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Home bias in international equity and debt holdings: A study of cross-border portfolio allocation

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Abstract

We investigate home bias and the determinants of cross-border portfolio allocation on total, equity and debt portfolios across the 30 largest economies in the world based on GDP and economic openness. The thesis is based on data from the Coordinated Portfolio Investment Survey (CPIS) by the IMF, over the period 2001-2016. In our investigation of home bias, we find a declining trend throughout the period, except when there exist financial shocks to the economy. We find that the strongest drivers of cross-border portfolio allocation are the rational portfolio optimization factors. Indicating that investors aim to reallocate their portfolio and close the distance between actual weights and optimal weights following the ICAPM to achieve a diversified portfolio.

Acknowledgements

We want to thank our supervisor Professor Bruno Gerard for his guidance, availability and valuable advice.

1. Introduction

According to financial theory[1], an investor should only hold domestic assets in their portfolio equal to their countries share in the market portfolio. Throughout time, however, investors have exhibited a preference for holding disproportionate holdings of domestic securities rather than foreign securities in portfolios despite the known benefits of international diversification. This phenomenon is known as home bias (HB). The objective of this research paper is to investigate the changes in HB over the period 2001 - 2016 in the world's 30 largest economies based on GDP and relative economic openness. We do not wish to explain the changes in HB, but rather document them and assess which market or economic characteristic that are associated with the changes. The choice of factor characteristics is guided by previous research and includes variables which investment theory of economic analysis suggest that may affect the degree of HB.

The study looks at the changes in foreign portfolio investments over time as well as the changes in home bias. To get a deeper understanding of the factors affecting these changes, we run a multinational pool cross-sectional regression. We aim to contribute to the existing literature by looking at the changes in home bias and the changes in the total cross-border portfolio allocation, not only for the total portfolio but also for both equity and debt individually. By investigating the changes over time in all three portfolios, we aim to shed light on subsequent changes in international portfolio allocation.

In the study, we find that foreign investments for total equity and debt portfolios have increased over the period 2001-2016. This is consistent with our findings that home bias increased over the same period. From the regression, we find that the rational portfolio optimization factors are the primary contributors to cross-border portfolio allocation. Investors aim to reallocate their portfolio to close the distance between actual weights and optimal weights following the International CAPM in their portfolio to achieve a more diversified portfolio.

[1] International CAPM

This paper consists of six parts: Part 2 reviews the literature and describes the factors earlier research suggests affects changes in HB. We describe our empirical methodology and specification in Part 3. Part 4 describes the data used in the study and where it is collected. Finally, we discuss our findings in Part 5, and Part 6 concludes.

2. Background and literature

French and Poterba (1991) were one of the researchers first to provide evidence of home bias. In their research, they noted that even though international diversification benefits have been recognized for decades, most investors hold nearly half of their wealth in domestic assets. They argued that the reason for home bias is a result of investors choice rather than institutional constraints.

The benefits of diversification have been shown in a wide variety of research. De Santis and Gerard (1997) showed that international portfolio diversification improves the returns of a portfolio as well as reduce risk. Grubel (1968) derived the efficient portfolio from the international stock markets as they suggested that international diversification is the best way to improve the returns of a portfolio through reaching their highest expected return as well as low portfolio variance. Investors that choose not to be appropriately diversified might therefore not only miss out on substantial investment opportunities but also increase the volatility of their portfolio. The existence of home bias leads to economic inefficiencies in the marketplace and as a result is considered suboptimal behavior in decision making.

Costs and barriers

There are several costs and barriers associated with making a foreign investment. The most common ones being direct barriers such as capital controls and transaction costs; however, there are other indirect costs such as differential tax treatment and other policy-induced restrictions. Costs can also come in the shape of information costs which was shown to be significant by Merton (1987). Merton investigated a model that suggested information costs might affect investor behavior, and investors believed that the riskiness of having stocks they do not know is high compared to when they hold shares that are known. This supports the findings by Ferreira & Miguel (2011), that when investing internationally, investors prefer to invest in countries with higher economic and financial development, lower restrictions on capital flows, more developed bond markets, stronger judicial systems, and higher past returns.

During the 90's there were a lot of changes with regards to financial markets and a broader economic environment. This was due to globalization that overall significantly reduced the costs and barriers. There was a decrease in an institutional constraint through the advent of the Internet and increased international trade flows and free trade. The Internet made information that was once difficult to obtain remarkably easy, and among other things, it broke down language barriers for many countries. It is important to note that although the Internet has significantly reduced barriers, home bias still exists.

Hortacsu et al. (2009) investigated home bias in eBay transactions, and Lin, M., & Viswanathan, S. (2015) investigated home bias online in a crowdfunding market. They both found that the existence of home bias was still present even online where there are close to no barriers or constraints. Similar findings were observed by Ahearne, Griever, and Warnock (2004) who display results where information costs were more impactful on home bias than direct barriers. They further show in their research that if all foreign companies are listed on the US stock exchange, the US home bias would be significantly reduced but still exist.

Asymmetric information

Home bias in international investments presents a challenge to asset pricing models building on the assumption of systemically informed investors due to the presence of asymmetrical information in the markets. Investors will according to Huberman (2001) ignore the basic principles of portfolio theory to invest in things that are familiar to them. This was further argued by Ferreira & Miguel (2011) who show that familiarity variables such as bilateral trade, common language, and geographical proximity etc. play an important role in explaining foreign bias due to investor preference. Ghering (1993) managed to show this when introduced a noisy rational expectations model where investors were completely informed in equilibrium, and he managed to show how, due to incomplete information regarding foreign markets, a domestic bias develops. Ghering argues that domestic bias arises naturally when investors is better informed about domestic stocks. This is specifically due to the variance of the error of foreign assets become larger than that of domestic assets. If there is

differential information in the market, then risk-averse investors will prefer the investments to which they have higher information and invest more domestically.

Nieuwerburgh and Veldkamp (2009) argue that home bias arises because investors that invest in their home assets can better assess local investment payoffs compared to what foreigners can. They show that local investors received a higher return where there was asymmetric information.

Hedging

Sercu and Vanpée (2007) suggest that a domestic asset is a better hedge for inflation risk and domestic consumption risk. Due to this investor preference, they believe that domestic assets are more likely to generally follow the domestic market performance, and supporting underweighted investors with respect to international diversification. They identify four home-country specific risks; inflation risk, real exchange rate risk, domestic consumption risk, and risk from non-tradable wealth. The evidence for hedging domestic risk is not very consistent however as Cooper and Kaplanis (1994) tested whether inflation hedging or direct observable costs of international investments are a possible reason for home bias in equity portfolios. The empirical evidence states that for the implications to be true the investors need to have low levels of risk aversion and there have to exist a negative correlation between equity returns and domestic inflation.

Home bias was particularly prominent in the 1970's and 1980's and has since then seen a significant decline as a result of gradually increased international diversification (Amadi A. A, 2004). The cause of why home bias remains today, given the known benefits to diversification, remains a puzzle. There have been many prominent economic(rational) and behavioral (irrational) explanations for home bias and its recent decline, where rational explanations are typically related to costs and barriers and behavioral explanations such as over-optimism towards domestic markets and investor preference. As of today, however, the debate is still ongoing.

3. Methodology

3.1 Measuring home bias

De Santis and Gerard (2009) define HB as the degree to which an investor under-invests in foreign markets and over-invests in domestic markets, despite the purported benefits of international diversification.

$$HB_i = 1 - \frac{Actual\ foreign\ holdings_i}{Optimal\ portfolio\ weight_i}$$

There are two main approaches to measure home bias, a return based approach, and a model-based approach. In this study, we utilize the model-based approach and work under the assumption that the International CAPM holds. We assume that the world is fully integrated, PPP holds, and the market equilibrium is achieved when all investors hold the world market portfolio.

We calculate the actual holdings as the share of foreign holdings in county i (W) and the optimal holdings (W*) as the share of foreign holdings.

$$HB_i = 1 - \frac{Share\ of\ foreign\ holdings\ in\ country\ i\ (W)}{Share\ of\ foreign\ holdings\ in\ the\ world\ market\ portfolio\ (W^*)}$$

Where W, the actual weight held abroad by country i can be calculated as

$$W = \frac{Total\ holdings\ abroad\ by\ country\ i}{Total\ capital\ portfolio\ of\ country\ i}$$

The total capital portfolio used to calculate W is defined as the total size of the portfolio invested in country i.

$$Total\ capital\ portfolio = Total\ invested\ abroad + Total\ invested\ domestically$$

$$Total\ invested\ domestically$$
$$= Total\ local\ market\ cap$$
$$- Total\ local\ market\ cap\ held\ by\ local\ investors$$

We calculate the optimal portfolio weights by the following formula following the assumption that ICAPM holds

$$W^* = \frac{Total\ market\ capitalization\ for\ counrty\ i}{Total\ world\ market\ capitalization}$$

Section 5 displays the results of the investigation of home bias for the total portfolio, which include equity and debt securities, the equity portfolio, and the debt portfolio. When calculating home bias for the different analysis, the same formulas are being utilized on each group to maintain consistency. If home bias is equal to one there is a full existence of home bias, and when the home bias is equal to zero there is no existence of home bias, and the portfolio of a country is fully diversified according to the International CAPM.

3.2 Portfolio weights

To investigate the change in cross-border portfolio allocation, we introduce a measure for the change in portfolio weights. To calculate the actual portfolio weights for country c in country k, we adopt De Santis and Gerard (2009) approach and use the following formula:

$$w_{ck,t} = \frac{Inv_{ck,t}}{\Sigma_k Inv_{c,k,t}}$$

Where $Inv_{ck,t}$ is the US dollar amount invested by country c in country k's financial assets at time t. Where the annual change is captured through the following formula:

$$\Delta w^{T}_{ck,t} = w_{ck,t} - w_{ck,t-1}$$

Where changes in the portfolio weights are due to a passive strategy, as a result of differential returns, or an active strategy where the investor re-allocate to markets with expected higher returns (De Santis and Gerard, 2009).

3.3 Misallocation and degree of underweight

We include the degree of underweight, also defined as initial misallocation, to capture the foreign portfolio rebalancing in the following period. To measure the initial misallocation we use optimal ($w^{*}_{ck,t}$) and actual ($w_{ck,t}$) share of country k. The difference between the optimal weights and actual weights reveal the misallocation in the destination country. The larger deviation between actual weights and optimal weights, the larger is the incentive to rebalance the portfolio by altering their position. Investors would increase the position when there exists under-weight, and reduce the position when actual share exceeds the optimal share of the country. We use De Santis and Gerard (2009) method to measure the potential existence of initial misallocation with the following formula:

$$DW_{ck,t} = w^{*}_{ck,t} - w_{ck,t}$$

Where DW ck,t is the degree of underweight, $w^{*}_{ck,t}$ is the optimal shares according to ICAPM and $w_{ck,t}$ is the actual shares invested. The optimal weights are not observable but assuming that PPP and ICAPM hold, the market equilibrium will be achieved when all investors hold the world market portfolio, and its market capitalization weights in each country. Since we are investigating cross-border portfolio allocation we only include foreign holdings of a portfolio and therefore exclude investing country c's investments in country k's market capitalization. Based on this assumption we compute the optimal foreign holdings with the following formula:

$$W^{*} = W^{*}_{k,t}/(1 - W^{*}_{c,t})$$

Where $w^*_{k,t}$w* is the total market capitalization of country k in the world portfolio, and $w^*_{c,t}$ is the total market capitalization of country c in the world portfolio.

Some studies are attempting to measure the benefits gained by the degree of underweight and holding higher domestic weights (e.g., Seasholes and Zhu, 2010). These attempts have found little systematic evidence that such overconcentration of domestic holdings occurs, and we assume that the rational investor will rebalance the portfolio to achieve full diversification and optimal portfolio weights.

3.4 Marginal diversification benefits

De Santis and Gerard present the measure of marginal diversification benefit (DB) as an interpretation of the relationship between portfolio variance and weights invested in foreign assets. They diversify security risk by constructing international portfolios of unrelated countries assets. The foreign investment portfolios variance is used to compute the impact of portfolio risk by increasing or decreasing the position in a particular security. They use the following formula for the foreign investment portfolio variance:

$$\sigma^2_{P,t} = w'_{c,t}\Sigma_{c,t}w_{c,t}$$

Where $w_{c,t}$ is the actual vector of weight for the k foreign assets, and c is the investing country c's perspective.

To measure marginal DB, we use the decrease in portfolio variance for a marginal increase in the weights invested in asset k. The interpretation is as follows:

$$DB_{ck,t} = -\frac{\partial}{\partial w_{ck,t}}\left[W'_{c,t}\Sigma_{c,t}W_{c,t}\right] = -2\Sigma^K_{l=1}w_{cl,t}\sigma_{lk,t}$$

Where marginal DB is measured by adding asset k to investor c's position.

3.5 Asset returns and lagged returns

To test the relationship between returns and lagged returns, we include both asset returns and lagged returns as explanatory variables in this research. We see from previous research that there exists a positive correlation between lagged returns and capital flows in the international portfolio (Bohn and Tesar (1996), Froot et al. (2001) and Brennan and Chao's (1997)). This suggests that institutional investors engage in "trend chasing" or positive feedback trading, which means that investors increase their foreign holdings when foreign markets outperform the local market.

To calculate portfolio returns, we will use the individual bond and equity indices for the various countries. In the instance where debt indices do not have comprehensive data for our period, we use Bloomberg Barclays aggregate bond index is a proxy. We calculate the total market return as the weighted return of both indices.

$$\frac{\partial}{\partial w_{kc,t}} E\left[R_{Pc,t}\right] = \mu_{ck,t}$$

Taking into account the previous research, we expect that lagged returns to have a positive correlation with the change in portfolio weights.

3.6 Currency risk

Previous research shows that currency risk is a significant explanatory variable for home bias and that high currency risk may affect the incentives to diversify internationally, due to investor's tolerance for currency fluctuations. De Santis and Gerard (2009) found a significant increase in cross-border diversification among European countries due to the elimination of risk. Therefore, we add binary variables to account for this decrease in currency risk.

EMU_1	1 when investing country c is in the EMU
EMU_2	1 when invested in country k is in the EMU
EMU_3	1 when both country c and country k are in the EMU. Effectively the elimination of currency risk.

3.7 Financial and Economic development

To investigate the effect of the economic and financial development of a country, and the potential impact this has on changes in portfolio weights we will include both as independent variables. We measure Economic development as the change in real GDP per capita and financial development as the change in market cap to real GDP. Economic and financial development will account for the size of the economy and the size of the equity, debt and total market respectively.

