The impact of gender diversity on ESG in the Private Equity industry

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Abstract

This paper investigates the relationship between gender diversity in senior positions in a Private Equity (PE) fund and the fund's inclination towards including Environmental, Social, and Governance (ESG) criteria into its investment strategy. Additionally, it analyzes how specific fund characteristics influence gender diversity in a PE fund. The data is retrieved from the online database Preqin leading to a total sample of 6,525 funds. The first part of the study is analysed using logit regression with ESG as a proxy for sustainable investments and the female to male ratio as a proxy for diversity, controlling for fund-specific characteristics. The second part of the research uses multiple linear regression (MLR), with the ratio as the dependent and the firm-specific characteristics as the independent variables. The results show a that a higher ratio positively influences the likelihood of sustainable investments. Additionally, funds which started investing after 2013 have a significantly higher ratio.

Key words: ESG, gender diversity, private equity

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1 Introduction

In the past few decades, Corporate Social Responsibility (CRS) practices have become increasingly important. The perception of CRS policies has changed from being considered foundationless PR campaigns to an exploitable source of potential competitive advantage for companies (Porter & Kramer, 2006). Consequently, Socially Responsible Investment (SRI), which refers to how investors weigh Environmental, Social, and Governance (ESG) factors when selecting assets for their portfolios, has also experienced unprecedented growth over recent years. The Covid-19 pandemic, in particular, has resulted in a significant turning point for ESG investing. It has shed light on the close link between the health of the economy, society, and the environment and proved that incorporating ethical and sustainable business practices remain both a great opportunity and necessity to tackle current social and environmental challenges (He & Harris, 2020). In fact, according to the US Forum for Sustainable and Responsible Investment, the total US-domiciled assets under management (AUM) using ESG-compliant investment strategies increased by 42 percent from 2018 to 2020, reaching 17.1 trillion USD at the beginning of 2020 (The Forum for Sustainable and Responsible Investment, 2020). The alternative assets industry, especially Private Equity (PE) firms, have also caught on to the valuable potential of incorporating ESG strategies. According to a recent study by Preqin, 79 percent of total assets across the alternative investment industry are currently managed by General Partners (GPs) engaged with ESG strategies. Interestingly, the aggregate capital raised by ESG-committed GPs has been consistently larger than by non-ESG committed GPs since 2011 (McGrath & Lee, 2020).

As is to be expected, the emergence of ESG funds is related to a surge of ESG aware investors, who are shifting the focus towards inclusion and diversity in the PE industry (McKinsey, 2020). A recent report by McKinsey describes three challenges private markets will have to overcome in the next decade: the importance of ESG considerations, lack of gender parity and diversity in the industry, and fast digitalization (McKinsey, 2020). The underrepresentation of women is especially concerning. According to Preqin, the PE industry has the lowest representation of women across all alternative assets, with only 17.9 percent of female employees compared to the industry average of 18.8 percent (Faulkner et al., 2017). Furthermore, the gender gap is more prominent in leadership and investment positions. For instance, women represent a mere 10 percent in portfolio management, with the number dropping to 9.4 and 4.1 percent for senior roles and board member positions, respectively (Faulkner et al., 2017). This gender imbalance has various negative consequences. For one, gender imbalanced PE funds are more prone to implicit biases against allocating deserved funding to female entrepreneurs (McKinsey, 2020). Secondly, there is growing evidence that gender-balanced funds outperform male-dominated and female-dominated funds (International Finance Corporation, 2019;

McKinsey, 2020). Thus, the rapid development of sustainable investment and the growing demand for gender parity, specifically in the PE industry are the main drivers of this thesis. This leads to the following research question:

How does gender diversity among managers of a Private Equity fund impact the fund's inclusion of ESG factors in its investment strategy?

Multiple reasons highlight the importance of this matter. Firstly, including ESG criteria has been linked to lower cost of capital due to reduced risk levels (Chava, 2014); secondly, there is evidence that female representation matters and can positively impact performance (McKinsey, 2020), and thirdly there is growing significant research on the links between gender parity and social and environmental compliance of firms that have not yet been studied in the PE industry (Liao et al., 2015; Velte, 2016). Therefore, this thesis would add to current literature on the impact of diversity in leadership positions and is particularly relevant for PE investors. Since General Partners (GPs) are responsible for managing and choosing which investments to include in their portfolios, understanding whether there are specific demographic characteristics such as gender that influence, these decisions are of central interest to investors. Especially in the PE industry, where limited partners have no influence over investment decisions and where interest in sustainable investment is rising.

The data for this analysis was retrieved from the online database Preqin. This database holds financial information on the following alternative assets: Private Equity, Venture Capital, Hedge Funds, Real Estate, Private Debt, Infrastructure, Natural Resources, and Secondaries. This paper focuses on the Private Equity industry and explicitly distinguishes between Private Equity and Venture Capital funds, as the latter are known to invest in different - usually younger and more tech-focused - firms. Furthermore, employee information and ESG compliance data were also retrieved from Preqin. In order to answer the research question, four hypotheses are proposed. To analyze the first hypothesis, which tests how gender diversity in management impacts a fund's sustainability goals, five logistic regressions are run controlling for firm-specific characteristics such as firm size, the vintage year, its geographical location, and asset class. Next, the determinants of gender diversity are further examined using MLR with the female to male ratio as the dependent and the previously mentioned fund characteristics as independent variables. Finally, the robustness of the regression results are checked via four different t-tests.

For the first part of the research, which focuses on the relationship between the female to male

ratio and ESG, the results show that the higher the number of women relative to men, the more likely a PE fund is to have an ESG compliant investment strategy. Additionally, being young, headquartered in Asia, and a Venture Capital firm is negatively associated with ESG, while the size and being headquartered in Europe or North America are positively associated. Interestingly, a fund's vintage year and geographical location are sensitive to changes in the female to male ratio, while a fund's size is not. Specifically, in the sample, younger funds react more strongly to increases in the ratio. Thus, as the number of women relative to men, rises, the impact on the probability of being an ESG fund rises more for older than younger funds. Furthermore, the impact of Western funds - defined as European and North American funds - on ESG is very strongly associated with changes in the female to male ratio, while the impact of Eastern funds - defined as Asian funds - reacts only minimally to changes in the ratio. For the second part of the research, which tries to determine which fund-specific characteristics influence the female to male ratio, the results show that funds with a vintage year of 2013 or later have a significantly higher female to male ratio, while fund size and geographical origin did not appear to influence gender diversity significantly.

The remainder of this paper will be structured as follows. Firstly, the Theoretical Framework reviews the relevant literature and discusses the hypotheses development. Next, the Data & Methodology section thoroughly explains the data and the methodological framework of the thesis. Then, the insights of the analysis are first presented in the Results, and critically assessed in the Discussion. Finally, the Conclusion summarizes the thesis, highlights the limitations of the study and proposes future research opportunities.

2 Theoretical Framework

2.1 Literature Review

2.1.1 Defining ESG

To better understand this thesis, it is essential to correctly define the concept of ESG, as it will be discussed throughout the whole paper. According to the Principles for Responsible Investment (PRI) Association, the Environmental benchmark incorporates how firms deal with environmental matters, including energy consumption, climate change, and natural resource conservation; the Social criterion addresses how firms cope with societal issues such as inclusion and diversity, health and safety, human rights, and employee relations; and the Governance benchmark involves the transparency and quality of management, shareholder rights and the independence of the board. Hence, the terms ESG

and sustainability will be used interchangeably throughout this paper.

2.1.2 Empirical evidence of the growing importance of ESG in the financial sector

As mentioned in the introduction, sustainable investing has become particularly popular in recent years. For instance, in 2006, the UN Principles for Responsible Investment (PRI), which acknowledge the impact of ESG factors on the performance of investment portfolios, and recognize the need to correctly disclose ESG issues to investors, were launched. Signatories of the UN PRI agree to the association's fundamental principles and file regular reports on their progress. Additionally, the Sustainable Development Goals (SDGs) established in 2015 by the United Nations, international agreements against Climate Change such as The Paris Agreement signed in 2016, and an increased sense of social responsibility means that companies are coming under increased scrutiny to integrate ESG criteria.

This shift from niche to mainstream is reviewed in a study by Sparkes and Cowton (2004). The researchers point out that Socially Responsible Investing (SRI) is not only popular among value-based organizations such as NGOs anymore, but that it has reached the mainstream as more and more institutional investors adopt SRI practices into their investment philosophy. Furthermore, they explore the link between SRI and Corporate Social Responsibility (CSR) and conclude that the pressure General Partners (GPs) are under to include SRI practices, is similar to the lobbying campaigns other companies are confronted with to include CSR practices (Sparks & Cowton, 2004).

The effect of ESG factors on investment portfolios is further highlighted in a study by Friede et al. (2015). In their paper the authors pooled the findings of 2200 individual primary studies to be able to extrapolate the results into a general setting, and found that 90 percent of the collected studies concluded a non-negative and most even a positive relation between ESG and financial performance which stayed stable over time. In their exhaustive investigation, they make a case for including ESG criteria into investment strategies and suggest future research into the specific determinants of ESG (Friede et al., 2015).

Additionally, ESG criteria seem to be particularly important for Private Equity funds. For example, a case study by Indahl and Jacobsen (2019), which focuses on the Nordic Private Equity firm Summa Equity, found that ESG criteria can be used as a source of competitive advantage in the industry. The results of their study showed that including sustainability criteria led to increased investments

into high growth industries, which led to high enough returns and higher perceived social impact for Summa Equity investors. This caused the company, which had one ESG and one non-ESG fund to ultimately close its non-ESG fund (Indahl & Jacobsen, 2019).

Nontheless, many researchers also recognize the issues with ESG reporting due to a lack of internationally accepted reporting standards (Amel-Zadeh & Serafeim, 2018, Zaccone & Pedrini, 2020) and the inconsistencies of ESG data by established ESG data providers (Gyönörová et al., 2021), which must still be addressed. Nonetheless, the growing adoption of ESG factors by firms raises the question of what influences a fund to include sustainability criteria in their investment strategy.

2.1.3 Empirical evidence of the determinants of ESG

Research on the determinants of ESG has grown in recent years and is particularly and is overwhelmingly focused on firm-specific characteristics. For instance, Crespi and Migliavacca (2020), focus on the effect of firm size, country of origin, and different time factors on corporate social performance (CSP) scores of firms in the financial industry. The results show that larger, more profitable firms, and firms that operate in a developed country are more likely to have a higher CSP score. Similarly, a recent study by Rahman and Alsayegh (2021), shows that among public listed firms in Asia, the main drivers of ESG are also firm profitability, leverage, and firm size. Furthermore, the authors argue that these firm-specific characteristics are linked to increased media exposure, more social responsibility, and higher scrutiny by governments (Rahman & Alsayegh, 2021). Additionally, Perrini's and Minoja's (2007) paper, which focuses on the relationship between CSR and medium-sized Italian enterprises (MSE), also finds that MSEs are less prone to have CSR policies in place than their larger counterparts. The difference in social engagement between large and small firms is also present in the PE industry. According to the most recent Preqin Impact Report, larger funds have led the ESG movement (Preqin, 2020). The average size of ESG-committed private capital funds closed in 2020 passed the 900 million USD mark, while the average size of non-ESG committed funds was slightly below 400 million USD (Preqin, 2020). Beske-Janssen et al. (2015) reason that smaller firms might be limited to commit to ESG investments as these investments do not usually bring immediate returns.

