paper that specifically studies foreign bias in Australian-domiciled mutual fund equity holdings across a range of developed and developing countries.[6]

The paper makes several contributions: firstly, it is the first paper to develop measures of foreign equity bias for Australian-domiciled mutual fund holdings that take into account the scepticism of investors in the ICAPM model. There are few papers in the global context that employ a Bayesian approach and take investors' scepticism into account in the ICAPM model (Asgharian and Hansson, 2006; Baele et al., 2007; Li, 2004; Pastor, 2000; Pastor and Stambaugh, 2000; and others). Secondly, this paper develops foreign bias measures for Australian-domiciled mutual fund holdings based on the multi-prior model's vola-tility correction technique, introduced by Garlappi et al. (2007). Bayesian portfolio weights are more stable than those of a data-based approach, but there may still be extreme and volatile weights. Garlappi et al. (2007) tackle the problem of volatile data by extending the mean-variance framework to incorporate investors' aversion to uncertainty about the estimate of mean returns.[7] Thirdly, this paper develops foreign equity bias measures for Australian-domiciled mutual fund holdings based on the Bayes–Stein shrinkage estimator that minimises the impact of estimation error by shrinking the sample mean towards the global min-imum variance portfolio, improving the precision associated with estimating the expected return of each asset. The improved es-timation of expected returns results in improved out-of-sample performance.[8] Fourthly, this paper identifies the plausible sources of foreign equity bias in Australian-domiciled mutual fund holdings. In a dynamic panel setting over the period 2002–2011, it re-lates the various measures of foreign bias to six categories of variable: economic development (trade, gross domestic product per capita, real gross domestic product growth rate, credit rating), stock market development (size, foreign listing, transaction cost), familiarity (language, internet user), institution (control of corruption, government effectiveness, rule of law, investment profile, legal system), stock characteristics (annual return, price to book ratio) and other variables (real exchange rate volatility, correla-tion, tax, global financial crisis, developed market dummy). The empirical estimation employs Arellano–Bover/Blundell–Bond lin-ear dynamic panel-data methods to account for country-specific heterogeneity and to control for simultaneity bias caused by the possibility that some of the explanatory variables are endogenous.[9] Finally, this paper takes into account the period of global fi-nancial crisis, during which cross-border equity holdings fell significantly in 2008 andrecovered (partly) in 2009.[10]

Few papers focus on bias in individual countries such as US (Ahearne et al., 2004), Japan (Kang and Stulz, 1997), Sweden (Dahlquist and Robertsson, 2001), Finland (Grinblatt and Keloharju, 2001). This paper is different in focusing exclusively on for-eign bias in Australian domiciled mutual fund holdings. It also differs from the work of Chan et al. (2005) and Ahearne et al. (2004). Chan et al. (2005) focus on 2-year data on the equity holdings of mutual funds from 26 different countries and use tra-ditional ICAPM measures to compute optimal foreign weights. Their econometric estimation is based on ordinary least squares regression. Ahearne et al. (2004) use one year (1997) data on US residents' holdings of foreign securities to develop an ICAPM traditional home bias measure. I develop foreign bias measures for 1414 Australian domiciled mutual funds which invest in 41 countries, using 10-year data. My paper uses various measures including ICAPM, mean-variance, global minimum variance, Bayes–Stein, Bayesian and multi-prior to compute optimal foreign weights. The empirical estimation employs the Arellano–Bover Blundell–Bond dynamic panel-data method to take into account country-specific heterogeneity and to control for simulta-neity bias.

What are the various measures of foreign equity bias in Australian-domiciled mutual fund holdings? What are the plausible sources of foreign equity bias? What is the impact of a global financial crisis on foreign equity bias in Australian-domiciled mutual fund holdings? This paper finds that gross domestic product per capita, real gross domestic product growth rate, credit rating, real exchange rate volatility, global financial crisis, familiarity, institution and stock market characteristic variables have a significant impact on foreign bias.

The next section discusses the literature review. Section 3 gives an overview of Australian-domiciled mutual fund holdings and discusses various foreign bias and optimal portfolio weight models. Section 4 describes data and variables. Section 5 discusses the validity of ICAPM and foreign bias measures. Section 6 discusses the methodology and empirical results, and Section 7 concludes.

2. Literature Review

Cooper et al. (2012) provide an excellent review of home bias literature, and describe positive and normative approaches to measuring home bias. In the positive approach, the equity home bias measure of a country is computed as the difference between

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[4] See International Investment Position Australia, Supplementary Statistics, 2015.

[5] See Australian Bureau of Statistics (2014); Investment Company Institute, Worldwide Mutual Fund Assets and Flows, Second Quarter, 2014.

[6] Mishra (2011) studies home bias that relies on the ICAPM approach. Warren (2010) examines equity home bias for Australia superannuation funds using a model that reflects observed decision processes.

[7] Knight (1921) states that the Bayesian decision maker is neutral to uncertainty.

[8] See Stein (1955); Berger (1974); Gorman and Jorgensen (2002); Herold and Maurer (2003); Ledoit and Wolf (2003); Wang (2005); Zellner (2010) for the shrink-age approach.

[9] Ahearne et al. (2004) and Chan et al. (2005) use pure cross-sectional analysis.

[10] UK foreign equity holdings were US $1,508,710 million in 2007; this fell to US $824,018.5 million in 2008 and partly recovered to US $1,079,254 million in 2009. US equity holdings abroad were US $5,247,983 million in 2007, which fell to US $2,748,428 million in 2008 and partly recovered to US$3,995,298 million in 2009.