

Financial Literacy and its Interaction with Altered Investment Behaviour: an Analysis of the Familiarity Bias

Master's Thesis in Economics



The research undertaken traces whether the inherent level of financial literacy an individual possesses will affect their willingness to suppress the natural tendency to prefer investing in familiar securities, thereby examining whether equity Familiarity Bias is lower in countries where the population has a higher level of financial literacy. This paper extends prior research by including financial knowledge-oriented measures, which has noteworthy academic and societal implications for informed retail decision-making, especially in developing nations such as India. By subsequently examining the extension of the Familiarity Bias into symmetrical regionalism, the paper explores the manifestation of the Surrounding Bias in individual investment-decisions. A quantitative study featuring one-sample t-tests and cross-sectional regression analyses reveal that while there exists a tendency for individuals to inherently invest in familiar securities from domestic or surrounding regions, a heightened level of financial literacy can curb these biased propensities; thereby implying that financially literate individuals are less prone to the Familiarity and Surrounding Biases than the relatively financially illiterate individuals.

Keywords: Familiarity Bias, Financial Literacy, Surrounding Bias

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I. Introduction

In the prevailing research landscape, the fields of Finance and Economics have evolved to appreciate that while individual investors consistently attempt to make rational decisions, they ultimately are incapable of totally ridding themselves of cognitive biases in their undertaken investments. The rationale for this outcome arises from the fact that all investors hold psychological biases that direct their financial behaviour and patterns of investment, which starkly contrasts traditional theory of finance that suggest that individuals are fully rational and operate in a wealth maximizing manner (Kahneman and Tversky, 1984). Accordingly, it is proposed that despite the well-founded and widely acknowledged evidence of the benefits associated with international portfolio diversification, individual investors demonstrate a preferential treatment towards holding familiar securities.

Robust and differentiated indications exist to imply that the preference for the mode of suboptimal diversification in financial investing arises predominantly as a consequence of decision making on the part of investors, rather than constraints posed by institutional frameworks of international financial markets (French and Poterba, 1991). Investors across the globe state their expectations of returns in their domestic market for equity to surpass returns in other equity markets by over a hundred basis points (*ibid*). This evidence is supplemented by the state of contemporary domestic ownership ratios that persist across the largest stock markets across the world; with estimates showing that despite academic literature propounding the benefits derived from international portfolio diversification, the gap between the investment in domestic securities (quantified by the S&P 500 Index) and foreign equities (quantified by the MSCI World Index) widened over the past decade for domestic investors across the United States (Schumacher, 2015).

Academic development in finance consistently finds itself sparring with the contradiction where despite theoretical models such as the international CAPM (capital asset pricing model) being well-acknowledged by academicians and industry professionals and suggesting that holding an internationally oriented portfolio is beneficial (Huberman, 2001; Solnik, 2000; Sercu et al, 2012), the Familiarity Bias (specifically home bias and foreign bias in equity) continues to persist. While several explanations for the bias including the patriotic behaviour of retail investors (Morse et al, 2004) were published to explore the home bias in equity, the field of finance has been largely unable to explain to unsophisticated investors that globally diversifying their portfolios shall create a more optimal outcome than simply investing in domestically bound securities.

Prior research ascertains that an individual's financial literacy holds a decisive impact on their willingness to bear financial risk and subsequently make reformed investment decisions (Gustafson and

Omark, 2015). In accordance with this understanding, a person's risk perception of unfamiliar securities is reliant on their access to top-quality financial data and their own aptitude to access, process, synthesize, and utilize it; implying that investor comprehension of foreign equities is thereby a function of the individual's ability to extrapolate unfamiliar statistics of return and volatility into understandable terms for themselves, which is deeply interrelated with their ability to process financial information.

Consequently, tangible linkages potentially exist between the level of financial literacy possessed by individuals and their ability to overcome the Familiarity Bias (specifically relating to the Home and Foreign Biases), in turn enabling them to realize the advantages that can be garnered from international portfolio diversification (ibid).

The fundamental objective of this research is to attempt to determine whether or not the inherent level of financial literacy a person possesses will affect the willingness of the individual to suppress the natural tendency to only invest in familiar and domestic securities. In other words, the major question tackled by the study strives to investigate if equity Familiarity Bias is lower in countries where the population has a higher level of financial literacy. Subsequently, the research question that this paper focuses on is: *To what extent is the cross-border equity investment propensity of individuals affected by a heightened level of financial literacy?*

While noteworthy research has been and continues to be carried out on the reaction of individual investors to risky assets depending on their risk-averse character (Keren, 1991; Montgomery and Adelbratt, 1982), the dynamic nature of the incorporation of psychological factors such as their 'familiarity' with the asset to counter the propositions of traditional finance theory implies that there exists a large scope for further research, which this paper aims to deal with. Although a considerable number of studies now recognize and proactively warn investors against the pitfalls of undiversified investing, the dimensions of this familiarity and its extension beyond the scope of the national identity of a security are areas that are explored in a more comprehensive fashion in this paper in order to draw important conclusions for the field of behavioural finance.

Further, this study strives to extend previously performed research by adding a perspective from a supplementary factor impacting risk perception, which arises from an individual investor's inherent financial literacy. Within the context of this study, financial illiteracy is viewed as a barrier that inhibits the achievement of an optimal magnitude of cross-border equity investment. In this regard, the paper thereby attempts to compare to what extent the aforementioned Familiarity Bias is exhibited for people with differentiated levels of financial literacy, a subject that has not been thoroughly explored in prior research. By looking into risk preferences within a framework that accounts for these biases arising from the background of an individual and thereby measuring whether or not all individual investors

across different nations are prone to Familiarity Bias with the same degree, the research is given a new outlook in a manner that aims to augment its applicability.

The following section of the paper provides a theoretical foundation for the arguments explored in the research. Following this, section III describes the research design that was employed to test the research question and hypotheses, and includes an in-depth discussion of the methodology used to supplement the design. Section IV relates to the analysis of the results generated from the parametric tests and discusses these results in the context of the hypothesized relationships. Following this, section V corresponds to the additional analysis conducted with a neutral benchmark, which seeks to contextualize the findings of this study. Section VI provides the discussion and conclusions derived through the research while also highlighting certain limitations faced by the study and the scope for future research in a related avenue. The following section, section VII, corresponds to the list of references utilized in the paper, while section VIII relates to the Appendices that supplement the findings in the paper through distinct sub-sections.

II. Theoretical Framework

This section of the paper strives to present the existing literature that provides a theoretical foundation for the research question at hand.

Despite the globally acknowledged advantages arising from international portfolio diversification (Bailey and Stulz, 1990; Chiou, 2009), there exists a propensity of investors to be tilted towards holding ‘familiar’ domestic securities (Levy and Sarnat, 1970). This inclination relates to biased investment decision-making, and reflects the Familiarity Bias (specifically the Home Bias and Foreign Bias puzzles) that has enjoyed a position of prominence in the past few decades of literature focusing on macro-finance and internationally integrated financial markets. In this regard, the equity portfolios that are predominantly composed of domestic securities suffer from a significant magnitude of under-diversification. Cornand et al (2016) demonstrated through their research that retail investors may succumb to this tendency of under-diversification to a greater degree than professional investors due to the two-fold effects stemming from lower financial knowledge and literacy, and higher costs of acquiring information on the personal investment scale.

Research performed under the expansive patronage of behavioural finance such as that undertaken by Jureviciene and Jermakova (2012), Yu et al (2011), and Binswanger et al (1980) recognizes that cognitive restrictions and inherent limitations lead to imperfect decision making on an international scale, but the proclivity of investors to risk acceptance as a constituent of these limitations does not operate in an identical manner for all individuals. Numerous variances arise in the ability of individual investors to comprehend, assimilate, and employ necessary information (that relate to the fundamental numerical characteristics of an asset, such as its volatility) depending on the level of their financial literacy, the major components of which stem from fundamental investor education and their ability to recognize the inherent quality of market assets.

Lusardi and Mitchell (2017) ascertain that despite the augmented accessibility of financial markets across the world, retail investors still experience a nature of struggle in processing and utilizing information, which then causes their investments to persist within the boundaries of familiar financial products. The paper bases its findings on the experience garnered from the United States American Life Panel Study (2008); depicting how respondents with a relatively low level of self-reported financial literacy found themselves incapable of making decisions or providing accurate answers to questions based on inflation, savings account return rates, and mutual funds, simply because the wording of the study (or the presentation format) was altered from generic investment documents provided at large commercial banks. This furthers the intuition that when retail investors are placed outside the scope of

a financial format that they are accustomed to, they are overwhelmed; thereby explaining their preference to invest in securities persisting within the boundaries of their familiarity and inherent knowledge.

The equity Familiarity Bias potentially persists in differentiated economies as a result of the difficulties of retail investors to master or gain adequate and good quality financial knowledge about intricate products such as annuities, pension accounts, mortgages, and even the terms associated with student loans or mortgages (Kimball and Shumway, 2006). This implies that despite the benefits garnered from offering a varied array of financial services in international markets, an increased obligation lies with unsophisticated individuals to ‘tailor-make’ their portfolios and alter their access to credit through the processes of borrowing, saving, and investing without necessarily fully grasping the underlying mechanisms. They further the findings propounded by Lewis (1998) that describe how the trend of ‘disintermediation’ prevails consistently even in less developed financial markets, which positions the incidence of decumulation and planning (specifically relating to pensions and retirement funds) onto individual investors. In other words, the responsibility of choosing ‘good’ investments is placed on unsophisticated investors, despite their lack of skill in identifying and purchasing financially complex instruments.

