



International equity portfolio allocations and transaction costs

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ARTICLE INFO

Article history:

Received 1 September 2009

Accepted 8 May 2010

Available online 13 May 2010

JEL classification:

G11

G15

F12

Keywords:

Portfolio diversification

International equity allocation

Transaction costs

Developed and emerging markets

Panel data models

ABSTRACT

In spite of the critical role of transaction cost, there are not many papers that explicitly examine its influence on international equity portfolio allocation decisions. Using bilateral cross-country equity portfolio investment data and three direct measures of transaction costs for 36 countries, we provide evidence that markets where transaction costs are lower attract greater equity portfolio investments. The results imply that future research on international equity portfolio diversification cannot afford to ignore the role of transaction costs, and policy makers, especially in emerging markets, will have to reduce transaction costs to attract higher levels of foreign equity portfolio investments.

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1. Introduction

There is extensive research documenting the gains from the diversification of domestic portfolios internationally. Grubel's (1968) study is accredited as the first to suggest that by including foreign securities, investors are able to achieve a lower variance in returns from the internationally diversified portfolio because of the less than perfect correlations amongst different stock markets around the world. Subsequent research by Solnik (1974) and more recently by Driessen and Laeven (2007) support the view that diversifying internationally helps in improving a portfolio's risk/reward ratio. Although Jorion (1985) challenges the *ex post* gains reported by earlier studies, Eun and Resnick (1988) find that, even after controlling for exchange risk, an internationally diversified portfolio significantly outperforms a portfolio that is invested in only US securities.

However, in spite of the overwhelming evidence on the gains from diversifying internationally, Cooper and Kaplanis (1994) show that investors tend to invest a disproportionately high share in domestic assets. In the literature, the tendency of investors to invest a greater proportion of a portfolio in domestic securities is commonly known as home bias. More recently, Chan et al.

(2005) investigate the factors which determine international asset allocations and find that mutual funds demonstrate foreign bias by underweighting and overweighting foreign markets. Further, Gelos and Wei (2005) show that international investment funds display wide variations in allocating weights to foreign markets based on the level of a country's transparency. Evidence of home bias and foreign bias provided by previous research thus far suggests that there are several direct and indirect barriers to international investments. These barriers arise, for instance, from discriminatory taxes, different legal status accorded to foreign investors in terms of ownership restrictions, differences in accounting and information disclosure standards and investor protection regulations, capital controls and transaction costs.¹

The consumption and portfolio choice model developed by Rowland (1999) shows that as the magnitude of transaction cost increases, the rate of portfolio diversification decreases. This implies that despite the well known benefits of international diversification, investors may underweight those countries where the transaction costs are high. Of course, the investor's decision to allocate a greater proportion of capital to domestic securities may be influenced by home bias as they may feel that they are informationally disadvantaged while investing in foreign markets. However, if we control for home bias as well as for factors that have

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¹ Bekaert and Harvey (2003) suggest that despite liberalization of financial markets, there are still many barriers to investing internationally.

been found important in international diversification literature, we should be able to demonstrate whether transaction costs significantly influence the international equity portfolio allocations. By using a comprehensive dataset of bilateral cross-country foreign equity portfolio holdings and four different measures of transaction costs for 36 countries, this paper examines whether different components of transaction cost significantly influence international investors' decisions to underweight or overweight country allocations.

The role and importance of transaction cost in investments is not trivial. Keim and Madhavan (1995) suggest that transaction costs are important in determining investment performance and may significantly diminish or possibly outweigh the expected value generated by an otherwise good investment strategy. Amihud and Mendelson (1986) suggest that assets with high transaction costs usually trade at a lower price relative to their expected cash flows. Similarly, Green et al. (2000) using a long dataset on the UK stock market suggest that the increase in transaction costs also generally increases market volatility, which is probably through the thin trading effect. They suggest that emerging markets must get the level of transaction cost right in order to influence their market volatility. Further, they note that emerging markets should not only focus on stamp duty but must also concentrate on other forms of transaction cost. De Roon et al. (2001) find that for US investors investing in emerging markets, the diversification benefits disappear when short selling and transaction costs are incorporated. Solnik and McLeavey (2004) note that the impact of transaction costs is often disregarded in active global portfolio management and to the extent diversification benefits may reduce portfolio risk; the incorporation of transaction costs could reduce the expected returns.