3.8 Economic openness

Economic openness is most commonly a measure of the ratio of exports plus imports over total GDP. Our expectations are in line with the research of Bekaert and Wang (2009) and Lane and Milesi-Ferretti (2003), who showed that a higher degree of economic openness should lead to lower the home bias due to fewer capital controls in the countries.

3.9 Financial openness

To be able to measure financial openness we use an adjusted measure that addresses the size of the country c's market relative to the world market. We calculate financial openness through the following formula:

$$FO = 1 - \frac{Fraction\ of\ domestic\ market\ held\ by\ foreigners}{Total\ value\ domestic\ market}$$

To be able to account for individual market size in the world market, we adjusted the financial openness measure:

$$AdjFO = \frac{FO}{1 - \frac{Total\ value\ domestic\ market}{Total\ value\ world\ market}}$$

By using the adjusted measure, we avoid errors in the smaller markets. The errors can be viewed as a higher measure of openness when we do not address for the size of both home and world markets in the financial openness. We expect that increased financial openness will lead to decreased home bias as shown by Mondria & Wu (2010).

3.11 The empirical specification

To be able to look at what impact the variables have on cross-border diversification decisions made by investors, the equation for this analysis takes the following form:

$$\begin{aligned}\Delta w_{ck,t} = {} & \alpha_0 + \alpha_1 Ret_{k,t} + \alpha_2 Ret_{k,t-1} + \alpha_3 ED_{k,t} + \alpha_4 FD_{k,t} + \alpha_5 AdjFO_{k,t} \\ & + \alpha_6 EO_{k,t} + \gamma_1 DW_{ck,t-1} + \beta_1 DB_{ck,t-1} + \delta_1 D_{1,c\subset EMU} \\ & + \delta_2 D_{2,k\subset EMU} + \delta_3 D_{3,(k\subset EMU * c\subset EMU)} + \delta_4 D_{3,(k\subset EMU * c\subset EMU)} \\ & * DB_{ck,t-1} + \delta_5 D_{3,(k\subset EMU * c\subset EMU)} * DW_{ck,t-1} + \phi RW_{c,t}\end{aligned}$$

$\Delta w_{ck,t}$ is our dependent variable and is the change in portfolio weight. $Ret_{k,t}$ and $Ret_{k,t-1}$ denote current and lagged portfolio returns consecutively. $ED_{k,t}$ = economic development. $FD_{k,t}$ = financial difficulty. $AdjFO_{k,t}$ = adjusted financial openness. $EO_{k,t}$ = economic openness. $DW_{ck,t-1}$ = initial degree of underweight. $DB_{ck,t-1}$ = diversification benefits. $D_1 = EMU_1$, $D_2 = EMU_2$, and $D_3 = EMU_3$ are dummy variable which will account for the effect of country c, k or both to be a part of the EMU. $RW_{c,t}$ is the weight of country c's portfolio invested in the rest of the world.

4. Data

We collect the primary data source used in this research paper from the IMF's Coordinated Portfolio Investment Survey (CPIS). We utilize both the total foreign portfolio investments, including both equity and total debt securities from 2001-2016. The data is collected for approximately 241 regions/countries and is estimated to cover approximately 90% of the world's international equity portfolio and 80% of the world's international bonds portfolio. The CPIS reports of international portfolio positions are disaggregated by regions and instruments, covering all major - equity, securities, bonds and notes and money market instruments, and the data is denominated in US dollars. Each country that participates in the survey will report their total foreign holdings in country i on the horizontal dimension and the total holdings abroad by country i on the vertical dimension. The CPIS dataset has the advantage of consistency due to the compilation of the data, according to a uniform protocol. The participants take the portfolio survey at the same time and provide a breakdown of their stock of portfolio investment asset by the country of residence of the non-resident issuer.

The CPIS datasets do have a few downsides. The data collection varies by country with regards to whether the data is collected at the aggregate or security-by-security level, whether they survey end-investors or custodians and whether the participation is mandatory or voluntary. CPIS also does not address the issue of third-country holdings, particularly in financial centers such as Luxembourg, Bermuda, and Ireland. The total amount of these investors is greater than their total market cap of the offshore financial centers stock and bonds markets meaning that they served as agents for funds invested elsewhere. This is not taken into account in the datasets provided by CPIS.

For more specific information regarding the data sources used to calculate the variables in the regression is explained in Appendix 7. There was no modification made to the raw data. When a country had incomplete data, the country was dropped from the overall analysis.

Correlation matrix for the various regressions can be found in Appendix 8, for the regression on the total portfolio, Appendix 9, for the regression on the debt

portfolio, and Appendix 10, for the regression on the equity portfolio. The correlations are all in line with the appropriate levels to be included in the regressions, and there is no existence of multicollinearity.

The descriptive statistics are explained in Appendix 11, for the regression on the total portfolio, Appendix 12, for the regression on the debt portfolio, and Appendix 13 for the regression on the equity portfolio. Our panel dataset is strongly balanced, and the date is from 2003-2016 with delta being one year. The data is stationary but is challenging to interpret, as they are all different variables to be in line with the dependent variables PW.

This research paper's key empirical analysis includes a sample of the 30 countries chosen based on highest GDP as well as economic openness to get access to available data. We exclude countries that are considered "tax haven"[2]. See the Appendix 1 for an extensive list of our sample of 30 countries.

[2] Tax heaven is for countries that have a low tax rate or non-tax rate. Tax heaven countries includes Andorra, Bahamas, Belize, Bermuda, the British Virgin Islands, the Cayman Islands, the Cook Islands, The isle of Man, Mauritius, Lichtenstein, Monaco, Malta, Panama, St. Kitts, and Nevis.

5. Empirical analysis of total, debt and equity holdings

5.1 Total foreign portfolio holdings

5.1.1 World

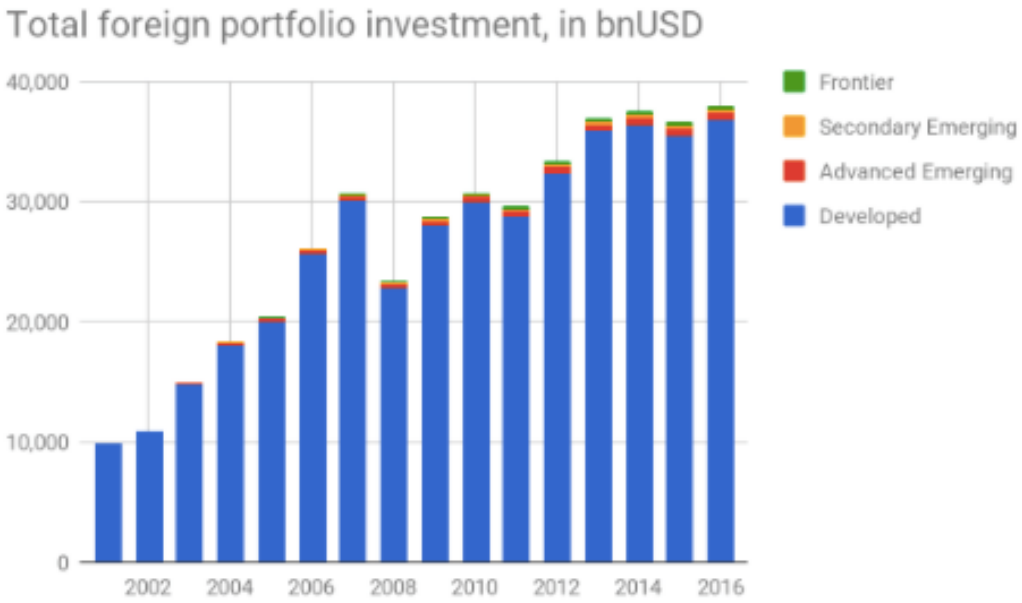
The data from CPIS includes a large sample of 243 countries. To simplify the initial analysis of the total foreign portfolio holdings, which consist of both equity and debt security investments; we use the FTSE 2016 classifications to group the data shown in Appendix 1. The annual review performed by FTSE classifies stock markets as developed[3], advanced emerging[4], secondary emerging[5] and frontier[6]. Out of the 76 countries, 57[7] have sufficient and complete vertical and horizontal CPIS data to be included in the analysis to represent their respective markets on a world basis.

The countries included in the FTSE classifications have changed during our period of research. FTSE started categorizing markets based on the level of income and infrastructure in 2003. In Appendix 1, we display the classifications in 2008 and 2016, where 2008 is the earliest reported by FTSE today. Developed markets remain unchanged from 2008 to 2016, and include the countries with high incomes and high market structure. Advanced emerging markets include countries with medium or high income with high or low markets structure. The Advanced emerging markets have an increase of five countries, which during the period 2008 until 2016 have become more developed and moved from Secondary emerging markets. The countries in Secondary emerging markets, which have a somewhat developed market structure, have decreased in participating countries mainly because of the increase in Advanced emerging markets. Frontier markets include six new countries in 2016 that were not included in 2008. Overall this indicates that the countries are getting more

[3] High income/high market infrastructure.
[4] Medium income/high market infrastructure or high income/low market infrastructure.
[5] Somewhat developed market infrastructure.
[6] Low income/low market infrastructure.
[7] When referring to the world and/or total data, we are referring to the total of these 57 countries.

developed, which indicates that there exists an increase in cross-border investments and a decrease in home bias during period 2001-2016.

Graph 1 displays the increasing trend of total foreign portfolio investments in each market category. In 2016 there were a total of $39,49 trillion invested internationally, which is a significant increase from $10.15 trillion invested in 2001. It is worth mentioning that not all countries in the survey for 2016 had data in 2001. Removing the countries with lack of data will still indicate significant growth in foreign investments in the world during period 2001-2016.



Graph 1: Displays the total sum of foreign investments made by 57 countries classified by the FTSE countries annually from 2001 to 2016. The FTSE classification is from FTSE 2016, see Appendix 1 for more details. The total foreign investments are measured in billion US Dollars and are the sum of all foreign equity and debt investments collected from the CPIS data. The table with the percentage values used in the graph can be found in Appendix 3.

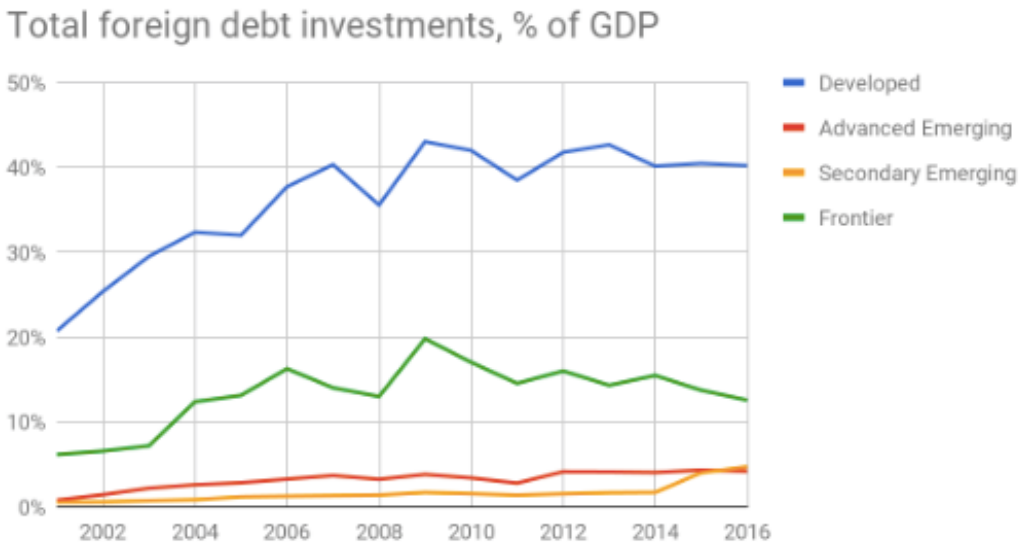
Apart from the overall significant growth, there has been some fluctuation over the period 2001-2016. The most significant shift occurred during the financial crisis in the year 2008. The financial crisis affected both equity and debt securities and created a decrease in total foreign portfolio investments especially

for developed markets. The reaction may have contributed to a flight to safety in most economies as well as a drop in total investments.

There are also fluctuations as a result of the European debt crisis in 2011 and oil price changes in 2014. The European sovereign debt crisis resulted in a collapse of several financial institutions in the Eurozone area. This had a significant impact on the European economy but also on the global economy with a decrease in import and export of goods and consumption, which resulted in a reduced growth rate on a world bases. The total foreign investments in developed markets have a significant decrease compared to the other classifications, mainly due to both the impact of the countries included and the correlation between them.

The oil prices changes do not necessarily impact the whole world negatively, but mainly the countries who rely on exporting and importing oil, which is a significant number in the FTSE countries. The decrease in oil prices creates weakened economic growth, reduced income and based on this reasons it may decrease the total foreign investments for the affected countries. As seen in the graph 1, the foreign investments decreased as a result of the oil price changes. Overall the level of total cross-border investments has increased from 2008 until the end of 2016. We see that the period after the financial crisis has somewhat slower growth than in the period before the financial crisis 2001-2008, except during the European debt crisis and the oil price fluctuations.

To get a deeper understanding of how the cross-border investments have changed over time we look closer into where the changes occur during the period 2001-2016 with regards to equity and debt, in what market, and to what extent. In Graph 2 and 3, we represent the total foreign debt and equity investments. The most striking trend to emerge from table 2 and table 3 is that equity, in general, has an overall higher increase in percentage investments of total GDP than debt, during the whole period 2001-2016.