Additionally, research shows that the growth of SRI has not been homogeneous across countries either. For instance, a paper by Bengtsson (2008), finds a stark difference in the growth rate of sustainable investments in developed versus developing countries. One of the reasons for this difference proposed by McGrath and Lee (2020) is the dissimilar institutions in charge of these countries. This

is in line with Baldini et al. (2016), who examine the impact of social structures on ESG disclosure using a cross-country sample. They find that structural country factors such as a country's political system, labor force, and culture influence ESG disclosure significantly (Baldini et al., 2016). To date, Europe is the leader in embracing ESG investments, North America follows closely, and Asia is behind (McGrath & Lee, 2020). This is partly because the European Union has been at the forefront of implementing sustainable action points, making substantial efforts to push ESG to the mainstream. In contrast, the US has fallen behind in recent years due to changes in their presidential administration, and there is a lack of requiring the release of ESG information in Asian countries. This ranking is also in line with the statistics reported in the yearly investment review by the GSI Alliance in 2018, which found that Europe had 46 percent of global investing assets and the USA 39 percent.

However, not only firm-specific characteristics play a role. For example, previous literature studies the motives and relationships between a fund manager's inclination toward including ESG issues into their investment strategies and a fund manager's risk appetite, work experience in the current fund, and changes in salary (Przychodzen et al., 2016). However, the relationship between a fund manager's gender and the fund's ESG motivations has barely been touched upon. This is surprising, seeing as the different risk profiles and investing behaviors of men and women have been widely studied. For instance, psychological theory shows that men demonstrate more overconfidence than women in fields such as finance. Barber and Odean (2001) empirically test this hypothesis and find that, indeed, overconfidence is more prominent in men and that this behavior leads to excessive trading and risk-taking. Furthermore, personality differences between men and women, such as women's greater tendency to be empathetic, behave altruistically, and adopt a future-focused perspective, are seen by many psychologists as a reason for women to be seen as responsible for and caregivers of the environment (Howell, 2013). Similarly, Swim (2020) found that both personality differences between men and women and societal constructs shape how women and men respond differently to sustainability. Consequently, researchers have found significant positive associations between the number of women on the board of a corporation and the firm's CSR rating (Bear et al., 2010; Li et al.,2017; Lopatta et al., 2020) and social and environmental compliance (Liao et al., 2015; Velte, 2016).

2.2 Hypotheses Development

Since the literature shows a rise in SRI (Sparks & Cowton, 2004), that women have a greater tendency to act sustainably (Howell, 2013; Swim, 2020) and that there is a demonstrated difference in the investing behavior of both genders (Barber & Odean, 2001; Przychodzen et al., 2016), the question

emerges of whether this relationship also holds in the fast-paced and dynamic PE industry. To assess whether there is a significant difference in the female to male ratio of ESG funds, the first hypothesis is:

Hypothesis 1. *Ha: The female to male ratio in top management influences the likelihood of PE funds including sustainability factors in their investment strategies.*

Furthermore, seeing the female-to-male ratio's potential as a determinant of ESG, it is crucial to understand how certain fund-specific characteristics could potentially influence it. Therefore, this paper will additionally assess the following three hypotheses. Firstly, seeing as there has been a recent rise in international efforts by the UN and governmental organisms to promote sustainable investments, one can assume that the vintage year of a fund is related to its ESG efforts. Thus, it would be interesting to see if the female to male ratio is significantly higher for younger than for older funds, leading to the second hypothesis:

Hypothesis 2. *Ha: There is a significant difference in the female to male ratio of younger and older funds.*

Secondly, the link between the size of a firm and ESG in different industries (Crespi & Migliavacca, 2020; Rahman & Alsayegh, 2021; Perrini & Minoja, 2007), as well as the size of a fund and ESG in the Private Equity industry specifically (Beske-Janssen et al.,2015; McGrath & Lee, 2020), has been widely studied. Therefore, if the size is related to ESG, it must be examined whether the female to male ratio of small and large funds differs significantly, leading the third hypothesis to be:

Hypothesis 3. *Ha: There is a significant difference in the female to male ratio of small and large funds.*

Finally, there is a strong case that governmental institutions and cultural heritage play a role when assessing the sustainability compliance of firms (Bengtsson, 2008; Baldini et al., 2016; McGrath & Lee, 2020). Acknowledging the different attitudes towards ESG per region, it is noteworthy to see whether there is a significant difference in the female to male ratio of PE funds across geographical locations.

Hypothesis 4. *Ha: There is a significant difference in the female to male ratio across regions.*

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3 Data & Methodology

3.1 Data

This section discusses the data collection and data transformation process required for the analysis. First, the data retrieval process is described in the Data Collection section. Next, the Variables section defines the variables added to the model and their expected relationship with the outcome variables. Then, the Descriptive Statistics section includes measures of central tendency and spread of the variables in the data set. Lastly, the variable transformations needed to improve statistical inference are explained in the Data Transformation section.

3.1.1 Data Collection

This study uses data retrieved from the online database Preqin, which holds financial information on the alternative assets market. It covers the following asset classes: Private Equity, Venture Capital, Hedge Funds, Real Estate, Private Debt, Infrastructure, Natural Resources, and Secondaries. Their source of data is self-reported submissions of individual General Partners and hedge fund managers. Furthermore, they track many global news sources to be up to date with industry trends and use intelligent algorithms to classify this news according to each alternative asset (Preqin, n.d.). Additionally, Preqin also has extensive data on the ESG Status of funds, which is obtained from the individual firms' website and LP board minutes and applies to when ESG factors may significantly impact the performance of an investment (Preqin, n.d.).

For this research, the data is filtered by Asset Class "Private Equity" and Fund Status "Closed to Investment", leading to a total of 26,960 funds. However, when further filtering by ESG/Ethos Fund Manager ESG Status, only 8,379 observations are left. This is the number of funds that disclosed information on whether they have an ESG policy in place, are affiliated to the UN Principles for Responsible Investment (PRI), the Global Real Estate Sustainability Benchmark (GRESB) or Sustainability Accounting Board (SASB) associations or not (Preqin, n.d.). To be precise: 4,472 answered "Yes"; 3,723 answered "No"; 150 answered "Considering," meaning they were not opposed to implementing a policy in the future, but were not currently; and 34 were on "Pending," which means that they were actively drafting up a policy (Preqin, n.d.). After accounting for missing observations in the vintage year, fund size, and asset class, the number of observations drops to 6,525. This sample represents a worldwide investment portfolio from 1994 to 2021. The contact information of the top managers and executives of the fund is used to obtain its gender composition.

3.1.2 Variables

The binary variable ESG is used as a proxy for ESG-compliant funds, with non-ESG-compliant funds belonging to the reference group and ESG-compliant funds to the target group. The reference group takes on the value 0 and includes funds whose ESG Status was either "No" or "Considering". The target group takes on the value one and includes funds whose ESG Status was either "Yes" or "Pending", leading to a balanced sample with 3,436 ESG funds and 3,089 non-ESG funds (Table 8.1.1, Appendix A).

To investigate how females in top management positions impact the likelihood of a fund including sustainability factors in their investment strategies, the ratio between females and males in executive positions is calculated. For the first hypothesis, the ratio is added as the main variable of interest, and for the other three hypotheses as the dependent variable. The data downloaded from Preqin included the titles of the fund executives, which allowed to create two binary variables, "Male" and "Female," leading to a total of 85,203 female workers and 28,8330 male workers. When downloading the data from Preqin, it was necessary to join both the employee data with the fund data, which led to a very large dataset as funds had multiple executives. Thus, it was required to collapse the dataset by fund via the fund id variable. This allows to see the exact number of female and male managers working in each fund and calculate the female to male ratio with the following formula:

$$Ratio = \frac{Female}{(Male * Female)}$$

The following variables are added as control variables for Hypothesis 1 and will become variables of interest for Hypotheses 2, 3 and 4: *Vintage Year* refers to the year the fund began making investments, *Fund Size* refers to the size of the fund at the closing date and is measured in USD million; *Region* describes the continent the fund is headquartered in; and the binary variable *VC* specifically differentiates between PE and VC funds. Tables 3.1.1 and 3.1.2 summarize the expected relationship between these variables and both ESG and Ratio.

Table 3.1.1: The determinants of ESG

Variable	Type	Expected Effect on ESG	Analysis
Ratio	Continuous	Positive	T-test & Regression
Vintage Year	Categorical	Positive	Regression
Fund Size	Continuous	Ambiguous	Regression
Region	Categorical	Ambiguous	Regression
VC	Binary	Negative	Regression

Note: This table provides an overview of the main determinants of ESG. Column (1) states the variable name, column (2) describes the variable type, column (3) lists the variable's expected relationship to ESG, and column (4) outlines the tests that will be performed.

Table 3.1.2: The determinants of Ratio

Variable	Type	Expected Effect on Ratio	Analysis
Vintage Year	Categorical	Positive	T-test & Regression
Fund Size	Continuous	Ambiguous	T-test & Regression
Region	Categorical	Ambiguous	T-test & Regression
VC	Binary	Ambiguous	Regression

Note: This table provides an overview of the possible determinants of Ratio. Column (1) states the variable name, column (2) describes the variable type, column (3) lists the variable's expected relationship to ESG, and column (4) outlines the tests that will be performed.

3.1.3 Descriptive Statistics

The descriptive statistics in Table 3.1.3 show that ESG funds make up a little more than half of the funds in the sample. Furthermore, on average, funds in the sample have a ratio of nearly 20 percent. The ratio is used as a dependent variable because the number of total executives varies greatly by fund ranging from 1 to 1,011 with an average of 67 employees per fund. Thus, a percentage allows for a more precise analysis. However, there is a large difference between the total number of men and women and the maximum number of women relative to men working per fund, which leads to a right-skewed distribution of the female to male ratio (Figure 8.1, Appendix B). Nevertheless, the fact that the female to male ratio is non-normally distributed is not of concern since the model will predict a population that is also non-normally distributed.