Keeping in mind the realization that immense differences continue to appear between the level of financial literacy and financial asset quality especially across developed and developing nations, it is subsequently reasonable to construe that the tendency of an investor to persist within a relatively ‘familiar’ framework shall also depend on their inherent background, as well as the subsequent implications that arise from their financial literacy and basic education (Yu et al, 2011). Consequently, this research also accounts for an individual investor’s level of financial literacy, while simultaneously controlling for other constraints that influence financial literacy (such as their nation of origin, source of information influencing their financial decisions, or their abilities in finance compared to an average investor within their peer group) in order to draw important inferences on whether and to what degree the investment behaviour of investors that possess different levels of financial literacy shall be changed when presented with securities originating from ‘foreign’ sources such as another nation.

The S&P Global Financial Literacy Survey (2014) highlighted essential inferences on the tendency of an individual’s financial literacy to influence their financial decision making. The study found that developed nations such as the Netherlands fall within the bracket of nations with comparatively the highest rates of financial literacy, consisting of a population of over 62 percent adults that are considered financially literate. On the other hand, developing nations such as India (with other emerging economies in Asia) were found to be a source for the least financially literate population of adults, with the rate of financial literacy amounting to less than 24 percent. By considering the

fundamental differences between the financial structures of these economies, the research aims to highlight the potentially significant dependency of investors from these nations to invest entirely within the bounds of familiar securities on their inherent financial literacy.

Furthermore, Tsoukas et al (2015) demonstrate through their research that the tendency to succumb to home bias may be minimized for samples that possess a greater concentration of general education on a higher level. Eventually, university education discernibly held a determinative effect on moderating biased individual-level investment decisions; with supplementary evidence highlighting that the home bias is minimized in nations producing a greater number of university graduates annually, despite the holistic development that may persist on a low level (MacDonald and Bose, 2016).

Additionally, van Rooij et al (2012) related the importance of ‘financial know-how’ to confidence in investment decision-making, specifically highlighting the evidence garnered from the Financial Crisis of 2008. The research found that investors owning credit cards and subprime mortgages purchased them absorbing the underlying information asymmetry that was associated with the securities, enabling them to assume a unique position of being able to decide on their own what levels of borrowing they preferred.

Contemporary financial literature has also unveiled that the inverse relationship between rising information costs and cross-border investment can be regulated when the level of financial literacy possessed by the domestic population is substantial (Lusardi and Mitchell, 2014; Jappelli and Padula, 2010). The intuition is furthered by Feldhues et al (2017), with their research exhibiting how when information costs are expressed as a linear function of geographical distance, the willingness of financially educated individuals to incur costs of foreign investment information acquisition is significantly different from zero. This is due to the fact that individuals with proficiency in finance may recognize the potential benefits associated with international diversification to a greater degree than regular retail investors.

Adjacently, financial analyses that focus on regional parameters (Bosch et al, 2008; Giuzio et al, 2020) find that the proclivity to invest in a security is not necessarily a function of the ‘nationality’ of the security, but simply whether the security ‘feels’ familiar enough to the investor (Darvas and Schoenmaker, 2017). In this regard, the scope of the research is extended to investigate whether equity Familiarity Bias comparatively applies to symmetrical regionalism as an additional examination of the home bias. The research thereby takes into account for example whether a Dutch investor would feel more comfortable investing in European equity as compared to Asian equity, based on their familiarity with the former over the latter.

Consequently, it is theorized that in order to potentially moderate the Familiarity Bias that prohibits optimal international portfolio diversification, it is imperative to expand the level of financial information and literacy available to individuals, specifically retail investors. The research aims to explain how augmenting financial literacy will enable expansive market participation and better-quality financial investment across the globe.

In this regard, the hypotheses that underlie the operation of this research can be described as follows:

H1: Investors assign portfolio weights to familiar securities that are higher than optimal portfolio weights.

In other words, it is hypothesized that a significant difference exists between the portfolio weight assigned to familiar (domestic) securities (specifically stocks) and the optimal weights associated with a diversified portfolio.

This hypothesis attempts to test whether the Familiarity Bias persists for investors.

H2: Investors assign portfolio weights to equity-based securities from surrounding countries that are higher than optimal portfolio weights.

In other words, it is hypothesized that Equity Familiarity Bias further extends to comparative regionalism, thereby implying that a significant difference exists between the portfolio weight assigned to familiar securities (specifically stocks) from a comparable region and the optimal weights associated with a diversified portfolio.

This hypothesis attempts to test whether the Surrounding Bias persists for investors.

H3: Equity Familiarity Bias is minimized for nations where the domestic population has a higher level of financial literacy.

In other words, it is hypothesized that a significant and negative relationship exists between the portfolio weights assigned to domestic equity securities (specifically stocks) and the level of financial literacy possessed by the investors of a country.

Congruently, a significant and positive relationship exists between the portfolio weights assigned to the optimal weights associated with a diversified portfolio and the level of financial literacy possessed by the investors of a country.

H4: Equity Surrounding Bias is minimized for nations where the domestic population has a higher level of financial literacy.

In other words, it is hypothesized that a significant and negative relationship exists between the portfolio weights assigned to equity securities (specifically stocks) from surrounding region nations and the level of financial literacy possessed by the investors of a country.

Congruently, a significant and positive relationship exists between the portfolio weights assigned to the optimal weights associated with a diversified portfolio from continent level indices and the level of financial literacy possessed by the investors of a country.

The following section elucidates the research design and experimental methodology utilized while carrying out the investigation of the hypothesized relationships.

III. Research Design

This section of the paper seeks to elucidate the methodology that the research operates on. Furthermore, in the latter portion of this section, the variables utilized in the paper to facilitate the data analysis are explained in detail.

III.A. Methodology of Research

The methodology of research utilized fundamentally operated using data collected from adults (over the age of 18) from multiple nations through a digital survey, using a questionnaire designed on the online survey software *Qualtrics*. Keeping in mind the need for the generation of a large number of responses for an in-depth research analysis, the survey method was deemed appropriate for the scope of this paper (Ponto, 2015). Additionally, the research carried out in the paper relied on the investigation of how individual investors behave in different contexts, thereby making an experimental method suitable as a method of research (Ross et al, 2003). Further, the survey was distributed digitally in order to solicit individuals to respond within a limited framework of time.

The underlying survey design operated by using a combination of the between-subjects and within-subjects design. Elements of the between-subjects method were used to examine the investment patterns of familiarity and regionality-driven investment of the individual across varied national indices. Further, complete randomization of all components and questions along with the within-subjects design were used to ensure no individual would infer additional information and alter their responses based on preceding questions; thereby permitting the effective comparison of investment behaviour across individuals from different nationalities (Charness et al, 2012).

The survey design operated in three distinct parts, with the first being designated to providing general instructions and information on the nature of choices the individuals were expected to make. The second portion corresponded to the decision task, within which individuals were expected to make decisions relating to the proportion of a hypothetical endowment they were willing to assign to two presented equity alternatives, each with a ‘domestic’ or ‘foreign’ attribute. A hypothetical endowment amount was presented as a recently inherited sum of EUR 10,000.00 that the individual has already decided to invest in the stock market for the next 10 years. The monetary amount of the sum was selected using prior literature and was deemed significant and relatable enough to elicit the actual risk appetite of individuals despite corresponding to a hypothetical pay-out structure (Linciano et al, 2015). Additionally, providing a fixed time-frame to contextualize the investment horizon, the ability of

individuals to extrapolate financial information into the future was tested, which directly related to their ability to synthesize financial information (Kimball and Shumway, 2006).

In the second portion of the survey, each individual was tasked with making five asset-allocation decisions in order to measure their proclivity towards investing in familiar equity. Each decision presented a hypothetical choice where individuals assigned portfolio weights to domestic and foreign securities to construct their preferred portfolio. Specifically, investors from multiple nations were shown decision tasks between allocating their hypothetical endowment to a world equity-based security (MSCI) versus a Dutch equity-based security (AEX), a world equity-based security (MSCI) versus an Indian equity-based security (NIFTY 50), and a world equity-based security versus an American equity-based security (S&P500) in order to provide a neutral benchmark to measure the strength of the domestic investment tendencies.

Further, as previously explained, this research aimed to extend the exploration of Equity Familiarity Bias to comparative regionalism; and thereby each investor was also tasked with allocating their assets to measure whether Indian investors prefer Asian equity over European equity, and congruently whether Dutch investors prefer European equity over Asian equity. Thus, investors from multiple nations were shown decision tasks between allocating their hypothetical endowment to a European equity-based security (Euronext NV) versus a Chinese equity-based security (SSE Composite), and an Asian equity-based security (MSCI Asia Apex) versus a German equity-based security (DAX). Respondents were provided with tabular information on the name of the indices, along with their ticker, origin, Morningstar Ratings, and market capitalization.

