SCIENFITIC REVIEW

"Home Bias Puzzle". Is It a Puzzle or Not?

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ABSTRACT *– The benefits of international diversification have been well documented over the last decades. Despite this however, investors seem unwilling to exploit this opportunity in order to limit the risk of their portfolio and they continue to invest the largest percentage of their wealth in domestic assets. This phenomenon is called the Home Bias Puzzle and the given explanations for it have not been empirically proven to justify its existence.*

The purpose of this paper is to present a literature review on the opinions and possible explanations about the home bias puzzle. Furthermore, concluding, it will try to answer whether the home bias puzzle is a puzzle or not.

KEY WORDS: *home bias puzzle, international finance*

Introduction

Harry Markowitz (1952) was the first to identify the benefits of investing in a portfolio of assets rather than just in one asset. Markowitz's mean variance portfolio theory was based in two principles, holding constant variance and maximizing expected return, or inversely holding constant return and minimizing variance. According to these two principles, an efficient frontier was constructed and an investor could choose his preferred portfolio on the basis of his own risk and return preferences. Grubel (1968) extended Markowitz's portfolio theory suggesting that portfolios should diversify internationally. Also, Levy and Sarnat (1970) showed that correlations among security returns are the key element for reducing risk. When correlations among securities are low, investors could substantially reduce the systematic risk. International diversification principles state that the correlation among international markets are low so one could diversify its portfolio more effectively than just domestically, i.e. the investors could succeed the same or higher returns with lower risk. However, as relevant research shows, investors do not diversify their portfolios internationally and if they do, they do it in a small percentage. The investors' behavior of investing heavily in domestic assets instead of diversifying their portfolio internationally is called the home bias puzzle. Some of the possible explanations given for the home bias puzzle are: inflation hedging motives, institutional barriers, taxes on international investments and transaction costs, non traded goods, asymmetric information and others. However none of the given explanation has been proved to explain entirely this puzzle.

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The Home Bias puzzle

Over the last years, barriers and costs in international investments have fallen dramatically. Thus, one would expect that investors would take advantage of it and diversify their portfolio internationally and hold the world market portfolio of stocks. However, this is not the case, foreign ownership of equity remains rather low. French and Poterba (1991), Cooper and Kaplanis (1994) and Tesar and Werner (1995) show that there still a strong home bias in investors' behaviour. According to French and Poterba (1991) the domestic ownership shares in the 1989 for the world's five largest stock markets were: US 92.2%, Japan 95.7%, UK 92%, Germany 79% and France 89.4%. The question arising at this point is why investors heavily concentrate their investments in domestic assets, since international diversification offers significant benefits to the limitation of a portfolio's risk. Over the years, many researchers have tried to answer that question and to provide a logical and supported solution for the existence of the home bias puzzle. However, none of the given explanation has been proved to be the correct one. The most common explanations for this attitude of the investors are: asymmetric information, non traded assets, inflation hedging, several costs and barriers in equity trading, differences in expectations and empirical measurement problems.

Differences in expectations and asymmetric information

A possible explanation of the home bias puzzle is investors' behaviour and beliefs. French and Poterba (1991) suggested that one possible reason for the home bias of investors is their optimism. Their optimism that can beat their domestic market but not the foreign market or that can hedge inflation risks. Similarly, investors are pessimistic as regarding foreign markets. Furthermore, their perception of foreign markets as riskier, because of the lack of information they have on them, drives investors to heavily invest in domestic assets.

The last one is the hypothesis of asymmetric information and states that investors invest in the securities they know more about. As Solnik (1996) suggested, everything unknown is perceived as risky. The same stands for financial markets which investors are not familiar with. So, if investors do not hold enough information about a market, they simply won't invest to it. Gehrig (1993), introducing a simple noisy rational expectations model, showed that even in equilibrium, investors remain incompletely informed. Furthermore, foreign assets seemed to be riskier than the domestic ones even without the foreign exchange rate risk. For this reason, according to the researcher, investors prefer to heavily invest in domestic assets and that is what generates the home bias puzzle. Other researches supporting that asymmetric information plays an important role in risk perception are those of Kang and Stulz (1997), Brennan and Cao (1997) and Coval and Moskowitz (1999).

Coval and Moskowitz (1999) extended the home bias phenomenon to domestic portfolios as well. They suggested that domestic investors prefer to invest to companies close to them. More specifically, according to their research, US fund managers seem to be willing to invest more in locally headquartered firms. That is because managers had more information on these companies rather than on firms located in other states. So, asymmetric information plays an important role in the investing preferences of even among local and non-local investors.

Similarly, Brennan and Cao (1997) developed a model of equity portfolio flows that was based in informational differentials among domestic and foreign investors. More specifically they used a dynamic generalization of the noisy rational expectations model of Hellwing (1980), developed to a multi-asset setting by Admati (1985). The main assumption of the model was that domestic investors are more informed about the domestic market than foreign investors. As the previous researchers, Brennan and Cao suggested that asymmetric information plays an important role in risk perception and portfolio formulation.