Furthermore, Table 3.1.3 also shows that the average fund in the sample started investing in 2013 and was, on average, worth 186,433,100 USD at closing. Nonetheless, the large standard deviation of both *Vintage Year* and *Size* indicates that they are highly skewed (Figure 8.4, Appendix B). For instance, the largest fund in the sample was worth 999 million USD at closing, while the smallest fund was worth only 150 thousand USD. Regarding the geographical location of funds, with a mean value of 2.296, we see that most funds in the sample are headquartered in either Europe, North America, or Asia, which are represented by the number 1, 2, and 3 respectively. Specifically, 26.10 percent of the funds in the sample are headquartered in Europe, 25.36 percent in North America, and 43.62 percent in Asia (Table 8.1.2, Appendix A). Moreover, 77.85 percent of ESG funds in the sample are in Europe or North America, while 75.98 percent of non-ESG funds are located in Asia, which is consistent with the findings in the Literature Review that stated that European and North American funds were leading the way towards sustainable investment (Table 8.1.3, Appendix A). Finally, Table 3.1.3 also shows that that almost 37 percent of funds in the sample are Venture Capital funds.

Table 3.1.3: Descriptive Statistics

	Mean	SD	Min	Max	N
ESG	0.539	0.498	0	1	8,274
Women	13.773	27.171	0	193	8,295
Men	53.268	101.775	0	818	8,295
Ratio	0.199	0.176	0	1	8,295
Vintage year	2,013.703	4.489	1,994	2,021	8,295
Fund size	186.433	220.439	0.150	999	6,544
Region	2.296	1.063	1	7	8,295
Managers	67.041	128.007	1	1,011	8,295
VC	0.363	0.481	0	1	8,295

Note: This table provides the summary statistics of all variables in the model before considering missing values. Summary statistics for the binary variables ESG and VC should be interpreted as proportions. Women, men, ratio (%), vintage year (years), size (USD million), region (1-7) and managers are continuous variables. The descriptive statistics after transformation are in Table 8.1.4, Appendix A.

3.1.4 Data Transformation

The large kurtosis of Vintage Year and Size is problematic, and transformations are necessary to improve statistical efficiency. Furthermore, several dummy variables will be added to facilitate statistical

testing.

Vintage Year will be winsorized (*VintageYear_w*), such that the most extreme values are replaced by the values in the 1st and 99th percentile. This process prevents problems with having small denominators, removes outliers, and improves the kurtosis in this case from 3.142 to 2.789 (Barnett & Lewis 1984). To remember is that the kurtosis of a normal distribution is 3, thus winsorizing leads to the variable following a more normal distribution (Figure 8.3, Appendix B). Furthermore, the binary variable *Young*, which is equal to 1 if *VintageYear_w* is larger than or equal to 2013 and 0 otherwise is added. This cutoff was chosen as it is approximately the mean. The relevance of this variable is twofold: firstly, it allows to directly examine hypothesis two, which hypothesizes whether the female to male ratio of younger funds is higher than that of older funds, via a one-sided t-test with unequal variances, and secondly, simplifies the interpretation of an interaction term studying the relationship between the ratio and the vintage year of a fund in the regression. *Fund Size* is highly skewed with a kurtosis of 4.886 (Figure 8.4, Appendix B). Without any transformations, this could lead to misleading results when performing inferential analysis with this variable. In this case, winsorizing only lowers the kurtosis to 4.717. Hence, the logarithm is applied (*ln(Size)*), which pulls in the values which are very high relative to the median and pushes away the values which are low relative to the median (Barnett & Lewis 1984). This causes the kurtosis in the tails to drop to 2.918 (Figure 8.5, Appendix B). Moreover, the dummy variable *Large*, which equals 1 when the logarithmically transformed fund size variable is above the mean and 0 otherwise is also added. This addition allows to directly investigate the third hypothesis, which examines the relationship between the female to male ratio and the fund size more thoroughly via a two-sided t-test with unequal variances. Finally, even though the findings in Table 3.1.3 do not indicate that any transformations are necessary for the categorical variable *Region*, I have decided to include a dummy variable to differentiate between East and West. Thus, the variable *West* will equal one if the fund is headquartered in either Europe or North America and 0 if the fund is headquartered in Asia. This variable will draw inference on whether there is a significant difference in the female to male ratio of Western relative to Eastern funds via a two-sided t-test of unequal variances.

3.2 Methodology

This section discusses the methodological framework of this paper. Firstly, I will go through the different Logit and MLR Assumptions. Next, the Model Specifications will be described. Finally, in the T-tests section, an overview of the four different t-tests that will be run to test for robustness is provided.

3.2.1 Logit and MLR Assumptions

A binary logistic regression model is used to test the first hypothesis, which investigates the effect of females in top management of PE funds on the fund's inclusion of ESG factors in their investment strategies. Binary logistic regressions make different assumptions than linear regression models. A logit model calculates the predicted probability of belonging to the target group - in this case being a fund that considers ESG factos in their investment strategies. Furthermore, the independent variables can be both categorical and continuous variables. Additionally, both the linear relationship assumption between the dependent and independent variables and the homoskedasticity assumptions linear regression models make do not have to hold. However, there are several other assumptions that must hold for a logit regression to be valid.

Most importantly, the dependent variable must be dichotomous – here, ESG takes equals 1 when the firms consider ESG factors in their investment strategy and 0 otherwise (Tabachnick & Fidell, 2014). Next, the error term must be independently and identically distributed (i.i.d) (Tabachnick & Fidell, 2014). Since the sample used in the analysis can be considered a random sample, retrieved from a sound source, there is no reason to believe that there is any connection between the observations and that this assumption does not hold. Furthermore, multicollinearity among predictors should be absent or very close to zero as a violation of this assumption would lead to biased estimators of the regressors (Tabachnick & Fidell, 2014). However, the correlation matrix in Table 3.2.1 shows that this assumption also holds.

Table 3.2.1: Correlation Matrix

	ESG	Ratio	V.Year	V.Year$_w$	Young	Fund Size	ln(Size)	Large	Region	West	VC
ESG	1										
Ratio	0.050	1									
Vintage Year	-0.219	0.004	1								
Vintage Year$_w$	-0.2193	0.0050	0.9986	1							
Young	-0.209	0.020	0.849	0.855	1						
Fund Size	0.289	0.007	-0.141	-0.142	-0.141	1					
ln(Size)	0.420	0.010	-0.176	-0.177	-0.177	0.808	1				
Large	0.407	0.022	-0.160	-0.160	-0.156	0.663	0.821	1			
Region	-0.638	-0.008	0.259	0.261	0.252	-0.298	-0.424	-0.400	1		
West	0.619	0.017	-0.299	-0.300	-0.284	0.379	0.493	0.465	-0.898	1	
VC	-0.457	-0.023	0.203	0.205	0.193	-0.293	-0.372	-0.364	0.420	-0.452	1

The correlation coefficient ranges from -1 to 1, and the closer to 0, the weaker the relationship between two variables is, and the higher the absolute value, the stronger the relative co-movement of two variables (Boslaugh, 2012). The correlogram illustrates some interesting insights. The dependent variable *ESG* shows a weak but positive relationship with the female to male ratio and a moderate positive association with the size of a fund particularly with with the transformed variables *ln(Size)* and *Large*. Furthermore, *ESG* is moderately and negatively correlated with the the *Vintage Year*, *Region*, and *VC*. Regarding the correlation between the female to male ratio and the remaining independent variables, we see a weak and positive relationship with the *Vintage Year* that increases when transformed into the binary variable *Young* and a weak and negative relationship with *Region* and *VC*. Since *Region* is a categorical factor variable that takes on the numbers 1 through 7 depending on the continent, a negative association means that ESG funds become less frequent as the factor increases, and the female to male ratio decreases. Furthermore, even though the correlation matrix displays a low correlation coefficient between *ESG* and *Ratio*, this does not mean that it is not a good predictor when included in a regression. In fact, significant correlation is not a requirement for regression analysis as a variable can still have strong predictive power in a regression when other control variables are added, and weak correlation is often merely an indicator that the relationship between both variables is nonlinear (Simmons et al., 2011).

Two additional assumptions of logit regressions are that there should not be any outliers in the data, and that the predictors should be a linear combination of the logit function (Tabachnick & Fidell, 2014). The latter also involves that all relevant variables are added to the model without including redundant regressors. In case of a violation of this assumption, the model would suffer from a specification error (Tabachnick & Fidell, 2014). The data transformations explained in the Data Transformation section were particularly important to eliminate large outliers from the sample. The resulting improved skewness, which can be seen in the histograms in Appendix B show that outliers are very unlikely and that this assumption also holds. Furthermore, to test whether the logit regressions are correctly specified, a specification link test for single-equation models is run for each model. The results show that the predicted value is significant for each of the models, which means that the model is not misspecified. Additionally, the squared predicted value is insignificant, which means that all relevant variables are included in the model and that the regressions are correctly specified (Table 7.3.1, Appendix C). Lastly, a large sample size is advised. Researchers have not agreed on a minimum number of observations per variable, with some concluding as little as 10 to be enough (Hosmer, Lemeshow, and Sturdivant, 2013), others suggesting at least 30 (Leblanc & Fitzgerald, 2000), and others recommending a minimum of 50 observations per variable (Field, 2013). With a

complete sample of 6,525 observations, we can also assume that it is large enough to test for inference.

To test Hypothesis 2, 3, and 4, investigating whether there is a significant relationship between the female to male ratio and a fund's vintage year, its size, and its geographical region, Multiple Linear Regression (MLR) will be used. MLR is an extension of Ordinary Least-Squares (OLS) as it includes multiple explanatory variables to predict the outcome variable (Field, 2013). Several assumptions must hold for the estimator to be BLUE and efficient. Differently than for the logit regression used for Hypothesis 1, the homoscedasticity assumption must hold. Consequently, robust standard errors will be used. Similar to the logit regression, the i.i.d., no perfect multicollinearity, and no outliers assumptions - previously proven – must hold. Lastly, and most importantly, the zero-conditional mean assumption must hold for the estimator to also be unbiased. Unfortunately, this assumption cannot be tested, but its violation is minimized by adequately specifying the model – reducing the risk of omitted variable bias (OVB).

3.2.2 Model Specifications

Firstly, the significance will be tested using a 95 percent confidence interval for all four hypotheses. Although homoskedasticity is not a necessary assumption for a logit regression, using robust standard errors (SE) is still advisable when working with large data sets (Tabachnick & Fidell, 2014). Furthermore, homoskedasticity is a necessary assumption for OLS to be efficient. Thus, the 95 percent confidence interval will be determined by robust SE for all logit regressions as well as for the MLR.