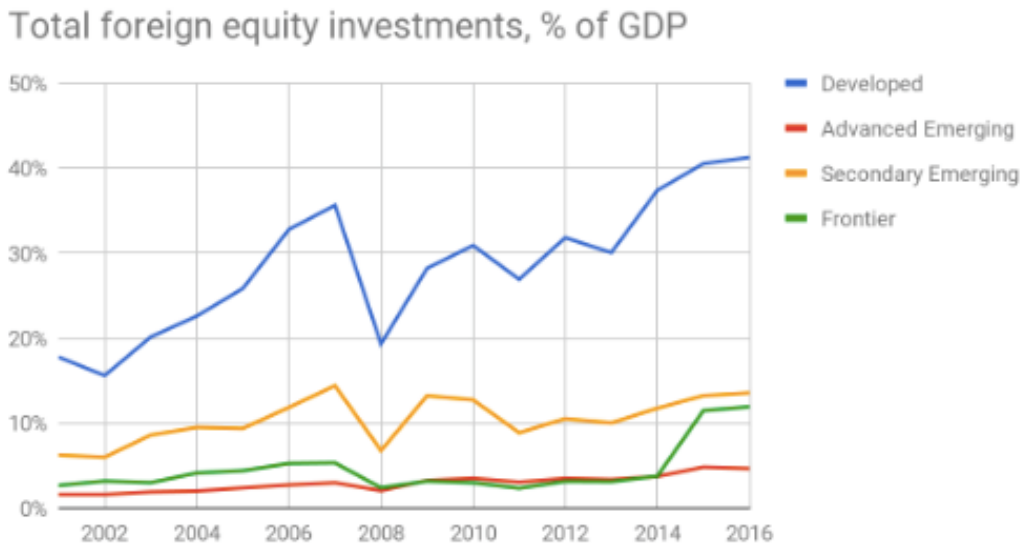
Graph 2: Displays the total foreign debt investments as a percentage of GDP made by the 57 FTSE countries annually from 2001-2016. The FTSE classification is from 2016, see Appendix 1 for more detailed information. The total foreign debt investments are from CPIS and are calculated as the aggregate sum scaled by the aggregate sum of gross GDP. The table with the percentage values used in the graph can be found in Appendix 3.

Graph 2 displays how developed markets are investing more of their total GDP abroad than emerging and frontier market. They invested a total foreign debt investment of 20.7% in 2001 and increased their total cross-border debt investments to 40.2% in 2016. Emerging markets have a lower percentage share of their total GDP invested in foreign debt securities, but overall they have a higher percentage change during the period. A possible reason for why emerging markets have the most considerable percentage change may be due to their economic and financial development and openness. Secondary emerging market invested 0.6% in 2001, and in year-end 2016 they have increased their investments to 4.7%. Frontier markets invested 6.1% in 2001 and continued to grow until 2009 where they invested 21.9% in total foreign debt investments. From 2009 Frontier markets have had a decrease in foreign debt investments down to 13.2% in year-end 2016.

From graph 2 we see that both frontier and developed markets experienced a sharp decrease in total foreign debt investments during the period of the

financial crisis in 2008, and both had a rapid recovery. In the same period advanced and secondary emerging markets have minimal to no change during this period. We can also see that the same accounts for the European debt crisis in 2011 and the oil price changes in both 2014.

Looking at Graph 3 we see that all markets experience an increase in total foreign equity investments during the period 2001-2016. Overall the developed markets have a higher total foreign investment as a percentage of GDP than the other countries.



Graph 3: Displays the total foreign equity investments as a percentage of GDP made by the 57 FTSE countries annually from 2001-2016. The FTSE classification are from 2016, see Appendix 1 for more detailed information. Total foreign equity investments reported by CPIS is calculated as the aggregate sum over the aggregate sum of gross GDP. The table with the percentage values used in the graph can be found in Appendix 3.

We also see that foreign equity investments are more volatile than debt investments, which is primarily due to the changes in returns and not due to investment flows. During the financial crisis, developed markets had the sharpest decrease in foreign equity investments. The decline might be a result of

an increase in the perceived risk of equity, which leads investors to invest in other securities that may prove to be a safer option than equity investments during this period. Other securities could, for example, be securities as debt securities such as US treasuries, which then again might contribute to the more rapid decrease for equity than debt.

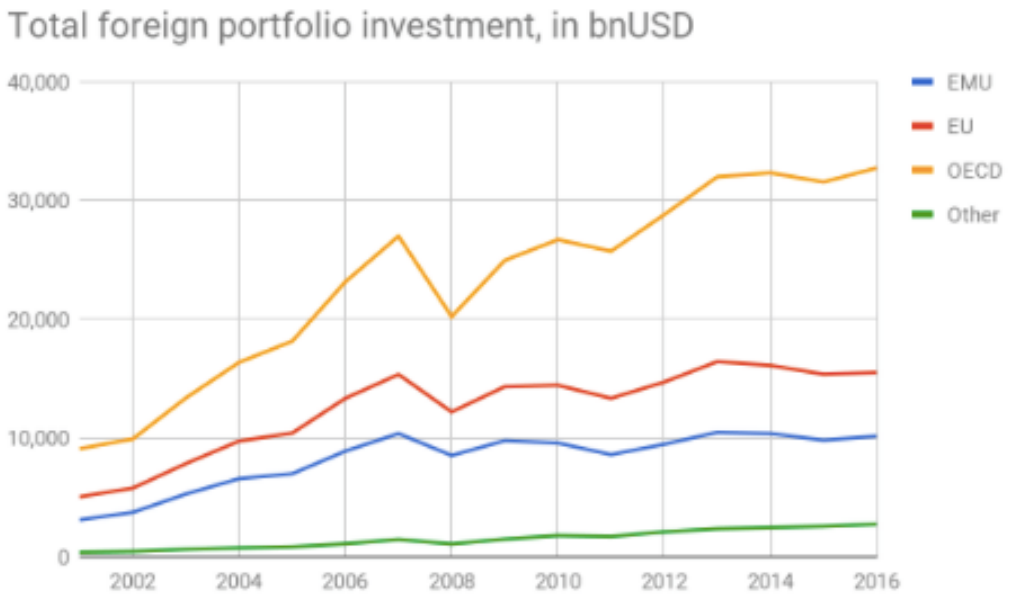
Secondary emerging and frontier markets both have a decline in foreign equity during the financial crises. What is interesting to see is the period after the financial crisis. In this period both secondary emerging and developed markets have a rapid recovery, while advanced and frontier markets both experienced a slow recovery. More interestingly is that advanced emerging markets have a stable growth throughout the whole period. The stable growth may be due to low correlation with other infrastructures and other markets. What all markets have in common is an increase in equity investments during the pre-crisis period, 2001-2007. The increase may be due to the increasing interest of the investor seeking long-term higher return, which again leads to a higher value as a result of the higher interest.

The European sovereign debt crisis resulted in a decrease in home bias for all countries with different severity. It is interesting to see the difference between the country classifications during the oil price changes in 2014. Frontier markets where more affected than any other market during this period. The reaction is potentially due to the effects that larger countries have high exposure to the oil industry and exports.

5.1.2 Sample countries

In order to look more detailed into our sample of 30 countries, we are using tree various classifications, EMU[8], OECD[9], EU[10] and others[11]. This will give us a better view of whether more homogeneous countries share characteristics.

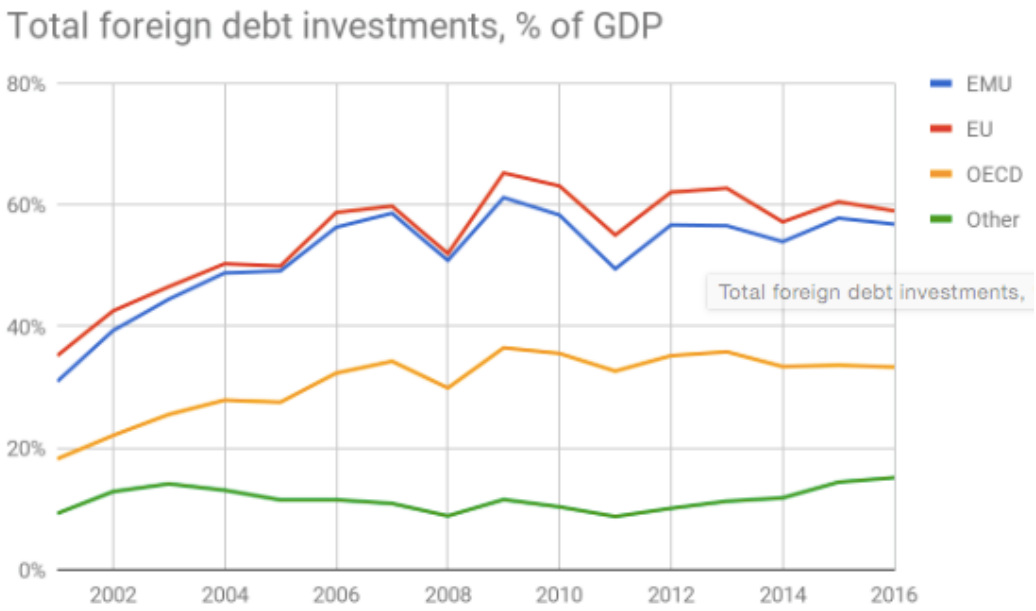
[8] *Members of the European monetary union.*
[9] *Members of the organization for economic cooperation and development.*
[10] *Members of the European union.*
[11] *Countries that is not included in EMU, EU and OECD countries.*



Graph 4: Displays the total foreign portfolio investments made by 30 select countries split into 4 categories from 2001-2016. See appendix table 2 for more detailed information regarding the 30 selected countries and its 4 classifications, EMU, EU, OECD and Other. The total portfolio investments are the aggregate sum of all equity and debt investments and are measured in billion USD. The table with the dollar values used in the graph can be found in Appendix 4.

In graph 4 there is a similar trend as on a world bases, a significant increase over time in the total foreign portfolio investment. The increase in total foreign portfolio investment is most prominent for countries outside of the EMU, EU, and OECD, and they experience an increase of 6.42x from 2001-2016. Countries included in the OECD, EMU, and EU had an increase in foreign investments during the same period with 2.6x, 2.3x and 2.1 respectively. Countries outside of EU and OECD are seeing little to no effect as a result of the financial crisis, and OECD countries experience a more significant impact from the shocks to the economy.

Breaking down the foreign debt and equity portfolio investments in the percentage of total GDP, we see a similar increasing trend in both debt and equity as on a world level.

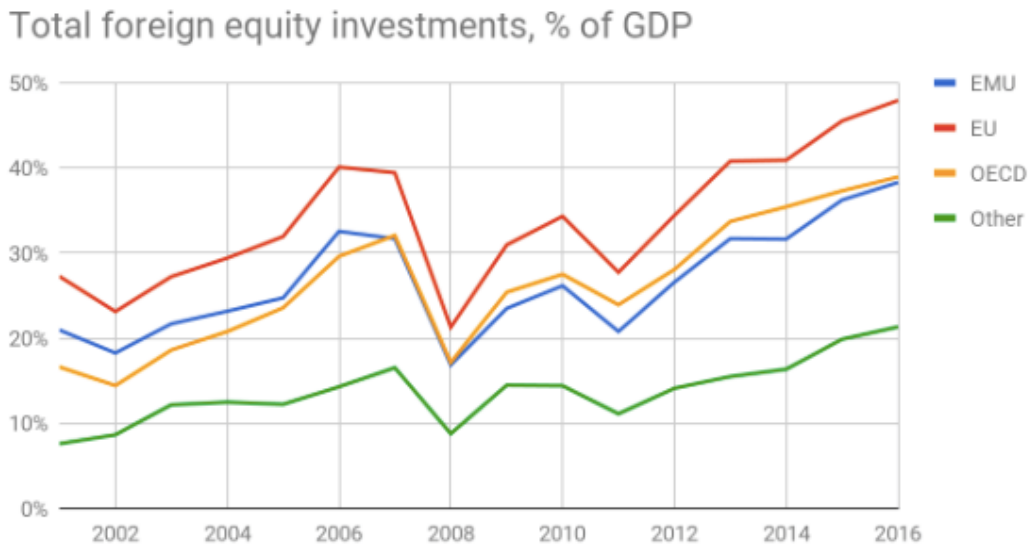


Graph 5: Displays the total foreign debt portfolio investments made by 30 select countries split into 4 categories from 2001-2016. See appendix table 2 for more detailed information regarding the 30 selected countries and its 4 classifications, EMU, EU, OECD and Other. The total portfolio investments are the aggregate aggregated sum of debt investments over the aggregate sum of gross GDP. The table with the percentage values used in the graph can be found in Appendix 4.

We see in graph 5 that the total foreign debt investment in the EU and EMU experience significant drops as a result of shocks. From the period 2001, EU and EMU countries move from an average of 40% in foreign debt investments to 60 % in year-end 2016. For OECD countries the effect of shocks is smaller and experience an increase from 20 to 35% total foreign debt investments as a percentage of GDP. Similarly to total foreign investments, countries outside of EMU, EU and OECD did not experience significant shocks, and their total foreign debt investments remain steady over the period 2001-2016.

When looking at countries for the period 2009-2011, there exists a decrease in total foreign debt investments. The decrease is mainly a result of the European debt crisis, and the reduction in debt is affecting European countries more

severely than OECD and the countries outside of the EU, EMU, and OECD who saw little to no change.



Graph 6: Displays the total foreign equity portfolio investments made by 30 selected countries, split into 4 categories from 2001-2016. See appendix table 2 for more detailed information regarding the 30 selected countries and its 4 classifications, EMU, EU, OECD and Other. The total portfolio investments are the aggregate aggregated sum of equity investments over the aggregate sum of gross GDP. The table with the percentage values used in the graph can be found in Appendix 4.

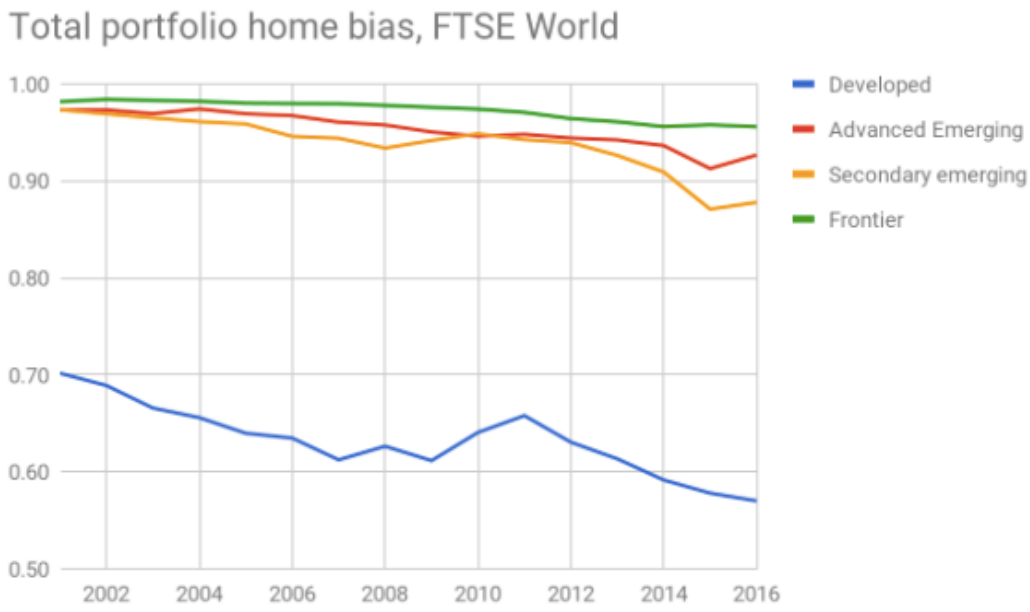
The total foreign equity investments in graph 6, have significantly higher movements and severity in movements from 2001-2016, especially for the financial crisis in 2007. We see that the financial crisis have a more significant impact on countries outside of the OECD and EU as well. As for growth, there is a much closer distribution between the different groups and the percentage of GDP that is foreign equity investments. Countries in the EU invest close to 50% of their total GDP in equity investments at the end of 2016 followed by countries in the OECD and EMU at approximately 40% and other countries outside of EMU, EU and OECD at 20%.