The final part of the survey related to questions of a more demographic nature, with a special focus on attaining information about the level of financial literacy of the respondents. The first portion within this part of the survey dealt with individual risk behaviour and an evaluation of their financial literacy that relied on a combination of absolute scoring and self-reporting. The framework of this section was based on the '11-Question' Financial Literacy Survey utilized by Lusardi and Mitchell (2010) in their research. The absolute scoring rated individual financial literacy by testing their knowledge of numeracy, simple and compound interest, inflation, and the tenets of portfolio diversification. The self-reporting components in this section focussed on an individual's own estimation of their abilities as compared to an average investor in the field of statistics, finance, and investments in general; whether or not they own stocks, and finally an evaluation of which form of information available to the individual influences their investment or financial decisions to the greatest extent. The second component of this part expected respondents, while remaining anonymous, to input their nation of origin, age, income level, the highest level of education completed, as well as their gender. The information garnered through this section generated the foundation for the creation of

control variables in order to measure whether or not the differences that arise in financial literacy for individuals across multiple nations causes alterations in their international investment patterns.

The research in this paper utilized parametric tests to establish the prevalence of the Familiarity and Surrounding biases in the sample obtained. One-sample t-tests were utilized in order to compare the actually derived mean with the hypothesized mean established through a theoretical background, and the significant differences in these means were a determinative indication of the presence of biased investment decision-making amongst the respondents in the study (Johnson and Li, 2014).

Further, regression analyses were utilized to highlight the relationship between the persistent Familiarity Bias in equity and financial literacy, as well as the relationship between Surrounding Bias and financial literacy. Since the collection of data consisted entirely of responses from multiple individual entities at one specific point in time, the parametric test deemed appropriate for the data analyses was a cross-sectional regression (Wooldridge, 2012). By utilizing the regression analyses, the dependency of the fall in equity Familiarity Bias and equity Surrounding Bias on heightened levels of financial literacy could be systematically established.

III.B. Data

As previously mentioned, the data utilized in the analysis undertaken in the paper was sourced through the online questionnaire software *Qualtrics*. The sample was obtained through anonymous responses by the circulation of the survey link across social media. While originally the survey was answered by 182 individuals, only 134 responses were deemed serviceable for the empirical analysis, due to the fact that 48 responses were incomplete or partially attempted. The relatively high drop-out rate, corresponding to over 25 percent of participants, can be explained as a consequence of the feelings of lack of functional knowledge among the financially illiterate section of the respondents on being tested on their financial knowledge and abilities (Soccorso et al, 2015); as well as the lack of interest in completing the survey in the absence of actual monetary incentives (Bonner and Sprinkle, 2002).

In line with the objectives of the study, the data pool comprised predominantly of respondents from India and Netherlands, and was almost uniformly split across the two nations, with 64 and 58 respondents respectively. The survey also garnered responses from other European nations including the United Kingdom, Italy, Germany, and Poland; thereby adding an enhanced dimension to the examination of the Surrounding Bias. Further, the composition of the sample comprised of 71 male and 62 female participants, offering diversified perspectives that transcend across nationality and gender.

III.C. Variables used in Research

The variables that were utilized in the research undertaken in this paper have been distinctly described in Table 1. As a result of the closely related nature of the variables within the theoretical context of the study, disentangling and separating the effects of specific explanatory variables was perceived as a challenge. In this regard, a correlation analysis was facilitated to check for the presence of collinearity between the independent variables, in order to prevent any improper influence being attributed to specific predictors due to augmented values.

The values of correlation coefficients were all found to be below the threshold for multicollinearity (Wooldridge, 2012). This was indicative of the fact that the predictors were not perfectly linearly correlated, and could thereby be used as reasonable estimates of the familiarity-driven investment propensity and financial literacy of an individual investor. The results from the correlation analysis can be found in Appendix B.

Table 1. Variables utilized in the research

<i>AmountMSCI</i>	The amount invested by the respondent in MSCI
<i>AmountNIFTY</i>	The amount invested by the respondent in NIFTY50
<i>AmountAEX</i>	The amount invested by the respondent in AEX
<i>AmountSSE</i>	The amount invested by the respondent in SSE Composite
<i>AmountDAX</i>	The amount invested by the respondent in DAX
<i>AmountEUNV</i>	The amount invested by the respondent in Euronext NV
<i>AmountMSCIAsia</i>	The amount invested by the respondent in MSCI Asia Apex
<i>AmountSP</i>	The amount invested by the respondent in S&P500
<i>FinLit</i>	The financial literacy of the respondent
<i>Country</i>	The country of origin of the respondent
<i>Stocks</i>	Whether (or not) the respondent owns stocks
<i>Edu</i>	The highest level of education completed by the respondent
<i>Gender</i>	The gender of the respondent

The variable *FinLit* quantifies the financial literacy of the individual participant and was constituted of the sum of two forms of components. The first section consisted of a component of absolute scoring, while the second prioritized a nature of self-reporting so as to collectively correspond to a person's financial literacy. The decisive elements that affect the financial literacy score of each respondent are presented in Appendix C.

Further, in order to measure the existence of familiar investment across the nations of India and the Netherlands, large-cap index funds corresponding to these nations with 5 Star Morningstar Ratings, namely the NIFTY50 and the AEX, were selected. In the same regard, to contrarily measure investment propensity in an internationally diversified index, the MSCI World index (which is also large-cap and possesses a 5 Star Morningstar Rating) was selected. To extend the measurement of the Familiarity Bias into comparative regionalism, the large-cap index funds possessing 5 Star Morningstar Ratings from Asia (MSCI Asia Apex), Europe (Euronext NV), China (SSE Composite), and Germany (DAX) were selected to foster comparability.

The nation of origin of the individual proved to be an important variable in order to measure whether differences in financial literacy that arose across the different nations played a role in altering the investor perception and subsequent investment selection propensity. In this regard, the nation of individual origin was quantified through a dummy variable using three categories, India, the Netherlands, and other nations (using the UNDP classification of nations, 2016), taking India as the reference category. Consequently, a value of '0' was allotted to a person from India, a '1' was allotted to respondents from the Netherlands, and a value of '2' was allotted to participants from other nations.

Finally, the control variables of *edu*, *stocks*, and *Gender* were utilized as supplementary variables to contextualize the demographic characteristics of each respondent. Each value was recoded through the use of dummy variables to make them comparable as categorical or ordinal variables, with a '0' being allotted to female participants, and a '1' being allotted to male participants.

The highest level of education completed by the individual was taken as an indicator to depict and substantiate the level of literacy (especially financial literacy) possessed by the participants. Johnson et al (2012) state that individuals with higher levels of education also have a tendency to be more financially literate, as they are able to access and synthesize greater levels of information and opportunities related to financial products. In this regard, individuals were asked to select their highest level of completed education. These values were quantified through a categorical variable, where each of the seven categories was assigned a number from 1 to 7 based on a predefined arrangement of increasing levels of education (ibid). For example, the lowest level of completed education ('Less than High School') was assigned 1, while the highest level ('Doctorate') was assigned a 7.

The variable of whether or not the individual owns stocks relates to the degree to which the individual engages in financial markets. Klos (2013) finds this to be a reliable indicator of financial literacy in general, as the paper finds that individuals that possess stocks or related financial instruments tend to be better informed and financially literate than individuals that do not partake in financial market transactions. In this regard, whether an individual owns stocks was quantified through a dummy variable (as nature of data was categorical), taking the individual not owning stocks as the reference category. Accordingly, a value of '0' was allotted to a person that did not own stocks, and a '1' was allotted to a person who owned stocks.

The levels associated with the variables and their utilization in the construction of the financial literacy parameter can be found in Appendix C and Appendix F.

The following chapter examines the results of the data analysis facilitated to test the hypothesized relationships.

IV. Analysis of Results

This chapter of the paper seeks to present and explore the results generated from the parametric tests. In order to evaluate the implications of the data analysis facilitated in the paper, it is imperative to place the hypotheses within the context of the generated results. The results are divided into four distinct sections, with each component examining one hypothesis established through the theoretical foundations of the research.

IV.A. Presence of Familiarity Bias

While theoretically, in the absence of the Familiarity Bias, investors would choose to accrue the benefits of international portfolio diversification by investing the entirety of their endowment in the fund MSCI; the summary statistics depicted that the mean investment channelled into the diversified fund corresponded to 47 percent for all respondents. With more than half of the endowment being allocated to the nationally-oriented indices over MSCI by the participants constituting the study, the presence of Familiarity Bias was uncovered. The summary statistics for the mean investment across the various funds in the research have been presented in Appendix D.

Accordingly, through the analysis of the gathered responses, the first hypothesis was tested using parametric One-Sample t-tests to examine whether individuals exhibited a proclivity towards investing in familiar securities. In order to compare the actual estimated mean, a hypothesized mean was constructed using theoretical foundations. As mentioned, with the null hypothesis of no Familiarity Bias existing, investors would unequivocally choose the internationally diversified world fund MSCI over their familiar national indices. In this regard, the mean investment in NIFTY50 and AEX should have corresponded to zero in India and Netherlands respectively, while mean investment in MSCI should have equalled 100 percent.