Secondly, to answer the research question, four hypotheses were defined in Section 2.2. On this basis, five different logit regressions are proposed to thoroughly examine the effect of women in senior positions in PE funds on the fund's sustainability profile, and one MLR to pin down how certain fund characteristics impact the female to male ratio. Hence model 1 through 5 focus on Hypothesis 1, and Model 6 will assess Hypotheses 2, 3, and 4.

$$u = log(\frac{ESG}{1-ESG})$$

$$u = \beta_0 + \beta_1 Ratio + \beta_2 i.VYear + \beta_3 Ln(Size) + \beta_4 i.Region + \beta_5 VC \tag{1}$$

$$u = \beta_0 + \beta_1 Ratio + \beta_2 D.Young + \beta_3 Ln(Size) + \beta_4 i.Region + \beta_5 VC \tag{2}$$

$$u = \beta_0 + \beta_1 Ratio + \beta_2 D.Young + \beta_3 Ratio * D.Young + \beta_4 Ln(Size) * \beta_5 i.Region + \beta_6 VC \tag{3}$$

$$u = \beta_0 + \beta_1 Ratio + \beta_2 D.Young + \beta_3 D.Large + \beta_4 Ratio * D.Large + \beta_5 i.Region + \beta_6 VC \quad (4)$$

$$u = \beta_0 + \beta_1 Ratio + \beta_2 D.Young + \beta_3 Ln(Size) + \beta_4 West + \beta_5 Ratio * West + \beta_6 VC \quad (5)$$

$$Ratio = \beta_0 + \beta_1 D.Young + \beta_2 Ln(Size) + \beta_3 i.Region + \beta_5 D.VC \quad (6)$$

In regressions 1 through 5, the left side of the function represents the log-odds of an event occurring, where *ESG* is equal to the probability of a fund replying "Yes" to including ESG factors in their investment strategies. Therefore, the estimated coefficients should be interpreted as the rate of change in the log odds of *ESG* for each independent variable change by 1 unit, holding all other coefficients constant. As this can be difficult to interpret, the odds ratios of the estimates are included in Table 8.1.6; Appendix A. These estimates are to be interpreted as the effect of a one-unit change in an independent variable on the odds ratio, holding all other variables constant. The formula to calculate the odds ratio is the following:

$$OddsRatio = (\frac{p}{(1-p)}) = e^{\beta k}$$

Next, in model 6, I investigate the effect of different fund characteristics on a PE fund's female to male ratio. It shows how the dependent variable changes, with changes in each independent variable, holding all other variables constant.

3.2.3 T-Tests

Three two-sided t-tests and one one-sided t-test will be run to support the regressions mentioned above. To investigate the first hypothesis, a two-sided t-test for unequal variances measuring whether there is a statistically significant difference between the average female to male ratio of ESG and non-ESG funds will be performed. This will show whether a higher female to male ratio has either a positive or a negative effect on ESG compliance. Next, to investigate the second hypothesis focusing on whether the average ratio of younger funds is significantly higher than that of older funds, a one-sided t-test for variables with unequal variances between *Ratio* and *Young* will be completed. A one-sided test is run because we are strictly interested in seeing whether funds with a vintage year

later than 2013 have a higher ratio than funds before that. Finally, two more two-sided t-tests on unequal variances will investigate the association between *Large* and *Ratio* and *West* and *Ratio* to investigate hypotheses 3 and 4, respectively.

4 Results

The research question has resulted in four hypotheses. The first one is concerned with how the gender composition of a private equity fund influences the fund's sustainability goals and the last three focus on the fund characteristics determining the gender composition of a fund. The empirical results of this thesis are discussed in section 4.1, where section 4.1.1 centers around the logistic regression results testing hypothesis 1, and section 4.1.2 around the MLR results testing hypotheses 2, 3 and 4. Lastly, I explain the results of the four different t-tests in section 4.2.

4.1 Regression Analysis

4.1.1 Hypothesis 1

Hypothesis 1 states that the female to male ratio in top management influences the likelihood of PE funds including sustainability factors in their investment strategies. Hence, five different logit models with the female to male ratio as the variable of interest and other fund characteristics as control variables are run. The estimated coefficient results are displayed in Table 4.1.1, and the estimated odds ratios used for interpretation in Table 8.1.6 in Appendix A.

The only difference between the first two models is that model 1 includes the *VintageYear_w* as a categorical factor variable and model 2 includes the binary variable *Young*. *Young*, which takes on the value one if the fund started investing after 2013 and 0 otherwise, aims to capture the fact that sustainable investing has grown in popularity in recent years. Interestingly, even though both variables try to control for the same effect, only the estimator of the binary variable used in model 2 is significant at a five percent level. Surprisingly, and not consistent with findings in the Theoretical Framework that stated that sustainable investment funds have soared in recent years, funds which started investing after 2013 are 15 percent less likely to consider ESG factors than their older counterparts, all else equal. This finding also leads to the dichotomous variable *Young* being used to control for a funds age in all other models. However, the coefficients of the female to male ratio and of the variables controlling for size, asset class, and geographical location are approximately the same in both models. Specifically, a one unit increase in the female to male ratio increases the probability of being an

ESG fund by 116 percent, ceteris paribus. Additionally, a one million dollar increase in fund size increases the likelihood of being an ESG fund between 1 33.83 and 2 34.64 percent, all else constant. Furthermore, Venture Capital firms are 70 percent less likely than other Private Equity funds to consider sustainability factors in their investment strategies, holding all other variables at a fixed value. Next, the regression results are consistent with the findings discussed in the theoretical framework, where multiple reports showed that European funds were the most driven towards sustainable investments. Mainly being headquartered in North American, in the Middle East, and Asia decreased the probability of being an ESG fund by approximately 85, 95, and 97 percent, respectively, compared to European funds in both models, ceteris paribus. All the estimates are significantly different from zero ($p<0.01$). The estimates for the other regions are not statistically significant at a five percent level and will thus not be interpreted.

Model 3 adds an interaction term between *Young* and *Ratio*. The results show that for old funds, a one unit increase in the female to male ratio leads to a 1.32 change in log odds, all else constant. However, a one unit increase in the female to male ratio for young funds yields a change in log odds of only (1.32 – 0.69) = 0.62. The ratio of these two odds ratios (0.69/1.32) is the exponentiated coefficient of the interaction term exp(-0.69) = 0.52 (Table 8.1.6, Appendix A). The female-to-male ratio's impact on young relative to old funds is illustrated in Figure 4.1 below, and the exact values can be found in Table 8.1.7 and 8.1.8 in Appendix A.

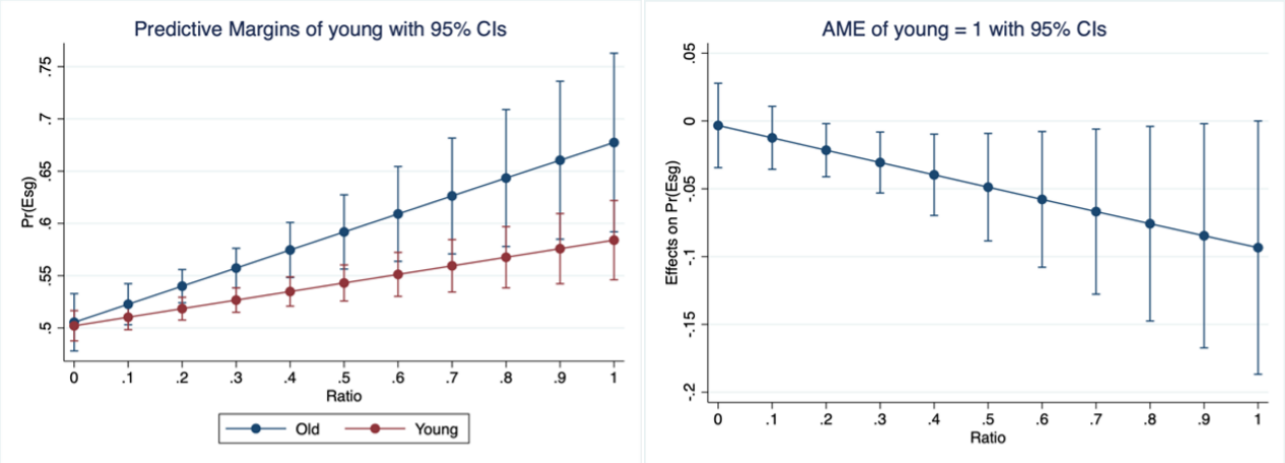

Figure 4.1: Predictive margins (left) and Average Marginal Effects (right) of being a young fund on the probability of being an ESG fund at set values of the female to male ratio.

The left plot in Figure 4.1 shows that overall, as the female to male ratio increases, so does the

probability of being an ESG fund for both young and old firms. To be precise, if the distribution of firms remained the same in the population, but all were old, it would be expected that 54 percent would include ESG funds, and if all were young, it would only be 51.85 percent for funds with a female to male ratio of 20 percent – the average in this sample. However, by looking at the right plot in Figure 4.1, one can clearly see that the young relative to old differences become more prominent as the ratio increases. To put it into perspective, for funds with a 20 percent female to male ratio, the probability of being an ESG fund is 0.022 percentage points lower for young than old funds. The negative impact increases to 0.067 and 0.093 percentage points when the male ratio is as high as 70 and 100 percent, respectively. Meaning, if the probability of ESG funds with a ratio of 20 percent were 30 percent for old funds, it would be 29.98 percent for young funds, but if the female to male ratio were 70 percent, it would decrease to 29.33 percent. This is consistent with the results of model 2, which also showed a negative effect of being a young fund on the probability of investing sustainably. Even though the effect is small, it is significant and noteworthy as it supports the hypothesis that the female to male ratio influences a fund's ESG objectives and raises the question of why young funds are less likely to be ESG compliant. Possible explanations will be further discussed in the Discussion.

Model 4 adds an interaction effect between the female to male ratio and the binary variable *Large*. Even though models 1 to 3 already showed that the size significantly impacts the probability of ESG, it is interesting to further examine this effect by dividing funds into two categories – large and small – and seeing how it interacts with the variable of interest. The regression results in Table 4.1.1 show significant coefficients ($p < 0.001$) for both main effects but non-significant results for the interaction effect. This indicates that the effect of size on the probability of belonging in the ESG category does not significantly depend on the female to male ratio. Since a non-significant interaction term does not necessarily mean that there is no difference between large and small funds, but rather that the difference – if existent – is too small for statistical inference and that the sample does not provide enough information to assess this difference, the marginal effects are plotted in Figure 4.2. Here, the exact values can be found in Table 8.1.9 and Table 8.1.10 in Appendix A.