Hau, H., & Lai, S. (2016) argue that equity had different reactions during the financial crisis; however, our graphs indicate that all markets experience a decrease but in different severity. During the financial crisis of 2007, the value of equity investments decreases which suggest that foreign investors sold their shares internationally and fled to safer investments contributing further to the sharp decline in.

5.2 Home bias

5.2.1 Home bias - world

Home bias[12] has decreased significantly over the last few decades and continued into the 21st century. In graph 7 we see a significant difference in home bias between countries within developed, emerging and frontier markets. Appendix 5 represents the percentage change in home bias for each portfolio.



Graph 7: Displays the total portfolio home bias from 2001-2016 for 52 countries. Classifications are from the FTSE 2016, see appendix 1 for more detailed information. Total portfolio home bias is calculated as the annual average, see section 3.0.1 for more detailed information regarding the

[12] *Decrease in home bias means that home bias goes towards zero, an increase in home bias means that home bias goes towards one.*

calculations of home bias. The table with the exact values used in the graph can be found in Appendix 5.

Developed markets have a significantly lower home bias than the rest of the world, which is as expected. This is potentially a result of the economic/financial development and openness of the countries in this calcification, as countries with lower costs and barriers have been shown to decrease the home bias and increase foreign investment Ferreira & Miguel (2011). In future periods we expect a decrease in home bias for frontier markets, as they are in a state of rapid growth with regards to the development of their financial markets as well as financial openness. The most substantial change in home bias overall has been for developed and secondary emerging markets which has declined by 19,75% and 9,04% respectively. Developed and advanced emerging markets have slightly more breaks that coincide with the various financial shocks from 2001-2016 than what we see with the secondary and frontier markets. This is consistent with our findings for change in equity and debt.

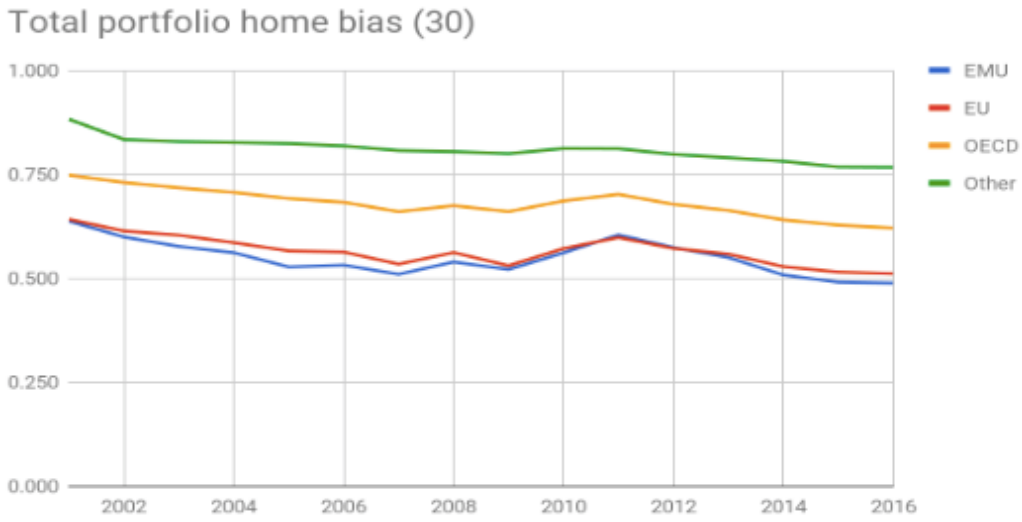
We see that during the financial crisis from 2007-2008 that developed markets experience an increase in home bias during this period, which is consistent with the theory of investors flight home to safety during fluctuations in the market. Both advanced and frontier markets have no change in home bias during this period. Looking at secondary emerging markets, we see an opposite reaction as a result of the crisis, which is a decrease in home bias. This is the opposite of the flight home to safety strategy that is explained by the existing literature. According to Wytner (2012), the decrease in home bias could be explained by investors actively increasing their home bias, but passive valuation changes subsumed these trades and reduced the home bias through portfolio rebalancing, increased information asymmetries, and familiarity from investors.

After the financial crisis, the graph shows that the developed and frontier markets have had a relatively steady decrease in home bias, while secondary and advanced emerging markets experienced an increase in home bias during 2015. In general, all markets experienced a higher concentration of investments in foreign securities and a reduction of investments in domestic securities. The

increase in foreign securities indicates that all markets have an overall lower home bias in year-end 2016 than the beginning of the period 2001.

5.2.2 Home bias – Selected sample[13]

Our selected sample of 30 countries gives us the opportunity to investigate the change in home bias over time by splitting the countries into four classifications, members of the EU, EMU, OECD, and other countries. Similarly to home bias on a world level, there is overall a slight decrease in home bias during the period 2001-2016. The most significant reduction is in EMU and EU countries, with a decrease of 23,38% and 20,39%.



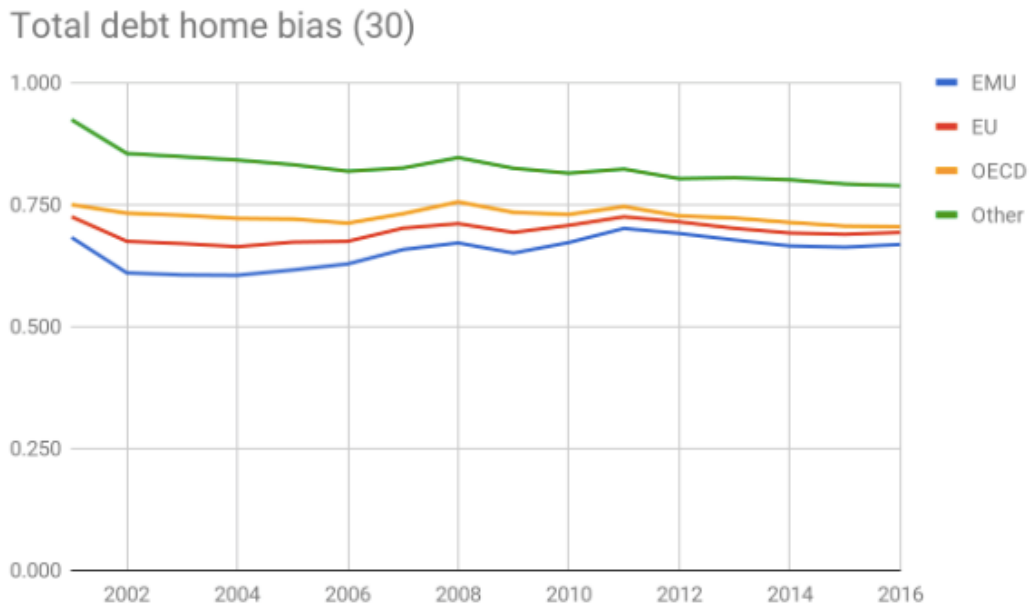
Graph 8: Displays the total portfolio home bias from 2001-2016 for our 30 selected countries split into 4 select classifications. See Appendix 1 for more information regarding the classifications and the 30 selected countries. Total portfolio home bias is calculated as the annual average, see section 3.0.1 for more detailed information regarding the calculations of home bias. The table with the exact values used in the graph can be found in Appendix 6.

Looking at graph 8 we see that home bias for EMU countries is typically lower than for the OECD, EU and other countries. The lower home bias follows our

[13] *30 largest countries based on GDP*

expectations of the role currency risk and financial/economic openness have on the total portfolio home bias. As expected, based on the home bias discussion for the FTSE world classification, home bias is increasing during the financial crisis for all classifications and is according to the theory that investors take less risk when there is a crisis in the market. Coinciding with changes caused by the European sovereign debt crisis in 2011 and the oil price changes in 2014, we see a steady decrease in total portfolio home bias mainly in OECD, EMU and EU countries.

Looking at other countries outside the EMU, EU, and OECD we see that there is almost no change throughout the period and there exists e a steady declining trend in home bias. The countries are dominantly not developed markets and are less affected by shocks to the economy due to the high home bias and lower exposure to the developed markets. The various fluctuations in the graph coincide with the multiple shocks on the economy from 2001-2016, corresponding with more significant changes in total equity and debt, or in total foreign portfolio investment as a result of these shocks.

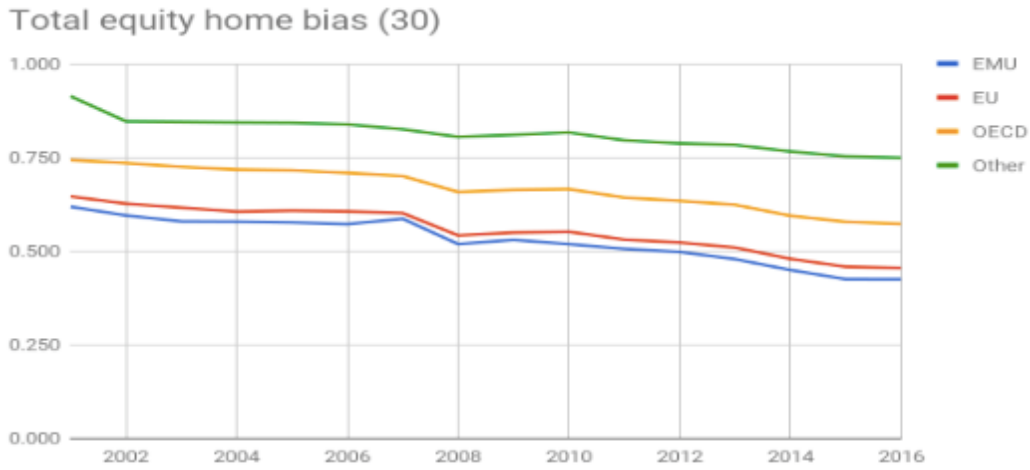


Graph 9: Displays the total debt portfolio home bias from 2001-2016 for our 30 selected countries split into 4 select classifications. See Appendix Table 1 for

more information regarding the classifications and the 30 select countries. Total debt portfolio home bias is calculated as the annual average, see section 3.0.1 for more detailed information regarding the calculations of home bias. The table with the exact values used in the graph can be found in Appendix 6.

Graph 9 show a minor decrease in debt home bias from 2001-2016, with small movements around the shocks as expected. The change in home bias is low for all classifications, and there is no significant difference in movements. During the European sovereign debt crisis there exists an increase in home bias for all classifications. As expected other countries have an overall higher debt home bias than OECD, EMU, and EU, which is mainly caused by lack of development.

Equity home bias does; however appear to have more massive movements and overall more considerable decline from 2001-2016.



Graph 10: Displays the total equity portfolio home bias from 2001-2016 for our 30 selected countries split into 4 select classifications. See Appendix 1 for more information regarding the classifications and the 30 select countries. Total equity portfolio home bias is calculated as the annual average, see section 3.0.1 for more detailed information regarding the calculations of home bias. The table with the exact values used in the graph can be found in Appendix 6.

Looking at graph 10 we see that EMU, EU, and OECD all have sharper movements in equity home bias than for debt home bias, but in general, there

exists a downward trend. In other countries outside of EMU, EU, and OECD we see as expected an overall higher home bias. What is interesting to see is the decrease in home bias during the financial crisis. Both total and debt portfolio show a decrease in home bias. This is according to the movements in total foreign investments and the theory that investors seek less risk and move til familiarity when there exist fluctuations in the market. An increase in home bias is against the theory of rational expectations during the crisis. After the financial crisis equity home bias continue to fall throughout the period, which indicates that both markets and investors are becoming more open for foreign allocation, and thereby international diversification.

The overall result in home bias for the 30 sample countries is consistent with the findings of home bias on a world level.

5.3 The impact of cross border portfolio allocation

The results of the pooled cross-sectional regression are displayed in the tables below and enabling further investigation of the impact of cross-border portfolio allocation. Table 1 presents the regression results of the regressions with regards to change in total portfolio weights. Table 2 displays the results of the regression with regards to change in debt portfolio weights, and table 3 displays the results from the regression with regards to change in total equity portfolio weights.

5.3.1 Total portfolio cross-border allocation

Total cross-border allocation				
	Regression A		Regression B	
PW	Coeff.	t	Coeff.	t
Cst	0.000	0.96	0.001	0.70
TP	0.411	3.06***	0.437	3.18***
LTP	- 0.214	- 1.54*	- 0.203	- 1.42*
ED	0.000	1.00	0.000	0.88
FD	0.001	2.28***	0.001	2.45***
EO	0.004	1.36*	0.005	1.17
FOA	- 0.001	- 0.92	- 0.001	- 1.10
RW	- 0.115	- 1.88**	- 0.118	- 1.92**
EMUa	- 0.000	- 0.50	- 0.000	- 0.50
EMUb	- 0.001	- 1.56*	- 0.001	- 1.56*
EMUc	0.000	0.25	0.000	0.25
DBemu	0.597	0.50	0.628	0.53
DWemu	- 0.039	- 3.83***	- 0.397	- 3.85***
LDB	0.217	3.44***	0.213	3.34***
LDW	0.272	31.02***	0.273	31.01***
2004			0.000	0.05
2005			- 0.000	- 0.16
2006			- 0.001	- 0.97
2007			- 0.001	- 0.51
2008			0.000	0.17
2009			- 0.001	- 0.33
2010			- 0.001	- 0.74
2011			- 0.001	- 0.42
2012			- 0.001	- 0.36
2013			- 0.001	- 0.59
2014			0.000	0.05
2015			- 0.000	- 0.03
2016			- 0.000	- 0.28
R2	0.084		0.084	
Adjusted R2	0.083		0.082	

The sample is based on 30 countries displayed in Appendix 2. Where the dependent variable is PW, the change in the total portfolio weights including

*both bonds and equity securities from 2001-2016. R and R-1 denote current and lagged portfolio returns consecutively. ED = economic development. FD = financial difficulty. EO = economic openness. FO = adjusted financial openness. LDB = diversification benefits. LDW = initial degree of underweight. RW = measures the weight of c's portfolio to the rest of the world total foreign portfolio. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU. Regression B includes yearly dummy variables that capture the effects of the various financial shocks from 2001-2016. The panel regression is estimated with random effects, and the T statistics are reported in parenthesis and computed using robust standard errors. * indicates statistical significance at 10% significance level, ** at 5% statistical significance level and *** statistical significance at 1% significance level.*

Regression A in Table 1 reports the key results of the regressions on the change in total cross-border portfolio allocation including both equity and debt from 2001-2016. The adjusted R-squared for our regression A and B are 8.26 % and 8.18 % respectively. These values are somewhat low; however, it is as expected for the nature of our cross-sectional data due to the heterogeneity of cross-sections. Our data set is also more cross-sectional dominant than time dominant, also contributing to the lower R-squared. We will, therefore, put a more heavyweight on the individual significance of the variables and overall significance of the model.