Upon testing the responses, Indian investors across the sample exhibited the Familiarity Bias, with the mean investment in the Indian index NIFTY50 being statistically different from the hypothesized mean of 0 ($t = 17.8341$, $df = 63$, $p < 0.05$). Correspondingly, the mean investment in the world index MSCI for Indian investors was also statistically different from the hypothesized mean of 100 ($t = -17.8341$, $df = 63$, $p < 0.05$). Additionally, the investors from the Netherlands were also prone to the Familiarity Bias, with the mean investment in the Dutch index AEX being statistically different from the hypothesized mean of 0 ($t = 12.7763$, $df = 57$, $p < 0.05$). In accordance, the mean investment in the world index MSCI for Dutch investors was also statistically different from the hypothesized mean of 100 ($t = -12.7763$, $df = 57$, $p < 0.05$).

The findings from the one-sample t-tests demonstrate how investors assign portfolio weights to familiar securities that are higher than optimal portfolio weights. Consequently, the first hypothesis **H1** (p.10) is confirmed through the analysis. The tabulated one-sample t-tests can be found in Appendix A.

IV.B. Presence of Surrounding Bias

Using similar foundations by extending the Familiarity Bias into the sphere of symmetrical regionalism, in the absence of the Surrounding Bias, investors would theoretically choose to accrue the benefits of international portfolio diversification by investing the entirety of their endowment in the funds MSCIAsia and Euronext NV. The summary statistics contradicted this notion by emphasising how the mean investment in the surrounding region funds corresponded to roughly 52 percent for DAX and 55 percent for SSE Composite across all respondents. With more than half of the endowment being allocated to the surrounding region-oriented indices over MSCIAsia or Euronext NV by the participants constituting the study, the presence of Surrounding Bias was uncovered. The summary statistics for the mean investment across the various funds in the research have been presented in Appendix D.

Subsequently, the second hypothesis was tested using parametric One-Sample t-tests to examine whether the tendency of individuals towards investing in familiar securities transcended to their surrounding regions. In order to compare the actual estimated mean, a hypothesized mean was constructed using theoretical foundations. As established, with the null hypothesis of no Surrounding Bias existing, investors would unequivocally choose the internationally diversified continent-oriented funds over the indices from surrounding regions that felt familiar to them by extension. Subsequently, mean investment in SSE Composite and DAX should have been zero in India and Netherlands, while mean investment in Euronext NV and MSCI Asia Apex should have equalled 100 percent.

The results of the t-tests highlighted how investors from India were prone to the Surrounding Bias, with their mean investment in the surrounding region index from China (SSE Composite) being statistically different from the hypothesized mean of 0 ($t = 20.9210$, $df = 63$, $p < 0.05$). Correspondingly, the mean investment in the European index Euronext NV for Indian investors was also statistically different from the hypothesized mean of 100 ($t = -20.9210$, $df = 63$, $p < 0.05$). Additionally, Dutch investors also exhibited the Surrounding Bias, with the mean investment in the German index DAX being statistically different from the hypothesized mean of 0 ($t = 15.3885$, $df = 57$, $p < 0.05$). In accordance, the mean investment in the Asian index MSCI Asia Apex for Dutch investors was also statistically different from the hypothesized mean of 100 ($t = -15.3885$, $df = 57$, $p < 0.05$).

The findings from the one-sample t-tests demonstrate how investors assign portfolio weights to equity-based securities from surrounding countries that are higher than optimal portfolio weights. Consequently, the second hypothesis **H2** (p.10) is confirmed through the analysis. The tabulated one-sample t-tests can be found in Appendix A.

IV.C. Financial Literacy and Familiarity Bias

Table 2. Results from Regression Analysis for Familiarity Bias

VARIABLES	AmountMSCI
Independent variables:	
FinLit	29.48641 *** (6.322841)
Country	2.578567 * (2.914755)
stocks	6.877885 * (5.508144)
Control variables:	
edu	0.1208944 ** (1.664075)
Gender	3.684025 (3.695221)
Constant	29.60772 *** (5.623487)
Observations	134
R-squared	0.4249
Adjusted R-squared	0.4024
<p>The data for this regression analysis was obtained from the distributed survey. The figures in the parentheses represent Standard Errors. Note: *** p<0.01, ** p<0.05, * p<0.1, which denotes that the above coefficients are statistically significant at levels 1%, 5%, or 10% respectively.</p>	

Table 2 presents results obtained from the regression analysis of the dependent variable *AmountMSCI* and the independent and control variables. As observed from the regression output, the major variable of concern *FinLit* that quantifies the financial literacy of the individual is significant at a level of 1 percent. The significantly large coefficient implies that a financially literate individual has a tendency to invest almost 30 percent more in the internationally diversified fund MSCI than a finally illiterate individual. The significant and positive coefficient of the variable *Country* further represents

how respondents from the Netherlands, which is relatively a more financially literate nation than India (p.8), are more likely to invest their money in the internationally diversified index MSCI.

Further, as previously established, financially literate individuals are more likely to participate in the stock market (p.17). Subsequently, the significant and positive coefficient of the variable *stocks* highlights how individuals that own stocks tend to invest almost 7 percent more in an internationally diversified fund over those individuals that do not own stocks. The gender of the participant did not have a decisive effect on their propensity to prefer investing in familiar securities across the sample.

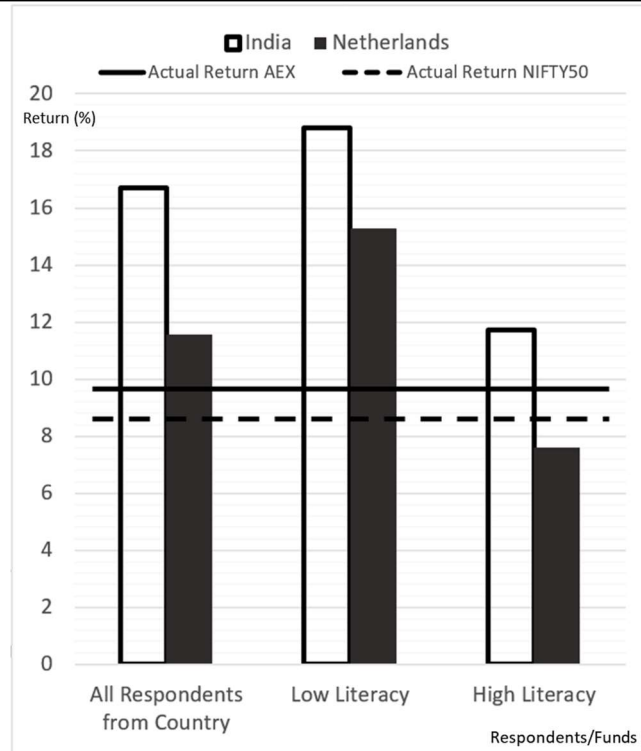
As observed, the significant and positive coefficient of the variable *edu* additionally showcases how individuals with comparatively a higher level of general educational attainment are more likely to invest in the diversified index MSCI. The conjunctional effect of these variables, therefore, confirms the third hypothesis **H3** (p.10), such that equity Familiarity Bias is minimized for nations where the domestic population possesses a higher level of financial literacy.

As a result, the findings from this empirical analysis fall directly in line with the stated theoretical expectations, which further supplements the findings rooted in prior research. The adjusted R-squared of 0.4024 obtained from the regression analysis depicts a moderate goodness of fit of the model. This measure further implies that over 40 percent of the variation in individual investor propensity to invest a familiar security is predominantly explained by financial literacy and other related explanatory and control variables underlying the research. Individual investment behaviour is subject to a multitude of decision-making constraints and biases, and quantifying these constraints almost perfectly in a quantitative model poses a severe challenge in economic research (Binswanger et al, 1980). In accordance, the results obtained in this paper depict how almost half of the variation in individual investor propensity to invest in a familiar security is explained by the model by using only five explanatory and control variables, thereby augmenting the practical applicability of this research despite there being further scope for improvement, due to the fact that there exist a multitude of other factors that affect each individual's investment behaviour uniquely.

Moreover, as previously established, investors across the globe state their expectations of returns in their domestic market for equity to surpass returns in other equity markets by over hundred basis points (French and Poterba, 1991). Figure 1 displays the annualized 10-year return expectation of the respondents for their familiar domestic index for India and the Netherlands, by separating them into three categories based on their financial literacy. As illustrated, participants had a tendency to overestimate the return of their domestic index by several basis points, especially if they belonged to the category of low financial literacy. On the other hand, respondents with relatively higher levels of financial literacy were able to more accurately estimate the annualized return in their domestic equity,

thereby allowing the mean estimation of domestic equity return to move towards convergence with the actual returns of the indices. In this regard, financial literacy can mitigate absurdly positive or negative estimations of return and allow investors to more accurately predict real market movements; thereby permitting them to make better and more diversified investment decisions.

Figure 1. Participants' Estimates of Annualized 10-Year Returns in Domestic Equity



The column bars corresponding to India and Netherlands for the three categories of financial literacy were created using responses from individuals. The actual return values of AEX and NIFTY50 are 9.68% and 9.30% respectively using CAGR values (further explained in Appendix E).

IV.D. Financial Literacy and Surrounding Bias

Table 3 presents results obtained from the regression analysis of the dependent variables *AmountMSCIAsia* and *AmountEUNV* with the independent and control variables. As observed from the regression output, the major variable of concern *FinLit* that quantifies the financial literacy of the individual is significant at a level of 1 percent for both diversified funds corresponding to continental level diversification in Asia and Europe. The significantly large coefficients imply that a financially literate individual has a tendency to invest almost 40 percent more in MSCI Asia Apex and Euronext NV than a finally illiterate individual. Subsequently, the significant and positive coefficients of the variable *Country* further represent how respondents from the Netherlands, which is relatively a more

financially literate nation than India (p.8), are more likely to invest their money in the internationally diversified indices over the familiar indices from the surrounding regions.