Another research by Kang and Stulz (1997) showed that foreign investors in Japan prefer to invest in well- know manufacturing firms, large firms, and firms with good accounting performance and low leverage instead of holding the Japanese market portfolio. The researchers took data for the period 1975-1991 on Japanese firms. Their results indicated that foreign investors, investing in Japan, hold 13.7% more in manufacturing firms than in the market portfolio, even though their returns were not greater than those of the market portfolio. Furthermore, the volatility of their monthly return was 5.38% instead of 4.81% of the market portfolio. This phenomenon occurs because foreign investors do not have the same amount of information for the domestic companies as domestic investors have, and especially regarding small firms. So, foreign investors tend to invest more on firms that are relatively known and export their products even though these firms might be more risky and less performing than the market portfolio.

Non traded goods

Another possible explanation of the home bias puzzle is that the presence of non-tradable goods leads investors to bias their portfolios to domestic assets. Non-tradable goods account approximately for 50% of aggregate consumption in modern economies. Serat (1995) developed a continuous-time dynamic equilibrium model with two agents in complete markets, two tradable goods and two non-tradable goods. Serat's results indicated that the agents hedge consumption risk of non-tradable by investing in home tradable goods. That, according to the researcher, explains the home bias of the investors.

Baxter and Jermann (1997) suggested that hedging for human capital risk can be a factor, though not so important, for the home bias of investors. According to them, human capital represents a large proportion of national income and is likely to be highly correlated to the returns of the domestic marketable assets. Furthermore, their results suggest that diversified portfolios should short domestic tradable assets and take long positions in foreign tradable assets.

However another research by Baxter et al. (1998) suggested that, generally, the presence of non trade goods is not the reason that causes investors' home bias. Their model is a multi-country equilibrium model with complete security markets and individuals in each country value two consumption goods, one for traded and one for non-traded. These goods enter together to the individual's utility function. Also, the transportation of the traded good is costless and the residents of each country must consume all the endowments of non-traded goods. Furthermore, the endowments of both goods are stochastic. The researchers after they characterize the optimal consumption allocations and determine the supporting, for these allocations, portfolio holdings come to the conclusion that even with the presence of non-

traded consumption goods, the benefits from international diversification would be very important.

Finally, Coën (2001) tested, by using wage as a proxy, whether human capital in an international capital asset pricing model could explain home bias. Their results showed that this could not be the case and the researchers suggested that asymmetric information between domestic and foreign investors could more likely explain the home bias puzzle.

Inflation hedging

One of the given explanations of the home bias puzzle is that investors prefer to hold domestic assets in order to hedge against inflation risks. However, there is no documented close relationship between the returns of the equities and the rate of inflation. Though, Solnik (1978) suggested that investors try to hedge property costs and not general inflation. That is because price indexes, which measure general inflation, do not take into consideration the relative price changes. And general inflation might differ from inflation in the property costs. So, domestic equity may be correlated with domestic property costs, and not inflation and hedge better these relative price changes than foreign equity. And thus investors prefer investing in domestic assets. However, this hypothesis has not been tested and empirically proved.

The researches by Adler and Dumas (1983) and Uppal (1993) suggest that the deviations from PPP (purchasing power parity) could lead investors to strongly invest in domestic assets in order to hedge different inflation. Cooper and Kaplanis (1994) used data of foreign equity holding from 8 countries in order to test whether hedging could explain home bias. Their results indicate that such hypothesis does not stand and in some cases hedging is to the opposite direction towards to explaining home bias.

Taxes, transaction costs and barriers to equity trading

Another possible explanation of the home bias puzzle is the costs of cross-border investing. These consist of taxes, like withholding taxes, and various transaction costs. However, as Cooper and Kaplanis (1994) suggest the costs for such investments could not be the case for the home bias puzzle. Specifically, Ahearne et al. (2004) suggest that informational costs are an indirect barrier of international diversification and one of the most important factors behind investors' home bias. Also according to their results, when the direct barriers of international diversification were statistically significant, their economic importance was insignificant.

Another research by Carmichael and Coën (2003) suggests that transaction costs can be the explanation for the home bias in investors' portfolios. More specifically the researchers, by using a simple overlapping generations model, showed that in a world with no barriers in international investments, the induction of even a very small transaction cost, i.e. existing taxes, informational costs or other constraints, can generate a home bias in portfolio holdings.

Finally, Tesar and Werner (1995) examined the investment pattern of five OECD countries in the long run. They found that the turnover of foreign equity investments is higher than the turnover in domestic equity markets. This research shows that transaction costs or barriers in equity trading cannot be the case for the home bias of investors.