We find that the two strongest determinants of changes in portfolio weights are (a) the need to diversify across countries (marginal diversification benefit, DB) and (b) the need to decrease the difference between the optimal and actual holdings in the portfolio (initial degree of underweight, DW). DB and DW are both rational portfolio optimization factors and have positive coefficients at the 1% level of 0.217 and 0.272 respectively. This indicates that the changes in portfolio weights are strongly affected by the need for the investors to optimally diversify their portfolio. The investors

can be fully diversify by gaining a diversification benefit by adding additional securities to the portfolio, as well as closing the difference between the actual and optimal weights. This result is consistent with previous literature, and these two optimal diversification considerations have a positive relationship with changes in portfolio weight reallocation. The interaction variable EMU_c^**LDW has a negative coefficient at the 1% level with a coefficient of -0.394. This indicates that the investors exhibit a lower incentive to decrease the difference between the optimal and actual holdings in the portfolio in the absence of currency risk. We see a similar result with EMU_b, which has a significant coefficient of -0.001 at the 10% level. Indicating that investors have less incentive to reallocate their portfolio when a country is a part of the EMU.

The financial development of the total bond and equity markets in the investing countries has a positive relationship with the change in portfolio weights with a highly significant coefficient of 0.001 at the 1% level. This indicates that the financial development measured as the size of the total portfolio scaled by gross GDP strongly affects the changes in portfolio weights. This is in line with our expectations that a more developed market attracts investors due to its generally higher credibility, higher liquidity and lower transaction costs. Economic openness, which is defined as the sum of total exports and imports scaled by gross GDP, has a coefficient of 0.004 at the 10% level. This indicates that the economic openness attracts investors due to fewer capital controls.

There is a positive relationship of 0.411 between the changes in portfolio weights and portfolio returns that is significant at the 1% level. This is in line with our expectations and theory stating that cross-border flows predict stock returns Froot and Ramadorai (2008). This could either be a result of a passive increase due to differential returns or an active reallocation by the investors to markets with a higher expected return (De Santis and Gerard, 2009). The lagged return has a negative coefficient -0.214 and is significant at the 10% level. This implies that investors do not

increase their foreign holdings when foreign markets outperform the local market, which is contrary to our expectations. However, it is important to note that we question the eligibility of this result as the returns are calculated as a weighted average of the portfolio equity and debt indices. This could diffuse the results of the changes in the total portfolio allocation. The weight of country c's portfolio to the rest of the worlds is significant at the 10% level with a negative coefficient. This implies that the size of the investing countries portfolio invested in the rest of the world is negatively affecting the change in total portfolio weights.

In regression B we include yearly dummies to capture the effects of the annual changes in portfolio weights with respect to the portfolio returns for the countries invested in. The dummies exhibit mainly negative coefficients except for 2004, 2008 and 2014, and all yearly dummies are insignificant and add no explanatory power to the regression. We can, therefore, not conclude the relationship between the effect of the various shocks to the economy and the changes in cross-border total portfolio allocation. Including the yearly dummy variables adds robustness to the results in regression A. From the results in table 1 regression B, the initial degree of underweight and the diversification benefit remains the strongest positive explanatory variables. The coefficients for DB and DW are positive and significant at the 1% level of 0.213 and 0.273 respectively. This is a slight decrease in the coefficient for DB and an increase in DW. This indicates that changes in portfolio weights are still strongly affected by the need for the investor to optimally diversify their portfolio after adding robustness.

Return, lagged return, financial development, EMUb and RW maintained their similar coefficients and significance after adding the yearly dummy variables, which display the robustness of our results. Thus the conclusion drawn from these variables in the analysis of regression A can be applied to regression B as well. The economic openness did, however, fall outside of the 10% significance level, which would indicate that the result in regression A is not robust for this variable.

5.3.2 Total debt portfolio cross-border allocation

Total debt cross-border allocation				
	Regression A		Regression B	
PW	Coeff.	t	Coeff	t
Cst	0.000	0.15	0.001	0.57
DP	0.651	10.89***	0.668	11.06***
LDP	0.138	2.15***	0.132	2.03***
ED	0.000	1.03	0.000	1.35*
FDD	0.001	2.13***	0.001	2.05***
EO	0.004	0.91	0.007	1.41*
FOD	0.009	1.47*	0.006	0.94
RWD	- 0.115	- 1.41*	- 0.118	- 1.44*
EMUa	- 0.000	- 0.11	- 0.000	- 0.11
EMUb	- 0.001	- 0.98	- 0.001	- 1.02
EMUc	- 0.001	- 0.65	- 0.001	- 0.65
DBDemu	0.054	0.13	0.064	0.16
DWDemu	- 0.326	- 3.23***	- 0.331	- 3.28***
LDBD	0.032	1.24	0.172	17.93***
LDWD	0.172	17.93***	0.032	1,23
2004			- 0.000	- 0.09
2005			- 0.001	- 0.46
2006			- 0.001	- 0.53
2007			- 0.001	- 0.54
2008			- 0.001	- 0.92
2009			0.001	0.43
2010			- 0.002	- 0.81
2011			- 0.003	- 1.38*
2012			- 0.001	- 0.51
2013			0.000	0.01
2014			- 0.002	- 1.07
2015			- 0.000	- 0.00
2016			- 0.000	- 0.08
R2	0.042		0.043	
Adjusted R2	0.041		0.040	

*The sample is based on 30 countries displayed in Appendix 2. Where the dependent variable is PWD, the change in the debt portfolio weights from 2001-2016. Regression B includes yearly dummy variables that capture the effects of the various financial shocks from 2001-2016 in the bond markets. R and R-1 denote current and lagged portfolio returns consecutively. ED = economic development. FDD = financial difficulty in equity markets. EO = economic openness. FOD = adjusted financial openness in equity markets. DBD = diversification benefits. DWD = initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU. The panel regression is estimated with random effects and the T statistics are reported in parenthesis and computed using robust standard errors. * indicates statistical significance at 10% significance level, ** at 5% statistical significance level and *** statistical significance at 1% significance level.*

Regression A in Table 2 displays the key results of the regressions on the change in total cross-border portfolio allocation for debt portfolios from 2001-2016. The adjusted R-squared for our regression A and B is 4.12 % and 4.06 % respectively. These values are somewhat low; however, it is as expected for the nature of our cross-sectional data due to the heterogeneity of cross-sections.

We find that for a debt portfolio the willingness to decrease the difference between the optimal and actual holdings in the portfolio (initial degree of underweight, DWE) is the strongest determinant of change in portfolio weights. The coefficient of 0.172 is significant at the 1% level and indicates that the changes in portfolio weights are strongly affected by the need for the investors to optimally diversify their portfolio. Debt diversification benefit maintains a positive coefficient, however, it is no longer significant and has no explanatory power in the regression. This differs from the regression on total portfolio weights. We question these results, as it is contrary to our expectations. This result could be a factor of the no comprehensive data for debt over our time period as seen in Appendix 3.

The interaction variable EMU_c^**LDWD has a coefficient of -0.326 at the 1% level. This indicates that when considering investigating in debt markets, the investors exhibit a lower incentive to decrease the difference between the optimal and actual holdings in the portfolio in the absence of currency risk. This is consistent with the results for the total portfolio in Table 1.

The coefficient of the financial development of the debt markets in the investing countries remains positive at the 5% level with a coefficient of 0.001, implying that for the debt portfolio the financial development of the debt markets has a positive relationship with the changes in the portfolio weights. This is in line with our expectations that more developed debt markets attract investors due to its generally higher credibility, higher liquidity, and lower transaction costs.

Adjusted financial openness is significant at the 10% level with a coefficient of 0.09. Changes in portfolio weights are affected by the financial openness of the target country. Indicating that countries with higher financial openness, when scaled by the size of the markets, give the incentive to change portfolio weights.

Return on the debt portfolios exhibits a positive coefficient of 0.651 at the 1% level. These are similar results as seen in the regression on the total portfolio and is in line with our expectations and theory stating that cross-border flows predict returns even in debt markets. Lagged returns displays a positive coefficient of 0.138, significant at the 1% level, for the change in debt portfolio weights. This indicates that institutional investors engage in "trend chasing" or positive feedback trading in the debt markets, implying that investors increase their foreign debt holdings when foreign bond markets outperform the local bond market.

The coefficient of -0.115 for the weight of country c's debt portfolio to the rest of the worlds is significant at the 10% level. Which implies that the size of the country c's foreign debt portfolio is negatively affecting the change in total portfolio weights.

Regression B includes yearly dummies to capture the effects of the annual changes in the debt portfolio. The dummies are mostly insignificant and negative except for 2009 and 2013, which displayed a positive relationship with changes in portfolio weights. The coefficient for 2011 is at -0.003 and is the only yearly dummy with explanatory power and is significant on the 1% level. This implies that during the time of the debt crisis that originated in Europe, there was a positive relationship between changes in portfolio weights and the annual change in 2011. During the time of the financial crisis, we would expect home bias to increase due to the high uncertainty. However, as displayed in graph 9 this is not the case and home bias actually decreased. This decline is consistent with the coefficient of 2011 as it indicates a positive relationship with the change in portfolio weights, thus a decreased home bias.

When adding the yearly dummies we observe that economic development and economic openness becomes significant at the 10% level with positive coefficients. This indicates that economic development and economic openness both affect the annual change in portfolio weights.

Return, lagged return, financial debt market development and RWD maintained their coefficients and significance after adding the yearly dummy variables, which display the robustness of our results. Thus the conclusion drawn from these variables in the analysis of regression A can be applied to regression B as well.

5.3.3 Total equity portfolio cross-border allocation

Total equity cross-border allocation				
	Regression A		Regression B	
PW	coeff.	t	coeff.	t
Cst	0.001	0.84	0.000	0.16
EP	- 0.657	- 3.27***	- 0.763	- 3.67***
LEP	1.244	6.57***	1.331	6.8***
ED	0.000	1.11	- 0.000	- 0.13
FDE	0.002	2.17***	0.003	3.11***
EO	0.006	1.19	- 0.001	- 0.19
FOE	0.010	0.60	0.001	0.49
RWE	- 0.001	- 0.46	- 0.001	- 0.45
EMUa	- 0.001	- 0.53	- 0.001	- 0.53
EMUb	- 0.001	- 0.85	- 0.001	- 0.74
EMUc	0.001	0.77	0.002	0.77
DBEemu	0.000	0.17	0.000	0.19
DWEemu	- 0.298	- 2.52***	- 0.298	- 2.52***
LDBE	0.000	0.03	- 0.000	- 0.01
LDWE	0.215	21.40***	0.215	21.45***
2004			0.003	
2005			0.000	
2006			- 0.000	
2007			0.000	
2008			0.004	
2009			- 0.004	
2010			0.001	
2011			0.002	
2012			- 0.001	
2013			- 0.000	
2014			0.001	
2015			0.000	
2016			0.000	
R2	0.061		0.063	
Adjusted R2	0.060		0.059	

The sample is based on 30 countries displayed in Appendix 2. Where the dependent variable is PWE, the change in the equity portfolio weights from

*2001-2016. Regression B includes yearly dummy variables that capture the effects of the various financial shocks from 2001-2016 in the equity markets. R and R-1 denote current and lagged portfolio returns consecutively. ED = economic development. FDE = financial difficulty in equity markets. EO = economic openness. FOE = adjusted financial openness in equity markets. DBE = diversification benefits. DWE = initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU. The panel regression is estimated with random effects, and the T statistics are reported in parenthesis and computed using robust standard errors. * indicates statistical significance at 10% significance level, ** at 5% statistical significance level and *** statistical significance at 1% significance level.*

Regression A in Table 1 displays the key results of the regressions on the change in total cross-border portfolio allocation including equity and portfolios from 2001-2016. The adjusted R-squared for our regression A and B are 5.95 % and 5.94 % respectively. These values are somewhat low; however, it is as expected for the nature of our cross-sectional data due to the heterogeneity of cross-sections.

We find that for an equity portfolio, the results closely resemble the debt portfolio. The willingness to decrease the difference between the optimal and actual holdings in the portfolio (initial degree of underweight, DWE) is the strongest determinant of change in portfolio weights and the coefficient is significant at the 1% level. Equity diversification benefits maintains its positive coefficient of 0.215, but unlike the total portfolio regression in Table 1, we do not get a significant coefficient for the diversification benefit for equity and thus it has no explanatory power. The interaction variable EMU_c^**LDWE has a negative coefficient of -0.298 at the 1% level. This is similar to the results displayed in Table 2, however the coefficient is somewhat lower.

The financial development of the total equity markets have a positive relationship with the change in portfolio weights with significant coefficient of 0.002 at the 1% level. This indicates that the financial development of the equity markets strongly affects the investors' changes in portfolio weights. These results are consistent with the regression results of Table 1 and Table 2.

Similar to the debt portfolio, lagged returns has a positive coefficient of 1.244 in the equity markets, significant at the 1% level. This is in line with our expectations suggesting that institutional investors increase their foreign holdings when foreign markets outperform the local market within the equity markets.

Return on the equity portfolio has a negative coefficient, which is the opposite of what we observe in the regression on the change in debt portfolio weights. This is contrary to our expectations that cross border flows predict stock returns, and indicates that domestic investors are more informed. It is important to note that we question the eligibility of this measure, and thus place little weight on this particular result. We use monthly returns to calculate the covariance matrices, which could have caused the result to be somewhat ambiguous. We suspect that adding additional observations per year when calculating the covariance matrices would have made this result more reliable.