Table 3. Results from Regression Analysis for Surrounding Bias

VARIABLES	AmountMSCIAAsia	AmountEUNV
Independent variables:		
FinLit	39.38803*** (3.704758)	39.84506*** (2.874666)
Country	1.923683* (1.70785)	0.9216227* (1.325187)
stocks	− 0.8004181 (3.227401)	5.737981* (2.504266)
Control variables:		
edu	1.344186** (0.9750359)	0.1477878 (0.7565684)
Gender	2.819056 (2.16515)	0.3967094 (1.680024)
Constant	22.6348*** (3.294984)	31.41882*** (2.556707)
Observations	134	134
R-squared	0.7476	0.8407
Adjusted R-squared	0.7377	0.8345
The data for this regression analysis was obtained from the distributed survey. The figures in the parentheses represent Standard Errors. Note: *** p<0.01, ** p<0.05, * p<0.1, which denotes that the above coefficients are statistically significant at levels 1%, 5%, or 10% respectively.		

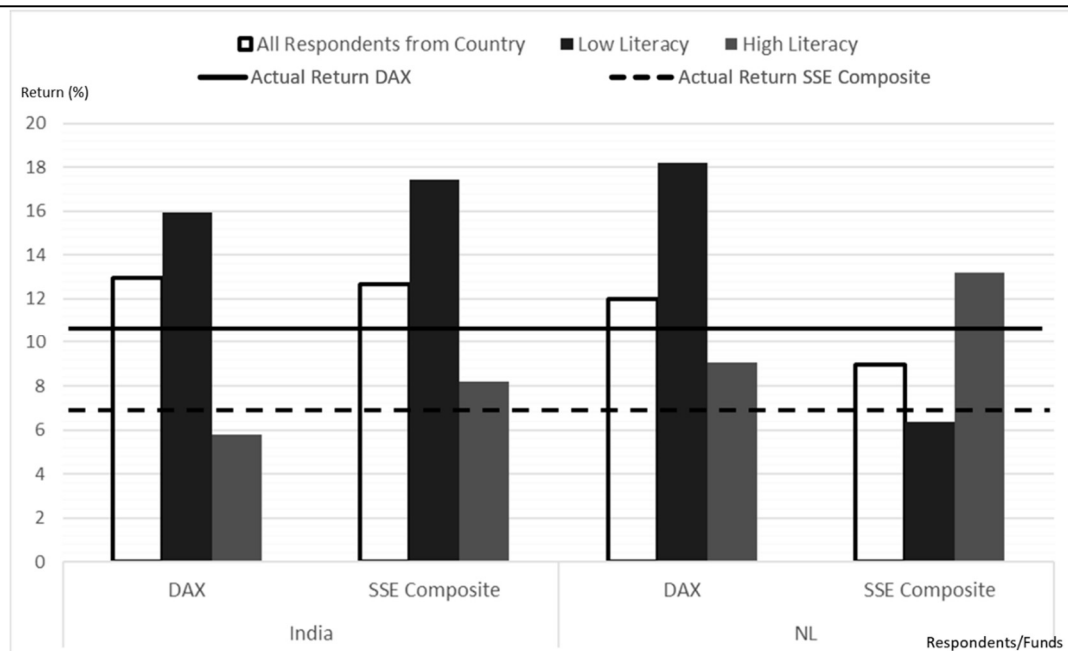
The results depict that individuals participating in the stock market are more likely to invest in Euronext NV, while the same does not hold for MSCI Asia Apex. On the other hand, the significant and positive coefficient of the variable *edu* additionally showcases how individuals with comparatively a higher level of general educational attainment are more likely to invest in the diversified index MSCI Asia Apex, while the same does not necessarily hold for investment in the European index. The gender of the participant did not have a decisive effect on their propensity to prefer investing in familiar securities across the sample for either of the funds.

Despite the differences in specific effects of each variable across the two continent-level indices, the combined effect is indicative of the fact that financially literate individuals from India and

Netherlands are more likely to invest in the diversified funds Euronext NV and MSCI Asia Apex as opposed to the familiar indices from their surrounding regions of China and Germany respectively. Consequently, the overall effect of attainment of a higher level of financial literacy confirms the fourth hypothesis **H4** (p.11), such that Equity Surrounding Bias is minimized for nations where the domestic population has a higher level of financial literacy.

Similar to the role of financial literacy in mitigating the Familiarity Bias, the findings from the empirical analysis undertaken in this section also fall directly in line with the stated theoretical expectations, which further supplements the findings rooted in prior research. The adjusted R-squared values of 0.7377 for MSCI Asia and 0.8345 for Euronext NV obtained from the regression analysis depict relatively high goodness of fit of the models. This measure further implies that over 73 percent (for MSCI Asia) and over 83 percent (for Euronext NV) of the variations in individual investor propensity to invest a familiar security that originates from a comparable surrounding region is predominantly explained by the explanatory and control variables underlying the research. By accounting for over three-fourths of the variation in investment in a surrounding region, the models illustrate how financial literacy and the related variables play a decisive role in mitigating an individual's tendency to be prone to the Surrounding Bias.

Figure 2. Participants' Estimates of Annualized 10-Year Returns in Surrounding Equity



The column bars corresponding to DAX and SSE Composite in India and Netherlands for the three categories of financial literacy were created using responses from individuals. The actual return values of DAX and SSE Composite are 10.74% and 7.09% respectively using CAGR values (further explained in Appendix E).

In line with the objective of examining the existence of Surrounding Bias in individual investment decisions, the paper extended previously established research to explore whether the tendency of investors to overestimate the returns for their domestic equity further transcended to their expectations for equity in their surrounding regions too. Figure 2 displays the annualized 10-year return expectation of the respondents of their surrounding equity from India and the Netherlands, by separating them into three categories based on their financial literacy. Similar to the Familiarity Bias, participants had a tendency to overestimate the return of the familiar surrounding index.

Participants with lower levels of financial literacy also overestimated the return for the index that did not belong to their surrounding region (specifically the overestimation of SSE Composite returns by financially illiterate Dutch investors and the overestimation of DAX returns by financially illiterate Indian investors), but their overestimation of the other index did not surpass their estimated return for their surrounding region index.

On the other hand, respondents with relatively higher levels of financial literacy were able to more accurately estimate the annualized returns in not only the equity of their surrounding region, but also of the other index. The realistic estimations of financially literate individuals thereby allowed the mean estimation of surrounding equity return to move towards convergence with the actual returns of the indices. In this regard, consistent with the Familiarity Bias, financial literacy can mitigate absurdly positive or negative estimations of return even for surrounding regions and allow investors to more accurately predict real market movements; thereby permitting them to make better and more diversified investment decisions.

V. Additional Analysis: Neutral Benchmark

This section seeks to provide additional and alternative measures to supplement the results obtained in the data analysis in the previous section, through the means of a benchmark that is neutral to both nations taken in this study. The nation for the benchmark is the United States, as its selected index (S&P500) can be seen as almost homogeneously familiar for both India and the Netherlands based on the parameters of trade relations and political culture (Council of Foreign Relations, 2020).

V.A. Presence of Familiarity Bias in Neutral Benchmark

In order to supplement the discovery of the presence of Familiarity Bias in the sample constituting the study, a similar approach was applied to inspect whether the identical result appears for a neutral benchmark. Operating within equivalent theoretical boundaries, in the absence of the Familiarity Bias, investors would choose to accrue the benefits of international portfolio diversification by investing their whole endowment in the fund MSCI. The summary statistics depicted that the mean investment channelled into S&P500 corresponded to 49 percent for all respondents. With almost half of the endowment being allocated to the familiar index over MSCI, the presence of Familiarity Bias was revealed. The summary statistics for the mean investment across the various funds in the research have been presented in Appendix D.

Through the analysis of the gathered responses, the exploration of whether Familiarity Bias persisted for the neutral benchmark was tested using a parametric One-Sample t-test. In order to compare the actual estimated mean, a hypothesized mean was constructed using theoretical foundations. As mentioned, with the null hypothesis of no Familiarity Bias existing, investors would unequivocally choose the internationally diversified world fund MSCI over the familiar American index. In this regard, the mean investment in S&P500 should have corresponded to zero in India and Netherlands respectively for investors to be free from Familiarity Bias.

The results of the t-test depicted that Indian investors across the sample exhibited the Familiarity Bias, with the mean investment in the American index S&P500 being statistically different from the hypothesized mean of 0 ($t = 24.0292$, $df = 63$, $p < 0.05$). Additionally, the investors from the Netherlands were also prone to the Familiarity Bias, with the mean investment in S&P500 being statistically different from the hypothesized mean of 0 ($t = 17.1018$, $df = 57$, $p < 0.05$). In this regard, the one-sample t-test demonstrated how investors assigned portfolio weights to the familiar American security that are higher than optimal portfolio weights. Consequently, the presence of the Familiarity

Bias in the neutral benchmark is confirmed through the t-test. The tabulated test can be found in Appendix A.