In spite of the critical role of transaction cost acknowledged by previous studies, very few examine its influence on international portfolio investment decisions. Chan et al. (2005) use the transaction cost data of Elkins/McSherry Co. in examining how mutual funds of 26 developed and developing countries allocate their investment between domestic and foreign equity markets. However, they do not analyse the impact of each component (i.e., commission, fees, and market impact) that make up the Elkins/McSherry Co. transaction cost measure. Gelos and Wei (2005) merely control for transaction cost by using average turnover ratio as a proxy in examining how their newly constructed measures of transparency affect the investment choices of the emerging market equity funds. The apparent lack of research on the impact of transaction costs on international portfolio allocations is mainly due to the unavailability of cross-border bilateral portfolio holdings data on a country by country basis. In this research, we use bilateral country by country portfolio holdings data that have recently been made available by the International Monetary Fund (IMF) and provide evidence of the extent to which portfolio allocation choices are influenced by transaction costs.

Our study makes a number of important contributions to the existing literature. First, while controlling for the home bias phenomenon we examine the role of transaction costs in demonstrating why certain countries receive higher or lower levels of foreign equity portfolio allocations than others. Second, unlike previous studies on international portfolio allocations, we control for market microstructure effects by capturing the rate of information flow and industrial diversity of the equity markets. Existing research ignores the role of real effective exchange rates on portfolio investment decisions. In this study, instead of using a bilateral effective exchange rate, we use a broad based trade weighted real effective exchange rate which is a much better measure of exchange rate risk. Third, we use an extensive dataset comprising bilateral portfolio holdings for 36 developed and developing countries over a recent time period of 2001–2006 with 562 bilateral cross-sectional

units and 3290 observations which enable us to comprehensively examine our research hypotheses. Finally, in contrast to most previous studies that use a cross-sectional approach, we test our hypotheses robustly by using random and fixed effect models within a panel-data framework.

The results show that all three direct measures of transaction cost (commission, fees and market impact) distinctly and significantly affect investment allocation choices, and that countries with lower transaction costs seem to attract greater foreign equity portfolio investment. There are two important implications of this result. First, future research on international portfolio diversification cannot afford to ignore the role of transaction cost in country allocation decisions. Second, national policy makers should aim to reduce transaction costs to attract higher levels of foreign equity portfolio investments.

The rest of the paper is organised as follows. The next section explains the theoretical framework that provides a basis for our empirical work. Section 3 explains the data, various controlling variables and methodology used in this study. Section 4 presents and discusses the results of panel data analysis and Section 5 concludes the paper.

2. Barriers to bilateral cross-country equity investments: theoretical framework

An alternative approach to optimize the country allocation could be based on net equity returns which largely depend on the trading frequency and whether trading costs are stable over time.² However, this is not a realistic assumption as the transaction costs would vary significantly over the sample period of six years (2001–2006) used in this paper. For example in the case of Malaysia, we find that there is a considerable temporal variation in transaction costs and these appear to reduce over time.

We use the theoretical framework of Cooper and Kaplanis (1986) which suggests that in the presence of deadweight costs international investors do not hold the world market portfolio as is assumed in the International Capital Asset Pricing Model (ICAPM). In the Cooper and Kaplanis (1986) model, each investor is assumed to be a mean-variance risk-averse investor who is interested in maximizing returns for a given level of variance. Therefore, the optimization problem is described as:

$$\text{Max}(w_i'R - w_i'C_i), \quad (1)$$

subject to

$$w_i'Vw_i = v,$$

$$w_i'I = 1,$$

where w_i is a column vector of foreign portfolio weights whereby the j th element corresponds to the weight of individual i 's total wealth invested in risky assets of country j . R denotes the column vector of pre-tax expected returns and c_i is the column vector of the deadweight cost of investor i . The j th element of c_i is c_{ij} which is the deadweight cost for holding the asset in country j . V is the variance/covariance matrix of the gross (pre-cost, pre-tax) returns on the risky assets with v being the constant variance and I is a unity column vector. The objective of the investor is to optimize Eq. (1) given the two constraints. Eq. (1) can be maximized using the Lagrange method:

$$L = (w_i'R - w_i'C_i) - \left(\frac{h}{2}\right)(w_i'Vw_i - v) - k_i(w_i'I - 1), \quad (2)$$

² We thank the anonymous referee for this point. Chan et al. (2005) assume that transaction costs remain stable over time. However, such an assumption is only valid where cross-sectional data analysis is used. We do not report data showing temporal variations in transaction costs but these can be made available on request.

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