Regression B includes yearly dummies in order to capture the effects of the annual changes in the equity portfolio. The dummies are mostly insignificant and positive with the exception of 2006, 2009, 2012 and 2013, which displayed a negative relationship with changes in portfolio weights. The financial crisis had a severe impact on the equity markets with the most significant drop in 2007-2008, and the beginning of a recovery period in 2009. In crisis we would expect the home bias to increase and decrease post crisis. However, we have a positive coefficient of 0.004 in 2007-2008 followed by a negative coefficient of -0.005 in 2009, which indicates that we have the opposite relationship. This is consistent with the results in graph 10 where we observe a decline in both home bias and total equity portfolio investments.

Return, lagged return, financial equity market development and RWE maintained their coefficients and significance after adding the yearly dummy variables, which display the robustness of our results. Thus the conclusion drawn from these variables in the analysis of regression A can be applied to regression B as well.

6.0 Conclusion

This research paper investigates the changes in total portfolio home bias and cross-border portfolio allocation over the period 2001 - 2016 in the world's 30 largest economies based on GDP and relative economic openness using data from the CPIS.

When investigating the data reported from CPIS and the changes in home bias we find that the foreign investments for total, equity, and debt portfolios have increased over the period 2001-2016. The financial crisis, the European debt crisis and the oil price changes, all show a decline in the amount invested in cross-border investments. The total and debt portfolios both have an increase in home bias during the financial crisis which is consistent with the drop in foreign investments. However, home bias in total equity portfolio decrease during the financial crisis and does not support the theory of increase in home bias during market fluctuations. During the European debt crisis, the total portfolio and debt portfolio have an increase in home bias, while equity is less affected. During the oil price changes home bias for all portfolios have little to no change. We conclude that developed countries have higher foreign investments and lower home bias compared to countries with medium to lower income and infrastructure. There is a significant increase in total foreign investment and simultaneously a decrease in home bias from 2001-2016.

In our regressions, we found evidence that cross-border flow predict market returns in the debt portfolio and the total portfolio. Whereas in the equity and debt portfolio we see results indicating institutional investors engage in “trend chasing” or positive feedback trading in the markets, implying that investors increase their foreign holdings when foreign markets outperform the local market. The macroeconomic variables were mainly insignificant for the various regressions and had no explanatory power for the changes in the portfolio weights except for economic development. This variable was significant throughout the regressions and implied that higher economic development positively affects the change in portfolio weights. We find that in the absence of currency risk investors exhibited a lower incentive to decrease the difference between the optimal and actual holdings in the portfolio. Overall we conclude

that the rational portfolio optimization factors are the primary contributors to cross-border portfolio allocation. Investors aim to reallocate their portfolio to close the distance between actual weights and optimal weights following the ICAPM to achieve a more diversified portfolio and effectively reducing the home bias.

There are shortcomings to our study that leads to questions regarding the reliability of our results, where incomprehensive data sources being the primary challenge which can lead to inconsistent results. Robustness checks were performed; however, more exhaustive tests could be completed to prove the robustness of the results. Previous research on cross-border allocation has not succeeded to explain home bias, and this could potentially be due to lack of global data. Data sources today are more comprehensive and readily available than in the past. This opens an opportunity for new interesting studies to be performed by running previous studies with new data sources, to see how this would impact the result.

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7.0 Appendices

Appendix 1 Classification of countries

Developed Markets	
2009	2016
Australia	Australia
Austria	Austria
Belgium	Belgium
Canada	Canada
Denmark	Denmark
Finland	Finland
France	France
Germany	Germany
Hong Kong	Hong Kong
Ireland	Ireland
Israel	Israel
Italy	Italy
Japan	Japan
Netherlands	Netherlands
New Zealand	New Zealand
Norway	Norway
Portugal	Portugal
Singapore	Singapore
South Korea	South Korea
Spain	Spain
Sweden	Sweden
Switzerland	Switzerland
UK	UK
USA	USA

Advanced Emerging	
2009	2016
Brazil	Brazil
Hungary	Czech Republic

Secondary Emerging	
2009	2016
Argentina	Chile
Chile	China
China	Colombia
Colombia	Egypt
Czech Republic	India
Egypt	Indonesia
India	Pakistan
Indonesia	Peru
Malaysia	Phillipines
Morocco	Quatar
Pakistan	Russia
Peru	UAE
Philippines	
Russia	
Thailand	
Turkey	
UAE	

Frontier	
2009	2016
Bahrain	Argentina
Bangladesh	Bahrain
Botswana	Bangladesh
Bulgaria	Botswana
Cote d'Ivoire	Bulgaria
Croatia	Cote d'Ivoire
Cyprus	Croatia
Estonia	Cyprus
Jordan	Estonia

Mexico	Greece	Kenya	Ghana
Poland	Hungary	Lithuanua	Jordan
South Africa	Malaysia	Macedonia	Kazakhstan
Taiwan	Mexico	Malta	Kenya
	Poland	Mauritius	Latvia
	South Africa	Nigeria	Lithuanua
	Taiwan	Oman	Macedonia
	Thailand	Romania	Malta
	Turkey	Serbia	Mauritius
		Slovakia	Morocco
		Slovenia	Nigeria
		Sri Lanka	Oman
		Tunisia	Palestine
		Vietnam	Romania
			Serbia
			Slovakia
			Slovenia
			Sri Lanka
			Tunisia
			Vietnam

Appendix 1 displays the FTSE 2009 and 2016 classification of countries into four main groups, Developed Markets, Advanced Emerging Markets, Secondary Emerging Markets and Frontier Markets. FTSE operate by classifying the countries by evaluating the Quality of the market, Materiality, Consistency and Predictability, Cost Limitation, Stability and Market Access. FTSE did not start classifying countries until 2003, and the algorithm has changed substantially; therefore, their webpage only displays countries from after 2008.

Appendix 2 Selected sample

	Country	OECD			EU			EMU			GDP bnUSD
		2001	2009	2016	2001	2009	2016	2001	2009	2016	2016

1	United States	OECD	OECD	OECD							18624.48
2	Japan	OECD	OECD	OECD							4949.27
3	Germany	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	3477.80
4	United Kingdom	OECD	OECD	OECD	EU	EU	EU				2650.85
5	France	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	2465.45
6	India										2263.79
7	Italy	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	1859.38
8	Brazil										1796.19
9	Canada	OECD	OECD	OECD							1535.77
10	Korea, Republic of	OECD	OECD	OECD							1411.25
11	Russian Federation										1283.16
12	Spain	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	1237.26
13	Australia	OECD	OECD	OECD							1204.62
14	Mexico	OECD	OECD	OECD							1046.92
15	Indonesia										932.26
16	Turkey	OECD	OECD	OECD							863.71
17	Netherlands	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	777.23
18	Switzerland	OECD	OECD	OECD	EU	EU	EU				668.85
19	Argentina										545.48
20	Sweden	OECD	OECD	OECD	EU	EU	EU				514.46
21	Poland	OECD	OECD	OECD			EU				471.36
22	Belgium	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	467.96
23	Thailand										407.03
24	Austria	OECD	OECD	OECD	EU	EU	EU	EMU	EMU	EMU	390.80
25	Norway	OECD	OECD	OECD	EU	EU	EU				371.08
26	China, P.R.: Hong Kong										320.91
27	Israel			OECD							317.74
28	Philippines										304.91
29	Singapore										296.98
30	South Africa										295.46

Appendix 2 displays the 30 selected countries chosen based on gross GDP. The classification is members of the OECD, EU, and EMU. Countries excluded from the list are tax havens and countries that do not consistently report data to the CPIS. Countries classified as tax havens by the EU are American Samoa, Bahrain, Barbados, Grenada, Guam, South Korea, Macau, Marshall Islands,

Mongolia, Namibia, Palau, Panama, Saint Lucia, Samoa, Trinidad and Tobago, Tunisia, United Arab Emirates. We also exclude Luxembourg and Ireland but keep countries classified as tax light such as the Netherlands and Hong Kong. The gross GDP measured is as of 31.12.2016. United Kingdom will exit the EU March 29th, 2019 after vote decision in June 2016.

Appendix 3 Total debt and equity investments (world)

DEBT	%	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Developed	20.7%	25.4%	29.5%	32.4%	32.0%	37.7%	40.3%	35.6%	43.0%	42.0%	38.5%	41.8%	42.7%	40.1%	40.5%	40.2%
	Advanced Emerging	0.8%	1.4%	2.2%	2.6%	2.8%	3.3%	3.7%	3.2%	3.8%	3.4%	2.8%	4.1%	4.1%	4.1%	4.3%	4.2%
	Secondary Emerging	0.6%	0.6%	0.7%	0.9%	1.2%	1.3%	1.3%	1.4%	1.7%	1.6%	1.4%	1.5%	1.7%	1.7%	4.0%	4.7%
	Frontier	6.2%	6.6%	7.2%	12.4%	13.1%	16.3%	14.0%	13.0%	19.8%	17.0%	14.5%	16.0%	14.3%	15.5%	13.7%	12.6%

EQUITY	%	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Developed	17.77%	15.59%	20.14%	22.59%	25.84%	32.78%	35.61%	19.33%	28.21%	30.90%	26.92%	31.82%	30.05%	37.38%	40.53%	41.25%
	Advanced Emerging	1.61%	1.61%	1.91%	2.01%	2.38%	2.73%	2.99%	2.06%	3.26%	3.51%	3.06%	3.50%	3.37%	3.72%	4.83%	4.67%
	Secondary Emerging	6.26%	5.99%	8.60%	9.50%	9.37%	11.85%	14.40%	6.77%	13.23%	12.74%	8.87%	10.52%	10.02%	11.75%	13.23%	13.57%
	Frontier	2.67%	3.19%	3.01%	4.14%	4.41%	5.25%	5.32%	2.40%	3.18%	2.99%	2.34%	3.15%	3.12%	3.77%	11.47%	11.93%

Total	USD bn	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Developed	9,832	10,861	14,754	18,127	20,063	25,678	30,066	22,865	28,022	29,909	28,805	32,378	35,876	36,336	35,447	36,783
	Advanced Emerging	54	69	110	141	188	242	331	291	363	427	397	513	539	547	540	561
	Secondary Emerging	17	20	32	45	66	100	141	116	170	208	203	248	289	303	337	367
	Frontier	37	26	35	71	91	135	155	151	214	213	214	243	242	342	313	300

GDP	USD bn	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Developed	25,839	26,898	30,122	33,418	35,138	36,904	40,155	42,306	39,918	41,666	44,731	44,710	45,105	46,097	43,793	44,783
	Advanced Emerging	2,267	2,341	2,626	3,090	3,653	4,171	4,949	5,653	5,095	6,120	6,891	6,715	6,905	6,914	5,812	5,691
	Secondary Emerging	1,593	1,692	1,920	2,285	2,707	3,265	4,088	4,662	4,388	5,414	6,449	6,802	6,994	6,956	6,246	6,438
	Frontier	415	263	339	430	520	626	802	980	860	983	1,181	1,189	1,257	1,230	1,195	1,127

Appendix 3: Displays the total foreign debt and equity portfolio investments made by 57 FTSE countries from 2001-2016. The total portfolio investments are the aggregate aggregated sum of debt investments scaled by the aggregate sum of gross GDP. It also displays the total sum of foreign investments made by the 57 over the same period. The total foreign investments are measured in billion USD and are the sum of all foreign equity and debt investments collected from the CPIS data.

Appendix 4 Total debt and equity investments (30)

Debt	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EMU	30.96%	39.32%	44.48%	48.82%	49.14%	56.33%	58.62%	50.86%	61.21%	58.33%	49.47%	56.71%	56.58%	53.95%	57.82%	56.83%
EU	35.21%	42.57%	46.55%	50.32%	49.95%	58.74%	59.79%	51.99%	65.24%	63.13%	55.04%	62.10%	62.75%	57.19%	60.51%	59.01%
OECD	18.22%	22.08%	25.53%	27.90%	27.55%	32.33%	34.28%	29.87%	36.50%	35.57%	32.66%	35.21%	35.85%	33.41%	33.63%	33.33%
Other	9.23%	12.84%	14.12%	13.07%	11.47%	11.49%	10.88%	8.84%	11.52%	10.32%	8.74%	10.09%	11.25%	11.80%	14.41%	15.14%

Equity	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EMU	20.95%	18.27%	21.69%	23.17%	24.73%	32.55%	31.70%	16.86%	23.50%	26.16%	20.79%	26.58%	31.70%	31.64%	36.23%	38.30%
EU	27.26%	23.13%	27.23%	29.40%	31.94%	40.09%	39.43%	21.30%	30.96%	34.32%	27.74%	34.41%	40.79%	40.91%	45.51%	47.93%
OECD	16.62%	14.43%	18.61%	20.77%	23.57%	29.61%	32.07%	17.16%	25.40%	27.51%	23.92%	28.08%	33.71%	35.43%	37.31%	38.94%
Other	7.61%	8.66%	12.18%	12.49%	12.24%	14.29%	16.53%	8.79%	14.48%	14.42%	11.12%	14.12%	15.49%	16.36%	19.88%	21.33%

Total bnUSD	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EMU	3	4	5	7	7	9	10	9	10	10	9	9	10	10	10	10
EU	5	6	8	10	10	13	15	12	14	14	13	15	16	16	15	16
OECD	9	10	13	16	18	23	27	20	25	27	26	29	32	32	32	33
Other	0	0	1	1	1	1	1	1	1	2	2	2	2	2	3	3

Appendix 4: Displays the total foreign debt and equity portfolio investments made our 30 select countries displayed in table 1 appendix classified as EMU, EU, OECD and Other. The total portfolio investments are the aggregate aggregated sum of debt investments scaled by the aggregate sum of gross GDP. It also displays the total sum of foreign investments made by the 57 over the same period. The total foreign investments are measured in billion USD and are the sum of all foreign equity and debt investments collected from the CPIS data.

Appendix 5 Home bias (world)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Developed	0.70	0.69	0.67	0.66	0.64	0.63	0.61	0.63	0.61	0.64	0.66	0.63	0.61	0.59	0.58	0.57
Advanced Emerging	0.97	0.97	0.97	0.97	0.97	0.97	0.96	0.96	0.95	0.95	0.95	0.94	0.94	0.94	0.91	0.93
Secondary emerging	0.97	0.97	0.96	0.96	0.96	0.95	0.94	0.93	0.94	0.95	0.94	0.94	0.93	0.91	0.87	0.88
Frontier	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.97	0.97	0.96	0.96	0.96	0.96	0.96

Appendix 5: Displays the total portfolio home bias from 2001-2016 for 52 countries with comprehensive data for the home bias calculation. Total portfolio home bias is calculated as the annual average.