V.B. Financial Literacy and Familiarity Bias in Neutral Benchmark

Table 4 presents results obtained from the regression analysis of the dependent variable *AmountSP* and the independent and control variables. As observed from the regression output, the major variable of concern *FinLit* that quantifies the financial literacy of the individual is significant at a level of 1 percent. The significantly negative coefficient implies that a financially literate individual has a tendency to invest almost 30 percent less in the domestically driven index S&P500 than a finally illiterate individual.

Table 4. Results from Regression Analysis for Familiarity Bias: Neutral Benchmark

VARIABLES	AmountSP
Independent variables:	
FinLit	– 29.54989 *** (3.142283)
Country	– 3.967299 *** (1.448555)
Stocks	– 2.128571 * (2.7374)
Control variables:	
Edu	– 0.0973925* (0.8270009)
Gender	– 2.11818 (1.836426)
Constant	65.41265 *** (2.794722)
Observations	134
R-squared	0.7140
Adjusted R-squared	0.7028
<p>The data for this regression analysis was obtained from the distributed survey. The figures in the parentheses represent Standard Errors. Note: *** p<0.01, ** p<0.05, * p<0.1, which denotes that the above coefficients are statistically significant at levels 1%, 5%, or 10% respectively.</p>	

The significant and negative coefficient of the variable *Country* further represents how respondents from the Netherlands, which is relatively a more financially literate nation than India (p.8),

are less likely to invest their money in the domestically driven index S&P500. Further, the significant and negative coefficient of the variable *stocks* highlights how individuals that own stocks tend to invest almost 2 percent less in domestically driven index S&P500 over those individuals that do not own stocks. The gender of the participant did not play a role in determining their propensity to invest in a familiar security. As observed, the significant and negative coefficient of the variable *edu* additionally showcases how individuals with comparatively a higher level of general educational attainment are less likely to invest in S&P500. The conjunctional effect of these variables, therefore, implies that individuals with a higher level of financial literacy do not invest in S&P500 and are less prone to the Familiarity Bias garnered by the familiar American index.

Additionally, the findings from this section of the analysis directly supplement the results derived in section IV concerning the role of financial literacy in minimizing Familiarity Bias. The adjusted R-squared of 0.7028 obtained from the regression analysis depicts a relatively high goodness of fit of the model, which implies that over 70 percent of the variation in individual investor propensity to invest in a familiar security is predominantly explained by financial literacy and other related explanatory and control variables underlying the research. Subsequently, the neutral benchmark confirms the previously discussed results by illustrating how a higher level of financial literacy can mitigate an individual's innate tendency to invest in a familiar security in order to maximize the gains from international portfolio diversification.

VI. Discussion and Conclusion

The primary objectives of the research undertaken in this paper centred on the research question “To what extent is the cross-border equity investment propensity of individuals affected by a heightened level of financial literacy?” and revolved around dealing with the process of tracing whether or not the inherent level of financial literacy a person possesses will affect the willingness of the individual to suppress the natural tendency to only invest in familiar and domestic securities. The major question tackled by the study investigated if equity Familiarity Bias is lower in countries where the population has a higher level of financial literacy.

The research attempted to extend previously performed research by adding a perspective from a supplementary factor impacting risk perception, which arose from an individual investor’s inherent financial literacy. By looking into risk preferences within a framework that accounted for these biases arising from the background of an individual and thereby measuring whether or not all individual investors across different nations are prone to Familiarity Bias with the same degree, the research was given a new outlook in a manner that aimed to augment its applicability. By highlighting the importance of financial literacy as a component of investment behaviour, the research in the paper attempted to address how sustainable and long-run improvements in financial literacy, especially in developing nations such as India, may be advantageous to promote informed individual decision-making over time and may have extensive macro-level benefits for the financial markets at large.

Moreover, the research delved into a previously unexplored facet of the Familiarity Bias, by exploring whether the equity Familiarity Bias comparatively applies to symmetrical regionalism as an additional examination. By measuring whether familiarity in equity transcends beyond national borders through the existence of the Surrounding Bias, the research in this paper attempted to offer an original perspective into how investor behaviour can be moulded as a consequence of regional comparability and inherent financial literacy.

In order to explore these concepts, the research in this paper operated through a quantitative study featuring one-sample t-tests and cross-sectional regression analyses that utilized a sample of data assimilated from the circulation of an online survey. The responses of 134 individuals from numerous nations across the world were used to generate the required sample. In general, the results from the parametric tests were in line with the expectations derived from the theoretical framework. Consequently, through the data analysis, all four of the derived hypotheses were accepted; thereby

implying that while there exists a tendency for individuals to inherently invest in familiar securities from domestic or surrounding regions, a heightened level of financial literacy can curb this propensity.

In this regard, financially literate individuals were found to be less prone to the Familiarity and Surrounding Biases than the relatively financially illiterate individuals. It was further observed that individuals with high levels of financial literacy were able to more accurately estimate and forecast annualized returns for domestic and foreign equity, and were, therefore, more capable of reaping the most optimal advantages of international portfolio diversification.

The limitations of this research undertaken in this paper arose primarily from its methodological design. Firstly, the entire survey design operated on a hypothetical endowment that an individual must allocate in two differentiated indices across five decision frameworks. Holt and Laury (2002) explain through their research that risk behaviour is not comparable for hypothetical and real pay-out structures, as a lack of tangible losses to incur within the hypothetical pay-out structure may cause the outcomes to not fully represent actual risk appetites. This premise may hold considerable implications for the research carried out in this paper. Furthermore, the financially-intensive and repetitive nature of the decision tasks resulted in a relatively high drop-out rate for participants (corresponding to about 25%), despite them being informed that the survey operated only on their understanding and did not require additional knowledge on financial or stock markets. A scope exists for measuring Familiarity Bias in a less financially intensive framework that is not intimidating for participants with a lack of financial or economic base knowledge.

Furthermore, vast differences still exist between the financial asset quality especially across developed and developing nations (Yu et al, 2011). For example, the risk that affects securities on the European stock markets greatly differs from the type and form of risk affecting securities on the Asian stock markets. In this regard, while the survey offers differentiated diversified funds from across the world, it presents a simplified version for the sake of consistency and standardization; thereby not necessarily taking into account the intricacy of differentiation in asset qualities across financial markets. Thus, there exists the possibility for further research in this area that aptly tackles the complexities of international financial markets.

Additionally, while the evaluation of financial literacy in the research undertaken in this paper operates on an absolute score by measuring an individual's numerical abilities; it also relies on self-reporting on the individual's part. As a result, this assessment may not be completely accurate, as the ability of an individual to adequately measure their own abilities may be hampered by self-serving

biases; resulting in either an overestimation or an underestimation of their own abilities in finance and investment decision-making. Consequently, there exists a scope for further research in this area that manages to holistically assimilate information on an individual's inherent financial literacy without resorting to the collection of self-reported data.

Despite these limitations, the research undertaken in this paper attempts to offer valuable insights into investor behaviour as a function of financial literacy with reference to individual investment in familiar assets, and extends prior research by highlighting the importance of establishing financial literacy in order to promote informed individual decision-making globally.

VII. References

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VIII. Appendix

VIII.A. One Sample t-tests Tabulation

VIII.A.1. Presence of Familiarity Bias

Table 5. One-sample t-test and Descriptive Statistics for Familiar Investment in the Netherlands

Outcome	Mean	SD	n	Theoretical Mean	95% CI for Mean Difference	T	df
Amount Invested in AEX	49.035	29.228	58	0	41.3492, 56.71977	12.7763*	57
Amount Invested in MSCI	50.965	29.228	58	100	43.2802, 58.6508	-12.7763*	57

* $p < 0.05$. Here, SD represents the Standard Deviation, n represents the number of observations, and df represents the degrees of freedom. CI represents the Confidence Interval.

Table 6. One-sample t-test and Descriptive Statistics for Familiar Investment in India

Outcome	Mean	SD	N	Theoretical Mean	95% CI for Mean Difference	T	df
Amount Invested in NIFTY50	57.547	25.814	64	0	51.0986, 63.9951	17.8341*	63
Amount Invested in MSCI	42.453	25.814	64	100	36.0049, 48.9014	-17.8341*	63

* $p < 0.05$. Here, SD represents the Standard Deviation, n represents the number of observations, and df represents the degrees of freedom. CI represents the Confidence Interval.

VIII.A.2. Presence of Surrounding Bias

Table 7. One-sample t-test and Descriptive Statistics for Surrounding Region Investment in the Netherlands

Outcome	Mean	SD	n	Theoretical Mean	95% CI for Mean Difference	T	df
Amount in DAX	49.293	24.395	58	0	42.8787, 55.7075	15.3885*	57
Amount in SSE Composite	48.535	24.076	58	0	42.2038, 54.8652	15.3520*	57
Amount in Euronext NV	51.465	24.077	58	100	45.1348, 57.7962	-15.3520*	57
Amount in MSCI Asia	50.707	24.395	58	100	44.2926, 57.1213	-15.3885*	57

* $p < 0.05$. Here, SD represents the Standard Deviation, n represents the number of observations, and df represents the degrees of freedom. CI represents the Confidence Interval.