To the left, the predictive margins actually show that the effect of size on the probability of ESG is higher at higher values of *Ratio*. Even though larger firms are more likely to be ESG funds, the steeper slope representing smaller firms also implies that smaller funds are more sensitive to changes in the female to male ratio than larger firms. If the distribution of funds stayed the same in the population, but all were small, one could expect 43.6 percent of funds to include ESG factors in their investment strategies for fully male-led and 56.1 percent for fully female-led firms. This difference would be

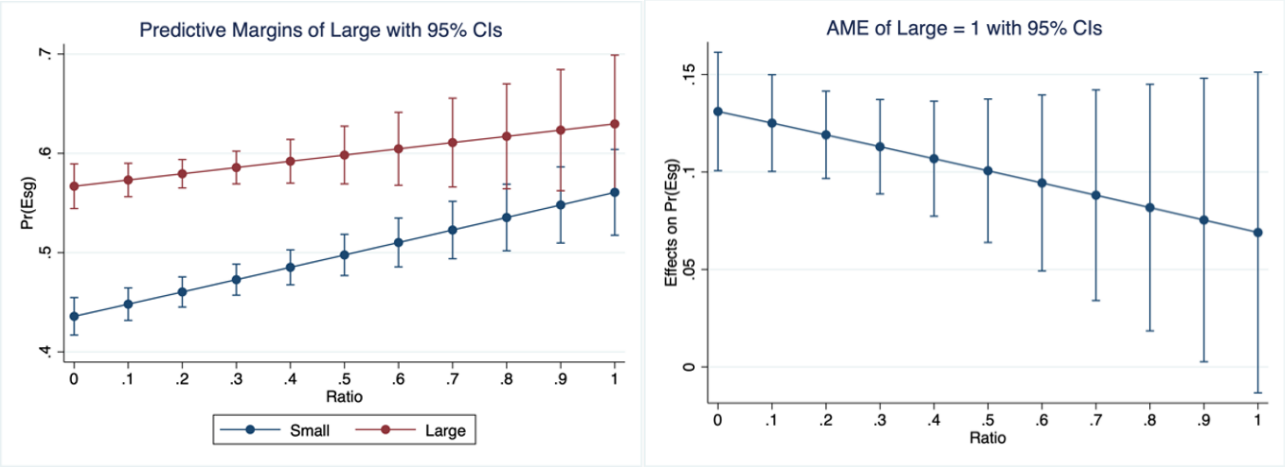

Figure 4.2: Predictive margins (left) and Average Marginal Effects (right) of being a large fund on the probability of being an ESG fund at set values of the female to male ratio.

much smaller for large firms, where the percentage of ESG funds only increases from 56.7 percent to 63 percent when moving from a female to male ratio of 0 to 1. However, as shown in the right plot of Figure 4.2, the difference between large and small funds monotonically decreases as the female to male ratio increases. While, for male-dominated funds (*Ratio* = 0.1), the probability of being an ESG fund is 0.131 percentage points higher when large relative to small, it is only 0.082 percentage points higher when female-dominated (*Ratio* = 0.8). Lastly, the estimated coefficients of the remaining variables in the regression stay approximately the same as in models 1 through 3.

Finally, model 5 includes an interaction effect between the female to male ratio and the dummy variable *West*, which equals one when a fund is in North America or Europe and 0 if it is in Asia. The purpose behind this model is to examine the different impact of the female to male ratio in eastern compared to western funds, where Europe and North America are used as proxies for West and Asia for East. The exclusion of other geographical locations is why the number of observations used in this model is less than in the previous ones. The results show that western funds are much more likely to be ESG funds than eastern funds. This is also evident by looking at the predictive margins plotted in Figure 4.3 below. In this case, the exact values are provided in Tables 8.1.11 and 8.1.12 in Appendix A.

Not only are western funds much more likely to include ESG factors in their investing strategies, but they are also more sensitive to changes in the female to male ratio. In fact, in a firm with the same number of women and men in decision-making positions, only 27.4 percent of eastern funds

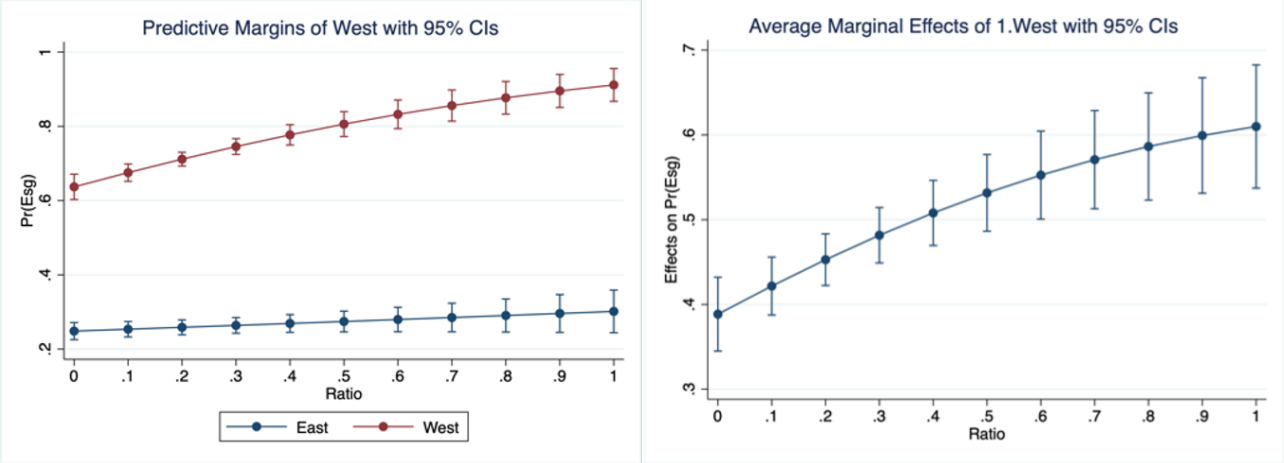

Figure 4.3: Predictive margins (left) and Average Marginal Effects (right) of being a western fund on the probability of being an ESG fund at set values of the female to male ratio.

are expected to consider ESG aspects compared to 80.6 percent of western funds. Furthermore, a mere ten percent rise in the female to male ratio to 60 percent increases this number by only 0.6 percent for eastern funds, while it increases by 2.6 percent for western funds. The stark difference between western relative to eastern firms as well as its increasing trend is displayed in the right plot of Figure 4.3. The probability of being an ESG fund is 0.453 percentage points higher for western funds when the female to male ratio is 20 percent but increases to 0.571 percentage points when the ratio is 70 percent. This finding consistent with the previously discussed literature and previous regression results, which found that being headquartered in Asia significantly decreased the likelihood of the fund belonging to the ESG category. Furthermore, since the association between *Ratio* and *West* is much stronger than between the previously discussed variables, it implies that the impact of the female to male ratio on ESG is more dependent on the fund's origin than its vintage year or size. The implications of this will be further discussed in the Discussion.

Table 4.1.1: Regression results of models 1 – 5 with the log-odds of ESG as the dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	1.348***	1.334***	1.229***	2.231***	-1.768***
	(0.316)	(0.177)	(0.196)	(0.125)	(0.142)
Ratio	0.770***	0.768***	1.318***	0.884***	0.297
	(0.164)	(0.164)	(0.421)	(0.185)	(0.181)
ln(Size)	0.291***	0.297***	0.297***		0.246***
	(0.028)	(0.028)	(0.028)		(0.027)
North America	-1.926***	-1.918***	-1.922***	-1.939***	
	(0.110)	(0.110)	(0.110)	(0.111)	
Asia	-3.367***	-3.393***	-3.397***	-3.455***	
	(0.110)	(0.109)	(0.109)	(0.108)	
Australasia	0.382	0.394	0.394	0.283	
	(0.386)	(0.384)	(0.385)	(0.380)	
Middle East	-3.053***	-3.052***	-3.052***	-3.108***	
	(0.304)	(0.302)	(0.301)	(0.311)	
Latin America & Caribbean	-0.060	-0.066	-0.065	-0.114	
	(0.372)	(0.374)	(0.375)	(0.377)	
Africa	1.981*	1.987*	1.999**	1.930*	
	(1.016)	(1.017)	(1.020)	(1.026)	
VC	-1.214***	-1.212***	-1.213***	-1.216***	-1.230***
	(0.076)	(0.075)	(0.075)	(0.075)	(0.075)
2001	0.000				
	(.)				
2002	0.909				
	(0.717)				
2003	0.975				
	(0.720)				
2004	1.351*				
	(0.709)				
2005	-0.186				
	(0.340)				
2006	0.091				
	(0.333)				
2007	0.149				
	(0.327)				
2008	0.059				
	(0.316)				
2009	0.107				
	(0.352)				

2010	-0.025				
	(0.311)				
2011	-0.192				
	(0.300)				
2012	-0.106				
	(0.310)				
2013	-0.110				
	(0.299)				
2014	-0.141				
	(0.294)				
2015	-0.300				
	(0.288)				
2016	-0.236				
	(0.283)				
2017	-0.137				
	(0.284)				
2018	-0.265				
	(0.290)				
2019	0.151				
	(0.303)				
2020	-0.143				
	(0.320)				
Young		-0.166**	-0.025	-0.182**	-0.135*
		(0.075)	(0.121)	(0.075)	(0.075)
Young × Ratio			-0.694		
			(0.457)		
Large				0.927***	
				(0.105)	
Large × Ratio				-0.447	
				(0.355)	
West × Ratio					1.680***
					(0.406)
West					1.923***
					(0.110)
Observations	6525	6525	6525	6525	6204

Note: Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.1.2 Hypothesis 2, 3 and 4

After investigating the association between the gender composition of the executive team of PE funds and its sustainability objectives, three follow-up hypotheses are proposed. These seek to investigate further what and how specific fund characteristics influence the gender structure of a fund. Hence, the dependent variable of model 6 is the female to male ratio. To answer hypothesis 2, which assesses the effect of young relative to old funds on ratio, the binary variable *Young* is added to the regression. To study the relationship - positive or negative - of the size of a fund on the female to male ratio, and test the third hypothesis, the logarithmically transformed fund size variable is also included. Next, the fourth hypothesis, which aims to investigate the possible effect of a firm's geographical location, is examined by adding the factor variable *Region* to the analysis. Lastly, I will control for different asset classes by adding the dichotomous variable *VC*.

Table 4.1.2: Regression results of model 6 with the ratio as the dependent variable

Variables	Model 6
Constant	.197***
	(0.011)
Young	0.011***
	(0.004)
ln(Size)	-0.000
	(0.002)
North America	0.009*
	(0.005)
Asia	-0.003
	(0.006)
Australasia	-0.023
	(0.015)
Middle East	-0.031*
	(0.018)
Latin America & Caribbean	0.031*
	(0.019)
Africa	-0.022
	(0.018)
VC	-0.006
	(0.005)
Observations	6525
R^2	0.0026

Note: Standard errors in parentheses
* $p < 0.10$, , ** $p < 0.05$, *** $p < 0.01$

The regression results in Table 6 show that funds that started investing after 2013 increase the female to male ratio by 0.011, ceteris paribus. This positive relationship speaks in favor of younger funds having a higher female to male ratio. This is an intuitive yet very insightful finding, which speaks in favor of the vintage year of a fund significantly influencing the ratio. However, we find no significant association between size and ratio nor most geographical regions. To note is that American, Latin American, and Caribbean funds appear to have more women in executive positions compared

to European funds but that the contrary is true for Middle Eastern funds. Nonetheless, the difference is not large enough for accurate statistical inference as the associated p-value is larger than the five percent significance level. Finally, because this regression model only explains 0.26 percent of the variation in the model and can thus be described as not fitting the data very well, t-tests to test for robustness are run next.