Empirical measurement problems

Glassman and Riddick (2001) suggested that home asset bias could be due to omitted assets from the investors' optimization model. As the authors write, most of the researchers use past returns in order to measure the expected returns in a portfolio maximization. However, this includes some drawbacks and investors usually adjust these past returns in order to optimize. Firstly, transaction costs play an important role in determining whether investing in foreign assets is more attractive than investing domestically. Solnik (1996) showed that the transaction costs vary across countries around 1-4% per year. These numbers, when subtracted from foreign assets' expected returns, could make foreign assets less attractive. Secondly, investors' expectations play an important role in their investing practices. As Shiller et al. (1991) suggested, domestic investors are more optimistic about the returns of the domestic market than the foreign investors are. A third issue for adjusting past returns is the estimation risk, i.e. the returns cannot be precisely estimated. In their paper, Glassman and Riddick tried to examine whether these adjustments of past returns could justify home bias. They used data from Morgan Stanley for six countries in the period 1985-1990. Their results showed no evidence supporting that the adjusting returns could justify the home asset bias.

Then, the researchers tested whether the adjustments in assets' variances could justify the presence of home bias. For example, if the perceived risk of foreign assets increases for some reason, then it is natural for the foreign assets to become less favourable. In order to see how much the variances of the assets should be adjusted, the researchers computed the needed adjustment by a combination of historical and extreme variances. In this case too, their results did not indicate that adjustments in variances could justify the home asset bias. Finally, Glassman and Riddick examined whether adjustments to correlations by including omitted assets from the optimization problem could justify the existence of the home asset bias. Such omitted factor could be human capital. Then, the researchers combine the adjustments to returns, standard deviations and correlations. Their results suggest that the characteristics of the omitted assets do not correspond to any known asset, and they exclude human capital, domestic or foreign bonds and domestic or foreign real estate. So, the authors conclude that the explanation of the home asset bias could lie under multiple omitted assets and left this explanation pending to further research.

Diversification costs exceed gains

Gorman and Jorgensen (2002) suggested that the theoretical gains from international diversification are difficult to be captured in practice by investors. More specifically, the researchers used both the Markowitz approach and the Bayes-Stein tangency "shrinkage" algorithm in order to estimate the expected returns and the covariance parameters. The results indicate that a 100% domestic portfolio performed as well or better than the tangency portfolios estimated by the two methods. Thus, according to the researchers, the home bias of the investors is not irrational but justified since they are not able to benefit from international diversification.

The interrelationship among the home bias puzzle and the equity premium puzzle

The expected returns of stocks are higher than those of bonds. This is quite logical since one could expect riskier assets to have higher returns than safer assets. However, the size of the difference in the returns among these assets is what puzzling the researchers. This puzzle is called the equity premium puzzle and was first identified by Mehra and Prescott (1985).

The excess expected return on an equity share of country m's output is the following:

$$\mathrm{E}_1\{r_m\} - r = -(1+r)\,\mathrm{Cov}_1\left\{\beta\left(\frac{\mathrm{C}_2}{\mathrm{C}_1}\right)^{-\rho}, r^m - r\right\}$$

"Because annual consumption growth is fairly stable and the annual variability of major stock markets returns moderate, the covariance of consumption growth with returns, while positive, is too low to explain the huge equity premium unless the risk-aversion coefficient ρ is extremely high." [Obstfeld and Rogoff 1996)]

At this point is where the equity premium puzzle and the home bias puzzle come together. The question arising is that if investors are so risk averse as the risk-aversion coefficient implies, then why investors do not diversify internationally in order to exploit the benefits of international diversification and lower the risk of their portfolio.

Conclusion

The tendency of investors to hold the largest percentage of their wealth in domestic assets rather than exploiting the benefits from international diversification is called the home bias puzzle. Investors' home bias has been puzzling researchers for many years and through time many possible explanations have been given for what causes the home bias puzzle. Among them are: asymmetric information, non traded assets, inflation hedging, several costs and barriers in equity trading, differences in expectations and empirical measurement problems. There is also an approach that the home bias puzzle is linked to the equity premium puzzle. Though, none of them has been empirically proved to be the correct one. The most promising explanations however, in my opinion, seem to be those of asymmetric information and differences in expectations. In other worlds, the solution of the home bias puzzle maybe lies into investors' behaviour. If investors perceive foreign markets as more risky than the domestic ones or even if they think that can beat the domestic market easier than the foreign ones that can drive them to invest the largest percentage of their wealth in domestic assets. Also, it could be our models that cannot predict accurately the expected returns and the optimization levels of portfolios. However, since neither of these explanations has also been empirically proved, we cannot disclose any of the other remaining proposed explanations.

For that reason, my conclusion is that the home bias puzzle is indeed a puzzle that is pending to further research and a testable hypothesis.

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