Table 8. One-sample t-test and Descriptive Statistics for Surrounding Region Investment in India

Outcome	Mean	SD	n	Theoretical Mean	95% CI for Mean Difference	t	df
Amount in DAX	54.828	23.188	64	0	49.0358, 60.6204	18.9157*	63
Amount in SSE Composite	60.672	23.200	64	0	54.8766, 66.4671	20.9210*	63
Amount in Euronext NV	39.328	23.200	64	100	33.5328, 45.1234	-20.9210*	63
Amount in MSCI Asia	45.172	23.188	64	100	39.3796, 50.9642	-18.9157*	63

* $p < 0.05$. Here, SD represents the Standard Deviation, n represents the number of observations, and df represents the degrees of freedom. CI represents the Confidence Interval.

VIII.A.3. Presence of Familiarity Bias: Neutral Benchmark

Table 9. One-sample t-test and Descriptive Statistics for Familiar Investment in India and the Netherlands using a Neutral Benchmark

Outcome	Mean	SD	n	Theoretical Mean	95% CI for Mean Difference	t	df
NL: Amount in S&P500	44.931	20.009	58	0	39.6701, 50.1921	17.1018*	57
India: Amount in S&P500	54.344	18.093	64	0	49.8244, 58.8632	24.0292*	63

* $p < 0.05$. Here, SD represents the Standard Deviation, n represents the number of observations, and df represents the degrees of freedom. CI represents the Confidence Interval.

VIII.B. Correlation of Variables

Table 10. Correlations between Dependent and Explanatory Variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. AmountMSCI	1.0000								
2. AmountEUNV	-	1.0000							
3. AmountMSCIAsia	-	-	1.0000						
4. AmountSP	-	-	-	1.0000					
5. FinLit	0.6406	0.9127	0.8598	-0.8334	1.0000				
6. Country	0.1594	0.1319	0.1890	-0.2685	0.1789	1.0000			
7. edu	0.3959	0.5741	0.5836	-0.5157	0.6290	0.0029	1.0000		
8. Gender	0.1421	0.1266	0.1548	-0.1405	0.1198	-0.1030	0.0886	1.0000	
9. stocks	0.5279	0.7267	0.6251	-0.6321	0.7339	0.0754	0.4827	0.1365	1.0000

VIII.C. Financial Literacy: Components and Calculation

The variable *FinLit* quantified individual financial literacy by testing their knowledge of numeracy, simple and compound interest, inflation, and the tenets of portfolio diversification. The self-reporting components then focussed on an individual's own estimation of their abilities as compared to an average investor in the field of statistics, finance, and investments in general; whether or not they own stocks, and finally an evaluation of which form of information available to the individual influences their investment or financial decisions to the greatest extent. The scoring of the separate components is explained in the following sections. Eventually, the combined variable *FinLit* was simplified and only had two categories, a '0' being awarded to an individual with a level of low financial literacy, and a '1' being awarded to an individual with high financial literacy. The final variable consisted of six elements of abilities in inflation adjustment, simple and compound interest, portfolio diversification, the source of information, performance compared to the peer group, and the subject score of each respondent.

VIII.C.1. Absolute Scoring

The first portion involved assigning a specific score to the respondents based on their responses to specific questions as follows. The corresponding options can be accessed in Appendix E. If question was answered correctly, the participant received a '1' for each answer; while receiving a '0' to signify the lack of a correct answer. By adding the score across the three questions for each participant, the combined score for the absolute portion of financial literacy of each respondent was obtained.

VIII.C.1.a. *Inflation adjustment*

Imagine that the interest rate on your savings account was 4% per year and inflation was 5% per year. After 1 year, how much would you be able to buy with the money in this account?

VIII.C.1.b. *Simple and Compound Interest*

Suppose you currently have €100 in a savings account and the rate of interest is 4% per year. After 5 years, how much money do you think you would have if the money was left to grow?

VIII.C.1.c. *Portfolio Diversification*

Is the following statement true or false? "*Buying a single company's stock usually provides a safer return than a stock mutual fund.*"

VIII.C.2. Self-Reporting

The latter portion involved attaining the individual's own assessment of their own financial literacy through the following questions. The corresponding options provided to each question can be accessed in Appendix E. Each of these variables was converted from the categorical to the ordinal level with the use of dummy variables. An absolute value was allotted to each corresponding response from a scale of 0 to the (number of options – 1). For example, with every additional course related to education and financial literacy the individual would earn one additional point, with the base category of 0 being allotted to an individual that has only studied Mathematics. In this regard, the self-reporting section was quantified through its conversion to ordinal variables to facilitate the data analysis.

VIII.C.2.a. *Source of Information*

Which source of information has the most influence on your investment and/or financial decisions?

VIII.C.2.b. *Peer Group Comparison*

How would you rate your knowledge on the following as compared to your peer group?

VIII.C.2.c. Subject Score

Have you previously followed (or are presently studying) any of the following courses or a close substitute during your higher secondary/ university education? *Please select all that apply.*

VIII.D. Summary Statistics: Mean Investment

Table 11. Participants' Responses: Mean Investment Across ETFs in Percentage

Mean Investment (%)	All Participants	High Financial Literacy	Low Financial Literacy
1. AmountMSCI	47.1119403	69.08511	35.24138
2. AmountEUNV	48.56716418	75.55319	33.98851
3. AmountMSCIA Asia	44.97761194	72.14894	30.29885
4. AmountDAX	51.76119403	25.55319	65.91954
5. AmountSSE	54.69402985	26.74468	69.7931
6. AmountSP	49.02985075	28.78723	59.96552

VIII.E. CAGR Estimation

In order to estimate the annualized growth rate for each index, the compound annual growth rate (CAGR) was used as an average estimator to calculate investment returns over a fixed time period of several years (Brewer and Picus, 2015). For each index, the annualized return corresponded to the CAGR calculated over 5 years. These values were further used to construct the graphical representations in the figures of chapter IV.

The formula utilized to calculate the CAGR was:
$$CAGR = \left(\frac{\text{ending value}}{\text{starting value}} \right)^{\frac{1}{\text{number of years}}} - 1$$

Table 12. Tabulation of 5-Year CAGR for Indices in Study

Index	Time Period	CAGR 5-Year
NIFTY 50	2013 – 2018	9.30 %
AEX	2011 – 2016	9.68 %
S&P500	2014 – 2019	11.96 %
SSE Composite	2012 – 2017	7.09 %
DAX	2011 – 2016	10.74 %

VIII.F. Materials of the Research: Survey

Start of Block: Introduction

General Information

Please Note:

The survey operates on your personal understanding of stock markets.

Your best estimation and understanding are valuable to this research.

Only the given information needs to be utilized to make a decision.

It is not necessary to have previous knowledge of investment or financial decision-making.

Information and Consent

You are invited to participate in this survey that aims to investigate your investment behaviour and financial decision-making.

This research is being conducted by **Meghna Chowdhary**, a Master's student, and Dr S. Nolte, an Assistant Professor for the Institute of Management Research at Radboud University. The research shall provide a foundation for Meghna's Master's Thesis in Financial Economics.

Voluntary Participation

Your participation in this survey is completely voluntary. You may withdraw your consent at any time during the survey. This questionnaire does not require any calculations.

What will happen to my data?

Your responses are valuable for this research and shall be treated with strict confidentiality.

All the responses are completely anonymous and shall only be accessible to the researchers.

More information?

In case you require more information on this research study, please contact Meghna Chowdhary.
(email: meghna.chowdhary@student.ru.nl)

Please read the questions carefully and answer to the best of your abilities.

Thank you for your time and support!

General Instructions You have recently inherited **EUR 10,000.00** and have already decided to invest this money in the stock market for the next 10 years.

Based on this scenario, you will be asked to make decisions relating to the investment of your endowment.

These decisions will consist of allocating your money between two ETFs (Exchange-Traded Funds) that track stock market indices.

NOTE:

You must allocate the given endowment as per whichever combination of the funds that you prefer.

Whatever amount you do not invest in one fund will automatically be invested in the other.

No calculations are required.