4.2 T-tests

As a robustness check and to support the above-discussed regression models, four t-tests are run, supporting hypotheses 1 through 4 in ascending order. The results show that the average female to male ratio significantly differs among ESG funds and non-ESG funds. Furthermore, the female to male ratio is significantly larger for younger funds. The non-significant results of the third t-test indicate that, on average, the female to male ratio does not vary between larger and smaller firms. Finally, the last t-test, which aimed to investigate whether the average female to male ratio was significantly different between Western and Eastern economies, where Western includes both Europe and North America, is also not significant. These results are consistent with the regression findings discussed in section 4.1.

Table 4.2.1: T-Test Hypothesis 1

Variable	Test	Mean ESG	Mean Non-ESG	Difference	T-Stat	P-Value
Ratio	Two-Sided T-Test	0.202	0.193	-0.016	-3.550	0.000

Table 4.2.2: T-Test Hypothesis 2

Variable	Test	Mean Young	Mean Old	Difference	T-Stat	P-Value
Ratio	One-Sided T-Test	0.204	0.196	-0.008	-1.905	0.028

Table 4.2.3: T-Test Hypothesis 3

Variable	Test	Mean Large	Mean Small	Difference	T-Stat	P-Value
Ratio	Two-Sided T-Test	0.205	0.198	-0.007	-1.492	0.136

Table 4.2.4: T-Test Hypothesis 4

Variable	Test	Mean West	Mean East	Difference	T-Stat	P-Value
Ratio	Two-Sided T-Test	0.205	0.199	-0.006	-1.291	0.197

5 Discussion

This paper aimed to examine the relationship between gender-diversity and sustainability in the Private Equity industry. The regression results in Table 4.1.1 consistently show that the female to male ratio of a fund is positively related to *ESG*. This implies that a higher number of women relative to men in decision-making positions of Private Equity funds increases the likelihood of the firm considering sustainability factors in their investment strategy and speaks in favor of rejecting the first null hypothesis of no effect. This is in line with the results of the first t-test in section 4.2.1, which showed that the average female to male ratio significantly differs among ESG and non-ESG funds. Furthermore, this outcome is consistent with the literature discussed in the theoretical framework, which found that the higher tendency of women relative to men to care for others makes them more susceptive to adopt environmentally friendly behaviors (Howell, 2013; Swim, 2020). To which extent being more socially responsibly inclined in one's day-to-day can be extended to investment decisions is not certain but serves as a good indication for the results. Therefore, to be able to extrapolate this hypothesis outside of this study, further research would be needed.

Additionally, the results show that the female to male ratio of a firm is not solely responsible for a company's ESG considerations. Firm-specific characteristics such as the vintage year, size, geographical location, and asset class also significantly influenced sustainability. For one, being young, being headquartered in Asia, and being a Venture Capital firm was negatively associated with ESG, while the size as well as being headquartered in Europe or North America had a positive association. This paper has emphasized multiple times that the emergence of ESG funds has been particularly prominent in the past years, so it is surprising that the results show that young firms – defined as firms who started investing in 2013 or later are less likely to be ESG funds than old firms - defined as firms who started investing before 2013. Nonetheless, a possible explanation could be that more established firms are under more pressure to act sustainably as a paper by Rahman & Alsayegh (2021) shows. Less surprising is the positive relationship between company size and ESG compliance, which has been found in the financial industry (Crespi & Migliavaca, 2020), among public listed Asian firms (Rahman & Alsayegh, 2021), medium-sized Italian enterprises (Perrini Minoja, 2007), and in the PE industry as well (Preqin, n.d.; Beske-Janssen et al.,2015). The possibility of geographical differences

was also highlighted in the literature review and is in accordance with Baldini et al. (2016) and McGrath & Lee (2020), which all found discrepancies due to different societal structures and government institutions. Lastly, the negative relationship between being a VC firm and ESG is related to the different types of investments VC's focus on, which – as touched upon in the introduction – are usually tech-savvy firms more concerned with fast growth than positive social impact.

The importance of these results is not to be overlooked, yet, the central finding of the first part of this research is how these effects vary with changes in the female to male ratio. For instance, even though the effect on the likelihood of a fund including ESG objectives, of both young and old funds are influenced by changes in the female to male ratio, the latter appear to be more sensitive to it. This is an interesting finding that needs further analysis before being generalized outside of this sample. However, a plausible explanation could be that the societal expectation of women being more sustainable than men is a generational issue. Meaning, that the perception of women as caregivers of the environment has lost momentum in recent years, making everyone, regardless of their gender, conscious of the importance of sustainable actions, thus lowering the impact an increase in the female to male ratio would have on the probability of ESG based investments. It is to be noted that this claim is based on personal opinion, and as mentioned earlier, would need further analysis. Furthermore, the results show that even though larger funds are more likely to consider ESG criteria, this effect does not significantly depend on the female to male ratio. To complete the analysis on the effect of female relative to male managers on ESG, a variable dividing *Region* into East - represented by Asia - and West - represented by North America and Europe - was added, and the interaction with the female to male ratio analyzed. A stark difference emerged, showing firstly that western funds are much more likely to act sustainably, and secondly that western funds are also much more sensitive to changes in the ratio. Compared to all other fund characteristics discussed, the association between geographical location and ratio was the strongest implying that the impact of the female to male ratio on ESG is more dependent on the fund's origin than its vintage year or size. This is an intuitive finding that has been touched upon briefly before and can partly be explained by cultural differences between these two regions. Asian countries are not only behind in regard to sustainability (McGrath & Lee, 2020) but also concerning gender equality (Crotti et al., 2021). Therefore, it is to be expected that even with women in decision-making positions, the priority in eastern funds would not lie in sustainable projects.

The insightful findings on how gender diversity in a management team impacts the fund's sustainability agenda raise the question of how fund-specific characteristics influence the number of women

relative to men in decision-making positions in a PE fund. The results are displayed in Table 4.1.2 and show that being a young fund influences the female to male ratio positively. This is in line with a moving trend in recent years to narrow down the gender balance gap in the PE industry (Faulkner et al., 2017). A recent report by McKinsey, which highlighted the current underrepresentation of women in the PE industry, stated that, indeed, GP's performance regarding gender parity had improved in recent years (McKinsey, 2020). Furthermore, the results of the second t-test in Table 4.2.2 show a significantly higher female to male ratio for younger funds. Hence, the second null hypothesis of no effect of the vintage year of a fund on the gender composition of the fund can also be rejected. Both the regression results in Table 4.1.2 and the third and fourth t-test results in Tables 4.2.3 and 4.2.4 respectively show that neither fund size nor geographical origin significantly influences the female to male ratio in this sample. Therefore, the third and fourth null hypotheses of no effect of fund size and geographical region on the female to male ratio cannot be rejected. This is surprising, seeing as larger PE firms, primarily due to increased resources and social responsibility, are considered to be leading the way in bridging the gender gap (Whitmarsh et al., 2016), while smaller funds have been shown to have a more pronounced gender imbalance (Huang et al., 2019), and North American funds have the highest reported proportion of female senior employees followed by European and Asian funds (Faulkner et al., 2017).

6 Conclusion

The aim of this paper is to investigate how gender diversity among managers in Private Equity funds, influences a fund's considerations of sustainability factors in its investment strategy. Furthermore, to delve deeper, the possible determinants of gender diversity are studied.

To perform the analysis, various fund characteristics, as well as information on the fund's ESG compliance and the contact information of the top managers at the firm, were collected for a large sample of PE funds. Specifically, for the analysis of the first hypothesis analyzing how gender diversity in management affects a company's ESG compliance, five logistic regressions with ESG as the outcome and the female to male ratio as the main variable of interest are run. Variables of fund characteristics such as the vintage year, the size, the geographical location, and the asset class are added as independent variables to encompass the effect of the ratio on sustainability and decrease the possibility of Omitted Variable Bias (OVB). For the analysis of how fund characteristics actually impact gender diversity, three different hypotheses examining the effect of the vintage year, the fund size, and its geographical location on gender respectively are tested. For this, one Multiple Linear

Regression (MLR) with the female to male ratio as the dependent and the previously listed fund characteristics as independent variables is run. Furthermore, a thorough analysis of the assumptions of both logistic and MLR regressions is performed to increase the internal validity of the paper. Finally, to test the robustness of the regression results, four different t-tests examining each hypothesis are run.

The results discussed above lead to the first hypothesis of no effect of the female to male ratio on the sustainability practices of a firm, as well as to the second hypothesis of no effect of the vintage year of a fund on the proportion of females relative to males in senior positions to be rejected, whilst there is not enough statistical evidence to be able to reject the third and fourth hypotheses of no effect of the size of a fund and its geographical region on the proportion of females relative to males in senior positions to be rejected.

However, this paper is subject to various limitations. For one, the data used for this research is self-reported. This can lead to selection biases as arguably better performing firms will be more likely to be included in the dataset (Ljungvist & Richardson, 2003). This self-selection bias could be one of the reasons the female to male ratio in this sample is higher compared to the average across the industry. Additionally, the use of ESG as a proxy for sustainability can be problematic. In this paper, a fund is considered to be ESG committed, as described in section 3.1.1, if they have an ESG policy or are affiliated to the PRI, GRESB, or SASB associations (Preqin,n.d.). Even though these accreditations serve as a good starting point, they do not say much about the specific sustainable behavior of the firm, such as what proportion of total AUM are dedicated to sustainable investments nor can they be considered a global benchmark. An additional limitation is the presence of OVB. Even though various variables are added to minimize OVB and link tests are run to test whether the models are correctly specified, the existence of confounding variables can never be wholly accounted for. Lastly, this paper focuses on senior positions such as vice president, CFO, CEO, and Managing Partner among others, but, due to dataset restrictions, does not distinguish between them even though it is evident that the responsibilities among senior employees also vary greatly. Thus, to build upon this research, replicating the study controlling for job positions to see which one has the greatest influence on sustainable behavior would be very insightful. Another suggestion would be to expand the dataset, in particular including more data points for emerging regions such as the Middle East, Latin America, and the Caribbean, and Africa since these regions were not statistically significant. Additionally, as this paper differentiates only between Private Equity and Venture Capital due to a low number of observations in other alternative asset classes, it would be noteworthy to contrast the findings if more asset classes would be controlled for such as Hedge Funds, Real Estate, and Private

Debt. Lastly, seeing as this study focuses on gender-parity in management teams in the PE industry, future research into other aspects of diversity such as how the effect differs when controlling for ethnic background by perhaps measuring minorities as a proportion of total employees would also be of interest.