Appendix 6 Home bias (30)

Total	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EMU	0.637	0.599	0.576	0.561	0.527	0.531	0.509	0.539	0.521	0.561	0.604	0.574	0.549	0.507	0.490	0.488
EU	0.641	0.613	0.603	0.585	0.565	0.563	0.533	0.561	0.530	0.571	0.597	0.571	0.558	0.527	0.514	0.510
OECD	0.747	0.730	0.717	0.706	0.691	0.682	0.660	0.674	0.660	0.686	0.701	0.677	0.663	0.640	0.627	0.620
Other	0.882	0.833	0.828	0.826	0.824	0.818	0.807	0.804	0.799	0.812	0.811	0.798	0.790	0.781	0.767	0.766

Equity	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EMU	0.618	0.594	0.578	0.578	0.576	0.571	0.585	0.518	0.529	0.518	0.505	0.497	0.478	0.449	0.424	0.424
EU	0.645	0.626	0.615	0.605	0.607	0.605	0.6	0.541	0.549	0.551	0.53	0.522	0.508	0.478	0.457	0.454
OECD	0.742	0.734	0.724	0.717	0.715	0.708	0.7	0.657	0.663	0.665	0.642	0.633	0.623	0.594	0.577	0.572
Other	0.913	0.846	0.844	0.843	0.842	0.838	0.825	0.804	0.81	0.816	0.795	0.787	0.783	0.765	0.752	0.748

Debt	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EMU	0.682	0.609	0.605	0.604	0.615	0.627	0.657	0.67	0.65	0.671	0.7	0.69	0.676	0.664	0.662	0.667
EU	0.724	0.674	0.669	0.663	0.672	0.674	0.701	0.71	0.692	0.706	0.724	0.714	0.7	0.691	0.688	0.692
OECD	0.749	0.731	0.727	0.721	0.719	0.711	0.73	0.755	0.733	0.729	0.745	0.726	0.721	0.712	0.705	0.704
Other	0.923	0.854	0.847	0.84	0.831	0.818	0.824	0.845	0.824	0.814	0.822	0.802	0.804	0.8	0.791	0.788

Appendix 6: Displays the total, equity and debt portfolio home bias from 2001-2016 for our select 30 countries classified as EU, EMU, OECD and Other. Portfolio home bias is calculated as the annual average.

Appendix 7 Detailed information, variables

Variables		Source	Calculation & Comments
Raw data			
Date			2001-2016 (data), 2003-2016 used in regression
GDP		The World Bank	Annual data
GDP per Capita		The World Bank	Annual data
Market Cap Debt		Bank for International Settlement, BIS	When using the market cap debt BIS was not a comprehensive enough source for all countries outside of our sample. We therefore also include internal and external debt added together from Datastream,the world bank, and the CIS factbook as neither are comprehensive sources. This primarily occured for countries outside of our 30 selected countries. We define the sum of external and internal debt as the size of the debt market. Values that has been altered and use either of these three sources will be highlighted in the excel with data attached. This data is annual.
Market Cap Equity		The World bank	When data was not available from the World Bank we utilised data from datastream, this primarily happened with countries outside of our select 30. We define the size of the equity markets as the sum of market cap equity. Values that has been altered and use either of these three sources will be highlighted in the excel with data attached. This data is annual.
Total market cap		The World bank and BIS	The total market cap was a sum of the market cap debt and market cap equity.
Imports		The World Bank	Annual data
Exports		The World Bank	Annual data
Return on debt		Bloomberg	Monthly market returns is the various core indices from each country. The ticked used for each index is indicated in the attached excel.
Return on equity		Bloomberg	Monthly market returns is the various core indices from each country. The ticked used for each index is indicated in the attached excel.
General variables not specific to portfolio			
ED	Economic development		Difference of real GDP per capita. See GDP per capita
EO	Economic openness		Difference of the (Total Exports + Total imports) / Total GDP. See total import, exports and Total GDP
EMU	Members of the European Monitary Union	European Central Bank	Classification annually, no change in our 30 countries since 2001

Total Portfolio			
PW	Change in active portfolio weighs	Coordinated Portfolio Investment Survey (CPIS)	Total amount invested abroad by country c in country k scaled by total foreign investments by country c
TP	Total portfolio return	Bloomberg	Market cap weighted average of country returns of return of debt and equity.
FO	Adjusted financial development	Coordinated Portfolio Investment Survey (CPIS) and market cap	First we find the financial openness by taking 1- (the fraction of domestic markets held by foreigners) / Total domestic market cap). The fraction of domestic markets held by foreigners is measured by the CPIS. Then the FO is divided by 1- (the total domestic market over the total value of the world market). This can be find through the market cap of the country i and the sum of the market cap for our 30 countries.
FD	Financial development	GDP and Market cap	FD is calculated as the size of the market cap for country k over the total GDP of country k.
DW	Difference between actual and optimal weights.	Market cap and CPIS	Difference between optimal equity weights according to the ICAPM and actual equity weights. Optimal weights is the optimal weights based on the equity market cap of country c over the total market cap by the 30 selected countries. The actual weight is found from taking the actual equity amount invested by country c in country k over the total equity amount invested abroad by country c.
DB	Marginal diversification benefit by adding asset k		DBD is measured as the diversification benefit of adding asset k to country c portfolio. It is calculated using the covariance matrix from the return on the various country indices monthly returns. Followed by takinging 1- the sumproduct of the vector of actual weights in country c foreign equity portfolio and the annual variance covariance matrix for country c and l following the formula stated in the empirical methodology
RW	Size of portfolio c invested in the world	Coordinated Portfolio Investment Survey (CPIS)	Is measured as the weight of c's foreign equity portfolio sxaled by the size of the total foreign portfolio in the rest of the world (select 30 countres).

Debt Portfolio			
PWD	Portfolio weights	Coordinated Portfolio Investment Survey (CPIS)	Amount of debt invested abroad by country c in country k scaled by total foreign debt investments by country c
DP	Returnon the bond market	Bloomberg	The indices from each 30 countries were selected from Bloomberg various country indices. In the absence of an index following the investment grade bonds, the Bloomberg Barclays global aggregate index was used as a proxy for country index. The data used in the means was monthly data. The annual mean returns was multiplied with the actual weights of country c in country k in order to get the mean c,k as seen in the empirical methodology section.
FOD	Adjusted financial development debt	Debt market cap and CPIS	First we find the financial openness by taking 1- (the fraction of domestic markets held by foreigners) / Total domestic market cap). The fraction of domestic markets held by foreigners is measured by the CPIS. Total domestic market cap source can be seen below. Then the FO is divided by 1- (the total domestic market over the total value of the world market). This can be find through the market cap of the country i and the sum of the market cap for our 30 countries.
FDD	Financial developmen debt	Calculation of macrodata	FD can be calculated as the size of the debt market cap for country k over the total GDP of country k.
DWD	Difference between actual and optimal weights.	Coordinated Portfolio Investment Survey (CPIS)	Difference between optimal debt weights according to the ICAPM and actual debt weights. Optimal weights is the optimal weights based on the debt market cap of country c over the total market cap by the 30 selected countries. The actual weight is found from taking the actual debt amount invested by country c in country k over the total debt amount invested abroad by country c.
DBD	Marginal increase in return as a result of a marginal increase in weights	Return and CPIS	DBD is measured as the debt diversification benefit of adding asset k to country c portfolio. It is calculated using the covariance matrix from the return on the various country indices monthly returns. Followed by takinging 1- the sumproduct of the vector of actual weights in country c foreign debt portfolio and the annual variance covariance matrix for country c and l following the formula stated in the empirical methodology
RWE	The size of equity portfolio c invested in the world	Coordinated Portfolio Investment Survey (CPIS)	Is measured as the weight of c's foreign debt portfolio sxaled by the size of the total foreign portfolio in the rest of the world (select 30 countres).

Equity Portfolio			
PWE	Portfolio weights	Coordinated Portfolio Investment Survey (CPIS)	Amount of equity invested abroad by country c in country k scaled by total foreign equity investments by country c
EP	Returnon the bond market	Bloomberg	The indices from each 30 equity countries were selected from Bloomberg various country indices.The data used in the means was monthly data. The annual mean returns was multiplied with the actual weights of country c in country k in order to get the mean c,k as seen in the empirical methodology section.
FOE	Adjusted financial development equity	Equity market cap and CPIS	First we find the financial openness by taking 1- (the fraction of domestic markets held by foreigners) / Total domestic market cap). The fraction of domestic markets held by foreigners is measured by the CPIS. Total domestic market cap source can be seen below. Then the FO is divided by 1- (the total domestic equity market over the total value of the world equtiy market). This can be find through the equity market cap of the country i and the sum of the market cap for our 30 countries.
FDE	Financial developmen equity	Calculation of macrodata	FD can be calculated as the size of the equity market cap for country k over the total GDP of country k.
DWE	Difference between actual and optimal weights.	Coordinated Portfolio Investment Survey (CPIS)	Difference between optimal equity weights according to the ICAPM and actual equity weights. Optimal weights is the optimal weights based on the equity market cap of country c over the total market cap by the 30 selected countries. The actual weight is found from taking the actual equity amount invested by country c in country k over the total equity amount invested abroad by country c.
DBE	Marginal increase in return as a result of a marginal increase in weights	Return and CPIS	DBE is measured as the equity diversification benefit of adding asset k to country c portfolio. It is calculated using the covariance matrix from the return on the various country indices monthly returns. Followed by takinging 1- the sumproduct of the vector of actual weights in country c foreign equity portfolio and the annual variance covariance matrix for country c and l following the formula stated in the empirical methodology
RWE		Coordinated Portfolio Investment Survey (CPIS)	Is measured as the weight of c's foreign equity portfolio sxaled by the size of the total foreign portfolio in the rest of the world (select 30 countres).

Table 7: Displays the various variables and data used to calculate the variables used in the regression.

Appendix 8 Correlation matrices

Appendix 8.1 Total portfolio

	PW	TP	LTP	ED	FD	EO	FOA	RW	EMUa	EMUb	EMUc	DBemu	DWemu	LDB	LDW	DB	DW
PW	1.0000																
TP	0.0333	1.0000															
LTP	-0.0357	-0.2890	1.0000														
ED	0.0049	-0.0227	0.1221	1.0000													
FD	0.0065	0.0735	-0.0315	-0.0928	1.0000												
EO	0.0133	-0.0311	0.0304	0.1169	-0.0357	1.0000											
FOA	-0.0066	0.0106	-0.0055	-0.0045	-0.0323	0.0110	1.0000										
RW	-0.0133	0.2284	0.0136	0.1305	-0.0340	-0.0156	-0.0188	1.0000									
EMUa	-0.0028	-0.0100	-0.0091	-0.0002	0.0006	-0.0015	0.0000	0.0031	1.0000								
EMUb	-0.0118	-0.0053	-0.0092	0.0069	-0.0169	0.0445	-0.0010	-0.0886	-0.0345	1.0000							
EMUc	-0.0045	-0.0026	-0.0092	0.0028	-0.0069	0.0182	-0.0004	-0.0362	0.4082	0.4082	1.0000						
DBemu	0.0012	0.0067	-0.0101	-0.0392	0.0013	0.0053	0.0013	-0.0161	-0.0061	-0.0061	-0.0150	1.0000					
DWemu	-0.0077	0.0223	-0.0033	-0.0025	-0.0052	-0.0029	-0.0000	-0.0077	-0.0084	-0.0084	-0.0206	0.5125	1.0000				
LDB	0.0903	-0.0144	0.0055	0.0083	-0.0038	0.0232	0.0009	-0.0102	-0.0122	-0.0023	-0.0056	0.0602	0.0309	1.0000			
LDW	0.2816	0.0171	-0.0514	0.0031	-0.0577	0.0070	0.0044	-0.0154	0.0027	0.0009	-0.0010	0.0495	0.0965	0.2177	1.0000		
DB	-0.2052	0.0114	0.0025	0.0333	0.0127	-0.0166	-0.0008	0.0126	-0.0145	0.0030	-0.0043	-0.0048	-0.0015	-0.3312	-0.0899	1.0000	
DW	-0.9106	-0.0481	0.0446	0.0160	0.1460	-0.0134	-0.0024	-0.0236	0.0027	0.0074	0.0022	-0.0031	0.0042	-0.0897	-0.3007	0.2128	1.0000

Appendix 8.1: Correlation matrix of the variables used in the regression 1. Where PW is the change in portfolio weights and the dependent variable in

the regression. TP and LTP denote current and lagged total portfolio returns consecutively. ED = economic development. FD = financial development. EO = economic openness. FOA = adjusted financial openness. DB = diversification benefits. DW = initial degree of underweight. LDB = lagged diversification benefit. LDW = lagged initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU.

Appendix 8.2 Total debt portfolio

	PWD	DP	LDP	ED	FDD	EO	FOD	RWD	EMUa	EMUb	EMUc	DBDemu	DWDemu	LDBD	LDWD	DWD	DBD
PWD	1.0000																
DP	0.0939	1.0000															
LDP	-0.0106	-0.0745	1.0000														
ED	0.0051	-0.0001	-0.0665	1.0000													
FDD	-0.0025	-0.0043	0.0051	-0.0090	1.0000												
EO	0.0146	0.0243	-0.0566	0.1169	0.0678	1.0000											
FOD	0.0137	-0.0092	0.0064	-0.1313	-0.2298	-0.0718	1.0000										
RWD	-0.0085	-0.0269	0.0151	0.1453	-0.0354	-0.0657	0.0325	1.0000									
EMUa	-0.0023	0.0102	0.0076	-0.0002	-0.0001	-0.0015	0.0005	0.0018	1.0000								
EMUb	-0.0073	0.0335	0.0445	0.0069	0.0026	0.0445	-0.0155	-0.0515	-0.0345	1.0000							
EMUc	-0.0049	0.0529	0.0575	0.0028	0.0011	0.0182	-0.0063	-0.0210	0.4082	0.4082	1.0000						
DBDemu	-0.0069	-0.0037	0.0268	-0.0332	-0.0034	0.0054	0.0005	-0.0084	0.0134	0.0134	0.0329	1.0000					
DWDemu	-0.0163	-0.0122	-0.0031	0.0056	-0.0067	-0.0091	0.0082	-0.0050	0.0060	0.0060	0.0147	0.5386	1.0000				
LDBD	0.0834	-0.0037	-0.2002	-0.0075	-0.0012	0.0311	0.0016	-0.0094	0.0050	-0.0008	0.0038	0.0682	0.0367	1.0000			
LDWD	0.1753	-0.0101	-0.1051	0.0011	-0.1108	0.0148	0.0433	0.0299	0.0023	0.0028	0.0025	0.0545	0.1012	0.4271	1.0000		
DWD	-0.8791	-0.1055	0.0205	0.0184	0.2179	-0.0114	-0.0875	-0.0142	0.0022	0.0025	0.0033	0.0043	0.0113	-0.0843	-0.2316	1.0000	
DBD	-0.4305	-0.1865	0.0140	-0.0029	0.0014	-0.0264	-0.0024	-0.0012	0.0056	-0.0051	0.0056	0.0054	0.0037	-0.2032	-0.0772	0.4143	1.0000

Appendix 8.2. Correlation matrix of the variables used in the regression 2. Where PWD is the change in debt portfolio weights and the dependent variable. TP and LTP denote current and lagged total portfolio returns consecutively. ED = economic development. FDD = financial difficulty. EO = economic openness. FOD = adjusted financial openness. DBD = diversification benefits. DWD = initial degree of underweight. LDBD = lagged diversification benefit. LDWD = lagged initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU.