End of Block: Introduction

Start of Block: Decision: India-World

Time1 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

1 NOTE:

Whatever amount you do not invest in NIFTY 50 will automatically be invested in MSCI World.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
NIFTY 50	National Stock Exchange of India	NSE:NIFTY50	India	5 Star	Large Cap
MSCI World	Morgan Stanley Capital International	NYSE:MSCI	Multiple	5 Star	Large Cap

2

3 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in NIFTY 50 (%) (1)

_____ Amount invested in MSCI World (%) (2)

4 How risky do you perceive NIFTY 50 to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

5 How risky do you perceive MSCI World to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

6 What is your forecast for the annual growth rate after 10 years for NIFTY 50?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



7 What is your forecast for the annual growth rate after 10 years for MSCI World?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: Decision: India-World

Start of Block: India-World Randomized

R_Time1 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

R_1 NOTE:

Whatever amount you do not invest in NIFTY 50 will automatically be invested in MSCI World.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
MSCI World	Morgan Stanley Capital International	NYSE:MSCI	Multiple	5 Star	Large Cap
NIFTY 50	National Stock Exchange of India	NSE:NIFTY50	India	5 Star	Large Cap

R_2

R_3 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in MSCI World (%) (1)

_____ Amount invested in NIFTY 50 (%) (2)

R_4 How risky do you perceive NIFTY 50 to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_5 How risky do you perceive MSCI World to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_6 What is your forecast for the annual growth rate after 10 years for NIFTY 50?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



R_7 What is your forecast for the annual growth rate after 10 years for MSCI World?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: India-World Randomized

Start of Block: Decision: NL-World

Timing2 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

8 NOTE:

Whatever amount you do not invest in AEX will automatically be invested in MSCI World.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
AEX	Amsterdam Exchange Index	INDEXEURO: AEX	The Netherlands	5 Star	Large Cap
MSCI World	Morgan Stanley Capital International	NYSE:MSCI	Multiple	5 Star	Large Cap

9

10 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in AEX (%) (1)

_____ Amount invested in MSCI World (%) (2)

11 How risky do you perceive AEX to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

12 How risky do you perceive MSCI World to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

13 What is your forecast for the annual growth rate after 10 years for AEX?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



14 What is your forecast for the annual growth rate after 10 years for MSCI World?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: Decision: NL-World

Start of Block: NL-World Randomized

R_Timing2 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

R_8 NOTE:

Whatever amount you do not invest in AEX will automatically be invested in MSCI World.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
MSCI World	Morgan Stanley Capital International	NYSE:MSCI	Multiple	5 Star	Large Cap
AEX	Amsterdam Exchange Index	INDEXEURO: AEX	The Netherlands	5 Star	Large Cap

R_9

R_10 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in MSCI World (%) (1)

_____ Amount invested in AEX (%) (2)

R_11 How risky do you perceive AEX to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_12 How risky do you perceive MSCI World to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_13 What is your forecast for the annual growth rate after 10 years for AEX?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



R_14 What is your forecast for the annual growth rate after 10 years for MSCI World?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: NL-World Randomized

Start of Block: Decision: USA-World

Timing3 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

15 **NOTE:**

Whatever amount you do not invest in S&P 500 will automatically be invested in MSCI World.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
S&P 500	Standard & Poor's 500	INDEXSP: .INX	United States	5 Star	Large Cap
MSCI World	Morgan Stanley Capital International	NYSE:MSCI	Multiple	5 Star	Large Cap

16

17 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in S&P 500 (%) (1)

_____ Amount invested in MSCI World (%) (2)

18 How risky do you perceive S&P 500 to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

19 How risky do you perceive MSCI World to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

20 What is your forecast for the annual growth rate after 10 years for S&P 500?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



21 What is your forecast for the annual growth rate after 10 years for MSCI World?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: Decision: USA-World

Start of Block: USA-World Randomized

R_Timing3 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

R_15 NOTE:

Whatever amount you do not invest in S&P 500 will automatically be invested in MSCI World.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
MSCI World	Morgan Stanley Capital International	NYSE:MSCI	Multiple	5 Star	Large Cap
S&P 500	Standard & Poor's 500	INDEXSP: .INX	United States	5 Star	Large Cap

R_16

R_17 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in MSCI World (%) (1)

_____ Amount invested in S&P 500 (%) (2)

R_18 How risky do you perceive S&P 500 to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_19 How risky do you perceive MSCI World to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_20 What is your forecast for the annual growth rate after 10 years for S&P 500?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



R_21 What is your forecast for the annual growth rate after 10 years for MSCI World?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: USA-World Randomized

Start of Block: Decision: China-EU

Timing4 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

22 NOTE:

Whatever amount you do not invest in SSE Composite will automatically be invested in Euronext NV.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
SSE Composite Index	Shanghai Composite	SHA: 000001	China	5 Star	Large Cap
Euronext NV	European New Exchange Technology	ENX	Europe	5 Star	Large Cap

23

24 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in SSE Composite (%) (1)

_____ Amount invested in Euronext NV (%) (2)

25 How risky do you perceive SSE Composite to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

26 How risky do you perceive Euronext NV to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

27 What is your forecast for the annual growth rate after 10 years for SSE Composite?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



28 What is your forecast for the annual growth rate after 10 years for Euronext NV?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: Decision: China-EU

Start of Block: China-EU Randomized

R_Timing4 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

R_22 NOTE:

Whatever amount you do not invest in SSE Composite will automatically be invested in Euronext NV.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
Euronext NV	European New Exchange Technology	ENX	Europe	5 Star	Large Cap
SSE Composite Index	Shanghai Composite	SHA: 000001	China	5 Star	Large Cap

R_23

R_24 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in Euronext NV (%) (1)

_____ Amount invested in SSE Composite (%) (2)

R_25 How risky do you perceive SSE Composite to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_26 How risky do you perceive Euronext NV to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_27 What is your forecast for the annual growth rate after 10 years for SSE Composite?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



R_28 What is your forecast for the annual growth rate after 10 years for Euronext NV?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()

**End of Block: China-EU Randomized****Start of Block: Decision: Germany-Asia**

Timing5 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

29 NOTE:

Whatever amount you do not invest in DAX will automatically be invested in MSCI Asia.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
DAX	Deutscher Aktienindex	INDEXDB: DAX	Germany	5 Star	Large Cap
MSCI Asia Apex 50	Morgan Stanley Capital International	MXAPEXA	Asia	5 Star	Large Cap

30

31 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in DAX (%) (1)

_____ Amount invested in MSCI Asia (%) (2)

32 How risky do you perceive DAX to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

33 How risky do you perceive MSCI Asia to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

34 What is your forecast for the annual growth rate after 10 years for DAX?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



35 What is your forecast for the annual growth rate after 10 years for MSCI Asia?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: Decision: Germany-Asia

Start of Block: Germany-Asia Randomized

R_Timing5 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

R_29 NOTE:

Whatever amount you do not invest in DAX will automatically be invested in MSCI Asia.

Please answer to the best of your abilities. *No calculations are required.*

Name	Index	Ticker	Origin	Morningstar Rating	Capitalization
MSCI Asia Apex 50	Morgan Stanley Capital International	MXAPEXA	Asia	5 Star	Large Cap
DAX	Deutscher Aktienindex	INDEXDB: DAX	Germany	5 Star	Large Cap

R_30

R_31 What amount (in %) of your endowment (EUR 10,000.00) are you willing to invest in both funds?

_____ Amount invested in MSCI Asia (%) (1)

_____ Amount invested in DAX (%) (2)

R_32 How risky do you perceive DAX to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_33 How risky do you perceive MSCI Asia to be?

Not risky at all (1)

Slightly risky (2)

Moderately risky (3)

Very risky (4)

Extremely risky (5)

R_34 What is your forecast for the annual growth rate after 10 years for DAX?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



R_35 What is your forecast for the annual growth rate after 10 years for MSCI Asia?

-50 -40 -30 -20 -10 0 10 20 30 40 50

Annual growth rate (%) ()



End of Block: Germany-Asia Randomized

Start of Block: Financial Literacy Questions

Timing6 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

36 Please answer the questions to the best of your abilities. No calculations are required.

37 How would you rate your knowledge on the following as compared to your peer group?

	Much worse (1)	Somewhat worse (2)	About the same (3)	Somewhat better (4)	Much better (5)
Statistics (1)					
Financial markets (2)					
Investing in general (3)					

38 Suppose you currently have €100 in a savings account and the rate of interest is 4% per year.

After 5 years, how much money do you think you would have if the money was left to grow?

Less than €104 (1)

Exactly €104 (2)

More than €104 (3)

Do not know (4)

39 Imagine that the interest rate on your savings account was 4% per year and inflation was 5% per year.

After 1 year, how much would you be able to buy with the money in this account?

Less than today (1)

Exactly the same (2)

More than today (3)

Do not know (4)

40 Which source of information has the most influence on your investment and/or financial decisions?

Advice from family or friends (1)

Information on the internet (2)

Advertisement (television or print) (3)

Your personal experiences (4)

41 Do you own stocks?

Yes (1)

No (2)

I currently do not hold stocks, but I did previously (3)

42 Is the following statement true or false?

"Buying a single company's stock usually provides a safer return than a stock mutual fund."

True (1)

False (2)

Do not know (3)

End of Block: Financial Literacy Questions

Start of Block: Demographic Info

Timing7 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

43 What is your country of origin?

▼ Afghanistan (1) ... Zimbabwe (1357)

44 What is your gender?

- Male (1)
 - Female (2)
 - Other (3)
-

45 What is your age?

- <18 (1)
 - 18-25 (2)
 - 26-30 (3)
 - 31-35 (4)
 - 36+ (5)
-

46 What is the highest level of education you have completed?

- Less than high school (1)
 - High school graduate (2)
 - Trade/Vocational training (3)
 - Bachelor's degree (4)
 - Professional degree (5)
 - Master's degree (6)
 - Doctorate (7)
-

47 Have you previously followed (or are presently studying) any of the following courses or a close substitute during your higher secondary/ university education? *Please select all that apply.*

- Economics (1)
 - Statistics (2)
 - Corporate Finance (3)
 - Financial Risk Management (4)
 - Investment Management (5)
 - Behavioural Finance (6)
 - Mathematics (7)
 - ☒ None of the Above (8)
-

48 What was your total household income (before taxes) during the past 12 months?

- Less than €10,000 (1)
- €10,000 - €39,999 (2)
- €40,000 - €69,999 (3)
- €70,000 - €99,999 (4)
- More than €100,000 (5)
- Do not wish to disclose (6)

End of Block: Demographic Info