7 References

McKinsey. (2020).*A new decade for private markets: McKinsey Global Private Markets Review 2020*. Retrieved May 15, 2021, from https://www.mckinsey.com/ /media/mckinsey/industries/private equity and principal investors/our insights/mckinseys private markets annual review/McKinsey-global-private-markets-review-2020-v4.ashx.

Barber, B. M., & Odean, T. (2001). Boys will be Boys: Gender, Overconfidence, and Common Stock Investment. *SSRN Electronic Journal*. Doi:10.2139/ssrn.139415

Barnett, V., & Lewis, T. (1984). Outliers in statistical data. *John Wiley & Sons*

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97*(2), 207-221.

Bengtsson, E. (2007). A History of Scandinavian Socially Responsible Investing. *Journal of Business Ethics, 82*(4), 969-983. doi:10.1007/s10551-007-9606-y

Beske-Janssen, P., Johnson, M. P., & Schaltegger, S. (2015). 20 years of performance measurement in sustainable supply chain management – what has been achieved? *Supply Chain Management: An International Journal, 20*(6), 664-680. doi:10.1108/scm-06-2015-0216

S. Boslaugh. (2012). *Statistics in a nutshell: A desktop quick reference*. California: O'Reilly & Associates, Inc.

Crifo, P., & Forget, V. D. (2013). Think global, invest responsibly: Why the private equity industry goes green. *Journal of business ethics, 116*(1), 21-48.

Crotti, R., Samans, R., Kali Pal, K., Ratcheva, V., & Zahidi, S. (2021). *The global gender gap report 2021*. World Economic Forum.

Cumming, D., & Johan, S. (2007). Socially responsible institutional investment in private equity. *Journal of Business Ethics, 75*(4), 395-416.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. London: SAGE Publications.

Faulkner, J., Padnos, C., O'Connell, K., Naydenova, E., Roberts, S., Tan, C., & Kelner, M. (2017). *Special Report: Women in Alternative Assets*. Retrieved from http://docs.preqin.com/reports/Preqin-Special-Report-Women-in- Alternative-Assets-October-2017.pdf.

Friede, G., Busch, T., & Bassen, A. (2015). *ESG and financial performance: aggregated evidence from more than 2000 empirical studies*. Journal of Sustainable Finance & Investment, 5(4), 210-233.

Global Sustainable Investment Alliance.(2018). *Global Sustainable Investment Review*. Retrieved from http://www.gsi-alliance.org/wp-content/uploads/2019/06/GSIR_Review2018F.pdf

He, H., & Harris, L. (2020). The impact of Covid-19 pandemic on corporate social responsibility and marketing philosophy. *Journal of Business Research,116*, 176-182.

Hinz, R. P., McCarthy, D. D., & Turner, J. A. (1996). Are women conservative investors? Gender differences in participant-directed pension investments.*Wharton Pension Research Council Working Papers,578*.

Hosmer Jr, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). Applied logistic regression. *John Wiley & Sons*

Indahl, R., & Jacobsen, H. G. (2019). Private Equity 4.0: Using ESG to Create More Value with Less Risk. *Journal of Applied Corporate Finance, 31*(2), 34-41.

LeBlanc, M., & Fitzgerald, S. (2000). Logistic regression for school psychologists. *School Psychology Quarterly, 15*(3), 344.

Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *The British Accounting Review, 47*(4), 409-424.

McGrath, C., & Lee, M. (2020). *Preqin Impact Report: The Rise of ESG in Alternative Assets*. Retrieved from https://www.preqin.com/insights/research/reports/preqin-impact-report-the-rise-of-esg-in-alternative-assets

Perrini, F., & Minoja, M. (2008).Strategizing corporate social responsibility: evidence from an Italian medium-sized, family-owned company. *Business Ethics: A European Review, 17*(1), 47-63.

Porter, M. E., & Kramer, M. R. (2006). The link between competitive advantage and corporate social responsibility. *Harvard business review, 8*(12), 78-92.

Przychodzen, J., Gómez-Bezares, F., Przychodzen, W., & Larreina, M. (2016). ESG Issues among fund managers—factors and motives. *Sustainability, 8*(10), 1078.

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of banking & finance, 32*(9), 1723-1742.

The Forum for Sustainable and Responsible Investment.(2020). *Report on US Sustainable and Impact Investing Trends*.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological science, 22*(11), 1359-1366.

Sparkes, R., & Cowton, C. J. (2004). The maturing of socially responsible investment: A review of the developing link with corporate social responsibility. *Journal of Business Ethics, 52*(1), 45-57.

Tabachnick, B. G., & Fidell, L. S. (2014). Using multivariate statistics: Pearson new international edition. *Pearson*.

Velte, P. (2016). Women on management board and ESG performance.*Journal of Global Responsibility, 7*(1), 98-109. Doi:10.1108/jgr-01-2016-0001

Whitmarsh, T. J., Phillips, C. J., & Eltobgy, M. (2016).*Women in Private Equity: The Limited Partner Perspective*. Retrieved June 15, 2021, from https://www.sib.wa.gov/information/pr/wef_paper.pdf.

8 Appendix

8.1 Appendix A

Table 8.1.1: Frequency statistics of ESG

ESG	Frequency	Percent	Cumulative
0	3,089	47.34	47.34
1	3,436	52,66	100,00
Total	6,525	100,00	

Table 8.1.2: Distribution of ESG and non-ESG funds in the sample

Region	Frequency	Percent	Cumulative
Europe	1,703	26.10	26.10
North America	1,655	25.36	51.46
Asia	2,846	43.62	95.08
Australasia	92	1.41	96.49
Middle East	63	0.97	97.46
Latin America & Caribbean	98	1.50	98.96
Africa	68	1.04	100.00
Total	6,525	100.00	

Table 8.1.3: Fund Characteristics of ESG and non-ESG funds

Variable		ESG funds (%)	Non-ESG funds(%)
Region			
	Europe	45.69	4.31
	North America	32.16	17.81
	Asia	14.52	75.98
	Australasia	2.44	0.26
	Middle East	0.67	1.29
	Latin America & Caribbean	2.56	0.32
	Africa	1.95	0.03
Total			

	East	15.72	77.46
	West	84.28	22.54
Asset Class			
	VC	19.06	63.19
	PE	80.94	36.81
Vintage Year			
	1994	0.03	-
	1995	-	-
	1996	0.03	-
	1997	0.20	-
	1998	0.15	0.10
	1999	0.23	0.13
	2000	0.61	0.23
	2001	0.58	0.23
	2002	0.55	0.06
	2003	0.81	0.10
	2004	1.05	0.10
	2005	3.35	1.42
	2006	4.92	1.72
	2007	6.29	2.01
	2008	5.62	2.23
	2009	3.67	1.81
	2010	4.54	3.76
	2011	5.70	5.79
	2012	4.95	4.18
	2013	6.26	5.18
	2014	7.22	6.93
	2015	6.90	13.47
	2016	9.23	15.90
	2017	9.02	15.05
	2018	7.33	10.07
	2019	6.84	5.63
	2020	3.43	2.91
	2021	0.49	1.00
Young vs. Old			
	Young	56.72	76.14
	Old	43.28	23.86
Large vs. Small			
	Large	71.68	32.73
	Small	28.32	67.27

Table 8.1.4: Descriptive Statistics after dropping missing values

	Sum	Mean	SD	Min	Max	N
ESG		0.527	0.499	0	1	6,525
Women		11.226	22.516	0	193	6,525
Men		42.758	82.053	0	818	6,525
Ratio		0.202	0.183	0	1	6,525
Vintage Year		2,013.611	4.484	1,994	2,021	6,525
Vintage Year_w		2,013.622	4.416	2,001	2,020	6,525
Young		0.659	0.474	0	1	6,525
Fund Size		186.717	220.653	0.150	999	6,525
ln(Size)		4.386	1.505	-1.897	6.907	6,525
Large		0.532	0.499	0	1	6,525
Region		2.345	1.106	1	7	6,525
West		0.541	0.498	0	1	6,204
Managers		53.984	103.577	1	1,011	6,525
VC		0.400	0.490	0	1	6,525

Note: Summary statistics for the binary variables ESG, VC, Young, Large, and West should be interpreted as proportions. Women, Men, Ratio (%), Vintage Year (years), Size (USD million), Region (1-7), Managers, Vintage Year_w (years), and ln(Size) are continuous variables. Vintage Year_w refers to the fact that the variable was winsorized at 99 and 1 percent and Ln(size) is the natural logarithmic transformation of the variable Size.

Table 8.1.5: Correlation Matrix without last added dummy variables

	ESG	Ratio	Vintage Year	Vintage Year_w	Fund Size	ln(Size)	Region	VC
ESG	1							
Ratio	0.0449	1						
Vintage Year	-0.213	0.00574	1					
Vintage Year_w	-0.214	0.00690	0.999	1				
Fund size	0.278	0.00568	-0.141	-0.142	1			
ln(Size)	0.407	0.00784	-0.172	-0.173	0.807	1		
Region	-0.369	-0.00973	0.170	0.170	-0.226	-0.293	1	
VC	-0.450	-0.0166	0.195	0.197	-0.291	-0.371	0.258	1

Table 8.1.6: Exponentiated regression coefficients of models 1 - 5 with the odds ratio of ESG as the dependent variable

	Model 1	Model 2	Model3	Model 4	Model 5
ESG					
Ratio	2.160***	2.155***	3.737***	2.420***	.297
	(0.354)	(0.353)	(1.573)	(0.448)	(0.243)
Fund Size_ln	1.338***	1.346***	1.346***		1.279***
	(0.037)	(0.037)	(0.037)		(0.035)
North America	0.146***	0.147***	0.146***	0.144***	
	(0.016)	(0.016)	(0.016)	(0.016)	
Asia	0.035***	0.034***	0.033***	0.032***	
	(0.004)	(0.004)	(0.004)	(0.003)	
Australasia	1.465	1.483	1.483	1.327	
	(0.566)	(0.570)	(0.571)	(0.505)	
Middle East	0.047***	0.047***	0.047***	0.045***	
	(0.014)	(0.014)	(0.014)	(0.014)	
Latin America	Caribbean	0.942	0.936	0.937	0.892
	(0.350)	(0.350)	(0.351)	(0.336)	
Africa	7.246*	7.292*	7.379**	6.889*	
	(7.364)	(7.412)	(7.523)	(7.065)	
VC	0.297***	0.298***	0.297***	0.296***	0.292***
	(0.023)	(0.022)	(0.022)	(0.022)	(0.022)
2002	2.482				
	(1.778)				
2003	2.652				
	(1.909)				
2004	3.861*				
	(2.736)				
2005	0.831				
	(0.282)				
2006	1.096				
	(0.365)				
2007	1.161				
	(0.365)				
2008	1.061				
	(0.335)				
2009	1.112				
	(0.392)				
2010	0.975				