Appendix 8.3 Total Equity Portfolio

	PWE	EP	LEP	ED	FDE	EO	FOE	RWE	EMUa	EMUb	EMUc	DBEemu	DWEemu	LDBE	LDWE	DWE	DBE
PWE	1.0000																
EP	-0.0358	1.0000															
LEP	0.0794	-0.2337	1.0000														
ED	0.0042	-0.0020	-0.1218	1.0000													
FDE	0.0358	-0.1610	0.0692	-0.1306	1.0000												
EO	0.0010	0.0449	-0.1076	0.1177	-0.1331	1.0000											
FOE	0.0003	0.0298	0.0012	0.0367	-0.1102	-0.0215	1.0000										
RWE	-0.0063	-0.0012	0.0069	-0.0568	0.0067	-0.0284	0.0003	1.0000									
EMUa	-0.0042	0.0080	0.0069	-0.0011	0.0011	-0.0015	-0.0032	0.5417	1.0000								
EMUb	-0.0054	0.0156	0.0131	0.0061	-0.0284	0.0442	0.0835	-0.0205	-0.0376	1.0000							
EMUc	0.0028	0.0014	0.0060	0.0024	-0.0135	0.0203	0.0394	0.2129	0.3929	0.4693	1.0000						
DBEemu	0.0007	-0.0078	-0.0231	0.0208	0.0008	-0.0062	-0.0036	0.0001	0.0000	0.0000	0.0000	1.0000					
DWEemu	-0.0123	0.0103	-0.0582	0.0139	-0.0006	-0.0009	-0.0040	-0.0003	-0.0250	-0.0298	-0.0635	0.0381	1.0000				
LDBE	0.0001	-0.0061	-0.0138	0.0130	-0.0038	-0.0064	-0.0022	0.0006	0.0000	-0.0000	-0.0000	0.4661	0.0178	1.0000			
LDWE	0.2261	0.0942	-0.0135	0.0101	0.0193	-0.0020	-0.0104	0.0066	0.0044	-0.0076	-0.0040	0.0032	0.0848	0.0007	1.0000		
DWE	-0.9046	0.0509	-0.0755	-0.0024	-0.0020	-0.0038	-0.0154	0.0065	0.0043	-0.0072	-0.0047	-0.0000	0.0137	-0.0000	-0.2746	1.0000	
DBE	-0.0008	-0.0145	0.0125	-0.0431	0.0248	-0.0219	0.0107	0.0106	0.0000	0.0000	0.0000	-0.2315	-0.0190	-0.4974	-0.0007	0.0007	1.0000

Appendix 8.3: Correlation matrix of the variables used in the regression 3. Where PWE is the change equity portfolio weights and the dependent variable in the regression. EP and LEP denote current and lagged total portfolio returns consecutively. ED = economic development. FDE = financial development. EO = economic openness. FOE = adjusted financial openness. DBE = diversification benefits. DWE = initial degree of underweight. LDBE = lagged diversification benefit. LDWE = lagged initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU.

Appendix 9 Summery statistics

Appendix 9.1 Total portfolio

Variable		Mean	Std. Dev.	Min	Max	Observations	
PW	overall	.0001642	.0323282	-.8429386	.9413179	N =	12180
	between		.0044345	-.0399437	.0662741	n =	870
	within		.0320229	-.8517262	.875208	T =	14
TP	overall	.0000452	.0022605	-.0425	.0385	N =	12180
	between		.0004098	-.0025429	.0035214	n =	870
	within		.0022231	-.0403405	.0355595	T =	14
LTP	overall	4.91e-06	.0021275	-.0425	.0385	N =	12180
	between		.0003044	-.0032214	.0033571	n =	870
	within		.0021056	-.0392737	.0375763	T =	14
ED	overall	966.1461	3506.519	-22701.78	13809.91	N =	12180
	between		678.8769	78.74814	2750.795	n =	870
	within		3440.246	-23721.83	12025.26	T =	14
FD	overall	.0529324	.8460992	-8.733	8.7386	N =	12180
	between		.1038778	-.0554143	.5701357	n =	870
	within		.8397051	-8.731768	8.739832	T =	14
EO	overall	.0062757	.0871911	-.80672	.56373	N =	12180
	between		.0194986	-.0268121	.0833021	n =	870
	within		.0849853	-.7748214	.4867036	T =	14
FOA	overall	.0038878	.2743735	-2.42919	2.46603	N =	12180
	between		.0039944	-.0024843	.0117379	n =	870
	within		.2743444	-2.436923	2.458297	T =	14
RW	overall	1.43e-09	.0047957	-.0563901	.0277277	N =	12180
	between		.0008336	-.0013163	.0027391	n =	870
	within		.0047227	-.0591292	.0249886	T =	14
EMUa	overall	.2333333	.4229699	0	1	N =	12180
	between		.4231959	0	1	n =	870
	within		0	.2333333	.2333333	T =	14
EMUb	overall	.2333333	.4229699	0	1	N =	12180
	between		.4231959	0	1	n =	870
	within		0	.2333333	.2333333	T =	14
EMUc	overall	.0482759	.2143574	0	1	N =	12180
	between		.2144719	0	1	n =	870
	within		0	.0482759	.0482759	T =	14
DBemu	overall	-9.25e-07	.0002747	-.014981	.013375	N =	12180
	between		.0000592	-.0005201	.0012028	n =	870
	within		.0002683	-.0154636	.0128924	T =	14
DWemu	overall	-.0000148	.003188	-.0785	.0754	N =	12180
	between		.0008808	-.0102429	.0099571	n =	870
	within		.0030641	-.078722	.0759995	T =	14
LDB	overall	.0000946	.0045682	-.120026	.136545	N =	12180
	between		.0006302	-.0075894	.0049134	n =	870
	within		.0045245	-.1210359	.1355351	T =	14
LDW	overall	-.0001603	.0330199	-.9657	.8445	N =	12180
	between		.0042466	-.0689429	.0229571	n =	870
	within		.032746	-.8969174	.8466755	T =	14

Appendix 9.1: Displays the summary statistics for the variables used in regression 2 A and B on the total change in debt portfolio weights. Where PW is the change debt portfolio weights and the dependent variable in the regression. TP and LTP denote current and lagged total portfolio returns consecutively. ED = economic development. FD = financial difficulty. EO = economic openness. FO = adjusted financial openness. DBD = diversification benefits. DWD =

initial degree of underweight. LDB = lagged diversification benefit. LDW = lagged initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU.

Appendix 9.2 Total debt portfolio

Variable		Mean	Std. Dev.	Min	Max	Observations	
PWD	overall	.0001642	.0395995	-1	1	N =	12180
	between		.0050238	-.0520246	.070922	n =	870
	within		.0392799	-1.070758	.9292422	T =	14
DP	overall	.000318	.0059098	-.2585	.4457	N =	12180
	between		.0015054	-.0154071	.0319071	n =	870
	within		.0057151	-.2427748	.4141109	T =	14
LDP	overall	.0003722	.005645	-.2585	.4457	N =	12180
	between		.001613	-.0181786	.0319071	n =	870
	within		.0054099	-.2399492	.414165	T =	14
ED	overall	966.1461	3506.519	-22701.78	13809.91	N =	12180
	between		678.8769	78.74814	2750.795	n =	870
	within		3440.246	-23721.83	12025.26	T =	14
FDD	overall	.0137942	.6338192	-8.869147	8.907825	N =	12180
	between		.0301763	-.0672332	.0631481	n =	870
	within		.6331013	-8.872967	8.904005	T =	14
EO	overall	.0062757	.0871911	-.80672	.56373	N =	12180
	between		.0194986	-.0268121	.0833021	n =	870
	within		.0849853	-.7748214	.4867036	T =	14
FOD	overall	.0034091	.0620682	-.61417	.604528	N =	12180
	between		.0054293	-.0062107	.0145389	n =	870
	within		.0618305	-.6094985	.6091995	T =	14
RWD	overall	1.47e-20	.0043803	-.0210083	.0213972	N =	12180
	between		.0006886	-.0013607	.0021448	n =	870
	within		.0043259	-.0209632	.0216956	T =	14
EMUa	overall	.2333333	.4229699	0	1	N =	12180
	between		.4231959	0	1	n =	870
	within		0	.2333333	.2333333	T =	14
EMUb	overall	.2333333	.4229699	0	1	N =	12180
	between		.4231959	0	1	n =	870
	within		0	.2333333	.2333333	T =	14
EMUc	overall	.0482759	.2143574	0	1	N =	12180
	between		.2144719	0	1	n =	870
	within		0	.0482759	.0482759	T =	14
DBDemu	overall	7.72e-06	.0010414	-.037381	.044617	N =	12180
	between		.0002265	-.0014356	.0040731	n =	870
	within		.0010165	-.0388163	.0451467	T =	14
DWDemu	overall	.0000137	.0041556	-.1222	.088	N =	12180
	between		.0012998	-.0171357	.01495	n =	870
	within		.0039473	-.1050506	.0745423	T =	14
LDBD	overall	-.0000953	.0152746	-.7120022	.8741069	N =	12180
	between		.0021843	-.0359539	.0302355	n =	870
	within		.0151178	-.7123135	.8737956	T =	14
LDWD	overall	-.0001681	.0410649	-1.0053	1.0273	N =	12180
	between		.0050344	-.0679429	.0385857	n =	870
	within		.0407554	-.9911825	1.041418	T =	14

Appendix 9.2: Displays the summary statistics for the variables used in regression 2 A and B on the total change in debt portfolio weights. Where PW is the change debt portfolio weights and the dependent variable in the regression. TP and LTP denote current and lagged total portfolio returns consecutively. ED = economic development. FD = financial difficulty. EO = economic openness.

FO = adjusted financial openness. DBD = diversification benefits. DWD = initial degree of underweight. LDB = lagged diversification benefit. LDW = lagged initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU.

Appendix 9.3 Total equity portfolio

Variable		Mean	Std. Dev.	Min	Max	Observations
PWE	overall	.0001627	.038733	-.8992891	1	N = 12180
	between		.0048335	-.0582453	.0398459	n = 870
	within		.0384306	-.8992778	.9603168	T = 14
EP	overall	-.0001212	.0021234	-.0418174	.082308	N = 12180
	between		.0004593	-.0053873	.0015792	n = 870
	within		.0020732	-.0404272	.0836983	T = 14
LEP	overall	-.0000741	.0022432	-.0418174	.082308	N = 12180
	between		.0003222	-.0034758	.0015588	n = 870
	within		.00222	-.0403798	.0837457	T = 14
ED	overall	966.1461	3506.519	-22701.78	13809.91	N = 12180
	between		678.8769	78.74814	2750.795	n = 870
	within		3440.246	-23721.83	12025.26	T = 14
FDE	overall	.0391401	.5617975	-6.484958	4.709665	N = 12180
	between		.0913136	-.0060794	.5119234	n = 870
	within		.5543348	-6.957741	4.236882	T = 14
EO	overall	.0062757	.0871911	-.80672	.56373	N = 12180
	between		.0194986	-.0268121	.0833021	n = 870
	within		.0849853	-.7748214	.4867036	T = 14
FOE	overall	.004059	.0244479	-.145674	.142758	N = 12180
	between		.0051116	-.0053542	.0141221	n = 870
	within		.0239081	-.1440954	.1467077	T = 14
RWE	overall	.1816005	.182393	0	.7868	N = 8117
	between		.1766397	.0003714	.5884929	n = 580
	within		.0459808	.0118862	.3875862	T = 13.9948
EMUa	overall	.2333333	.4229699	0	1	N = 12180
	between		.4231959	0	1	n = 870
	within		0	.2333333	.2333333	T = 14
EMUb	overall	.2333333	.4229699	0	1	N = 12180
	between		.4231959	0	1	n = 870
	within		0	.2333333	.2333333	T = 14
EMUc	overall	.0482759	.2143574	0	1	N = 12180
	between		.2144719	0	1	n = 870
	within		0	.0482759	.0482759	T = 14
DBEemu	overall	1.82e-06	.5208203	-27.44929	27.60781	N = 12180
	between		.0000526	-.0002494	.0007438	n = 870
	within		.5208203	-27.44926	27.60784	T = 14
DWEemu	overall	-.0000488	.0034597	-.1248	.096	N = 12180
	between		.0010106	-.0174429	.0052429	n = 870
	within		.003309	-.1074059	.1072869	T = 14
LDBE	overall	.000084	1.117651	-32.08246	32.18195	N = 12180
	between		.000303	-.0004842	.002263	n = 870
	within		1.117651	-32.08252	32.18193	T = 14
LDWE	overall	-.0001567	.0415677	-1.0164	.9021	N = 12180
	between		.0045674	-.04405	.0405143	n = 870
	within		.0413162	-.9725067	.9009862	T = 14

Appendix 9.3: Displays the summary statistics for the variables used in regression 3 A and B on the total change in equity portfolio weights. Where PWE is the change debt portfolio weights and the dependent variable. EP and LEP denote current and lagged total equity portfolio returns consecutively. ED

= economic development. FDE = financial difficulty. EO = economic openness. FOE = adjusted financial openness. LDBD = lagged diversification benefit. LDWD = lagged initial degree of underweight. EMUa is a dummy variable that equals to 1 when investing country c is in the EMU, EMUb is a dummy variable that equals to 1 when invested in country k is a member of the EMY and EMUc is a dummy variable which is 1 if both investor and host countries are in the EMU.