	(0.304)				
2011	0.825				
	(0.248)				
2012	0.899				
	(.279)				
2013	0.895				
	(0.268)				
2014	0.869				
	(0.255)				
2015	0.740				
	(0.213)				
2016	0.790				
	(0.223)				
2017	0.872				
	(0.248)				
2018	0.767				
	(0.222)				
2019	1.163				
	(-0.352)				
2020	0.867				
	(0.277)				
Young		0.847**	0.975	0.833**	0.873*
		(0.064)	(0.118)	(0.062)	(0.065)
Young × Ratio			0.500		
			(0.228)		
Large				2.526***	
				(0.265)	
Large × Ratio				0.639	
				(0.227)	
East × Ratio					0.000
					(.)
West × Ratio					5.365***
					(2.176)
West					6.841***
					(0.753)
Constant	3.849***	3.795***	3.418***	9.306***	0.171***
	(0.354)	(0.671)	(0.669)	(1.164)	(0.024)
Observations	6525	6525	6525	6525	6204

Note: Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.1.7: Predictive margins of young relative to old funds

Ratio		PR(ESG)
0	Old	0.505***
		(0.014)
	Young	0.502***
		(0.007)
0.1	Old	0.523***
		(0.010)
	Young	0.510***
		(0.006)
0.2	Old	0.540***
		(0.008)
	Young	0.518***
		(0.006)
0.3	Old	0.557***
		(0.010)
	Young	0.527***
		(0.006)
0.4	Old	0.575***
		(0.013)
	Young	0.535***
		(0.007)
0.5	Old	0.582***
		(0.018)
	Young	0.543***
		(0.009)
0.6	Old	0.609***
		(0.023)
	Young	0.551***
		(0.011)
0.7	Old	0.626***
		(0.028)
	Young	0.559***
		(0.013)
0.8	Old	0.643***
		(0.033)
	Young	0.568***
		(0.015)
0.9	Old	0.660***
		(0.039)

		Young	0.576***
			(0.017)
1		Old	0.677***
			(0.044)
		Young	0.584***
			(0.019)

Note: Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.1.8: Average Marginal Effect of young relative to old funds on the probability of ESG

Ratio	PR(ESG)
0	-0.003
	(0.016)
0.1	-0.012
	(0.012)
0.2	-0.022**
	(0.010)
0.3	-0.031***
	(0.011)
0.4	-0.040***
	(0.015)
0.5	-0.049**
	(0.020)
0.6	-0.058**
	(0.026)
0.7	-0.067**
	(0.031)
0.8	-0.076**
	(0.037)
0.9	-0.085**
	(0.042)
1	-0.093**
	(0.048)

Note: Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.1.9: Predictive margins of large relative to small funds

Ratio		PR(ESG)
0	Small	0.436***
		(0.010)
	Large	0.567***
		(0.011)
0.1	Small	0.448***
		(0.008)
	Large	0.573***
		(0.009)
0.2	Small	0.460***
		(0.008)
	Large	0.579***
		(0.007)
0.3	Small	0.473***
		(0.008)
	Large	0.586***
		(0.008)
0.4	Small	0.485***
		(0.009)
	Large	0.592***
		(0.011)
0.5	Small	0.498***
		(0.011)
	Large	0.598***
		(0.015)
0.6	Small	0.510***
		(0.013)
	Large	0.605***
		(0.019)
0.7	Small	0.523***
		(0.013)
	Large	0.611***
		(0.023)
0.8	Small	0.535***
		(0.017)
	Large	0.617***
		(0.027)
0.9	Small	0.548***
		(0.020)

		Large	0.623 ***
			(0.031)
1		Small	0.561***
			(0.022)
		Large	0.630***
			(0.035)

Note: Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.1.10: Average Marginal Effect of large relative to small funds on the probability of ESG

Ratio	PR(ESG)
0	0.131***
	(0.016)
0.1	0.125***
	(0.013)
0.2	0.119***
	(0.011)
0.3	0.113***
	(0.012)
0.4	0.107***
	(0.015)
0.5	0.101***
	(0.019)
0.6	0.094***
	(0.023)
0.7	0.088***
	(0.028)
0.8	0.082**
	(0.032)
0.9	0.075**
	(0.037)
1	0.069
	(0.042)

Note: Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.1.11: Predictive margins of western relative to eastern funds

Ratio		PR(ESG)
0	East	0.249***
		(0.012)
	West	0.637***
		(0.017)
0.1	East	0.254***
		(0.011)
	West	0.675***
		(0.012)
0.2	East	0.259***
		(0.010)
	West	0.712***
		(0.009)
0.3	East	0.264***
		(0.011)
	West	0.746***
		(0.011)
0.4	East	0.269***
		(0.011)
	West	0.777***
		(0.014)
0.5	East	0.274***
		(0.014)
	West	0.806***
		(0.017)
0.6	East	0.280***
		(0.017)
	West	0.832***
		(0.020)
0.7	East	0.285***
		(0.020)
	West	0.856***
		(0.021)
0.8	East	0.291***
		(0.023
	West	0.877***
		(0.022)
0.9	East	0.296***
		(0.026)

		West	0.895 ***
			(0.023)
1		East	0.302***
			(0.023)
		West	0.911***
			(0.029)

Note: Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8.1.12: Average Marginal Effect of western relative to eastern funds on the probability of ESG

Ratio	PR(ESG)
0	0.388***
	(0.022)
0.1	0.422***
	(0.017)
0.2	0.453***
	(0.016)
0.3	0.482***
	(0.017)
0.4	0.508***
	(0.020)
0.5	0.532***
	(0.023)
0.6	0.553***
	(0.026)
0.7	0.571***
	(0.030)
0.8	0.586***
	(0.032)
0.9	0.599***
	(0.035)
1	0.610***
	(0.037)

Note: Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

8.2 Appendix B

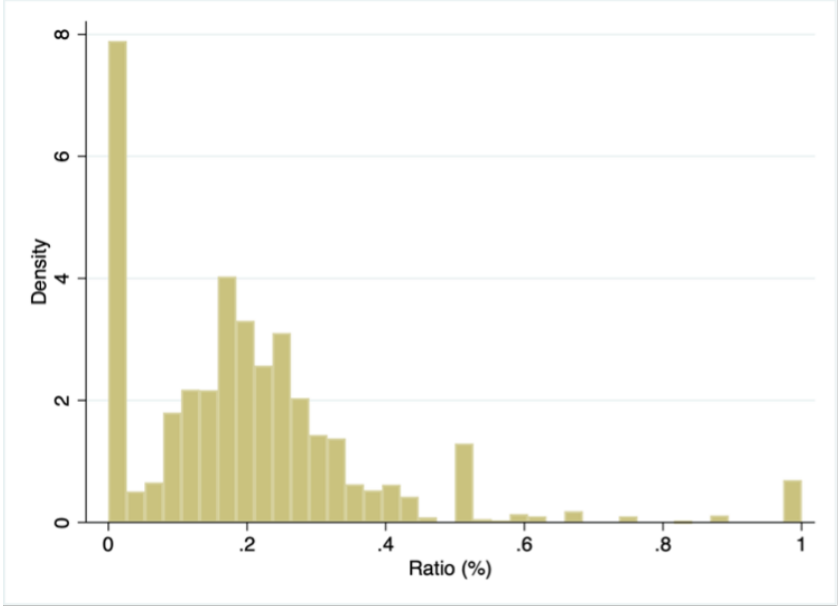

Figure 8.1: Histogram of the female to male ratio measured in percentage.

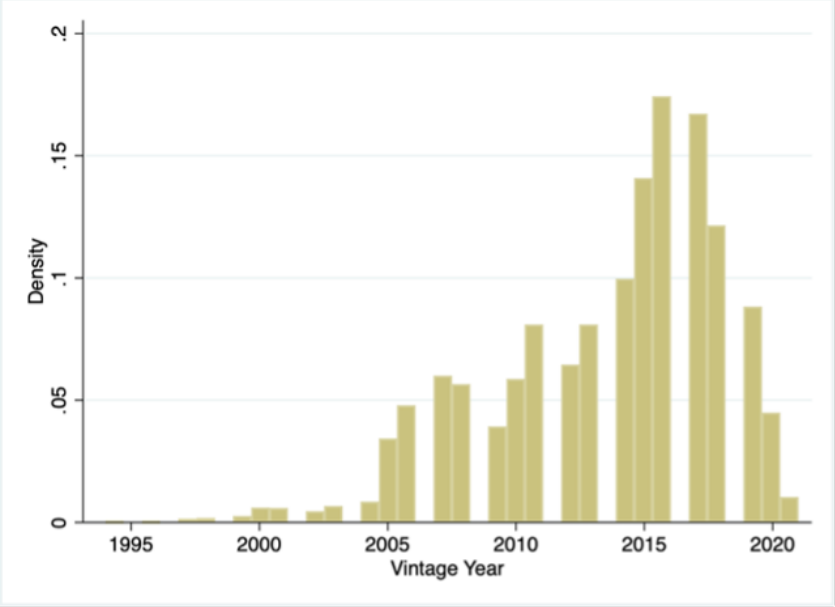

Figure 8.2: Histogram of the variable Vintage Year ranging from 1994 to 2021.

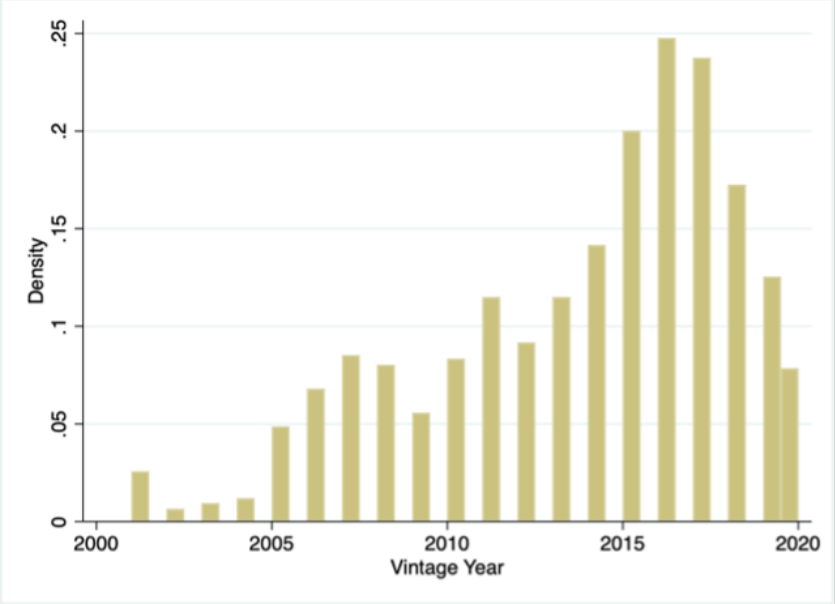

Figure 8.3: Histogram of the variable vintage year after winsorizing at the 1st and 99th percentile ranging from 2001 to 2020.

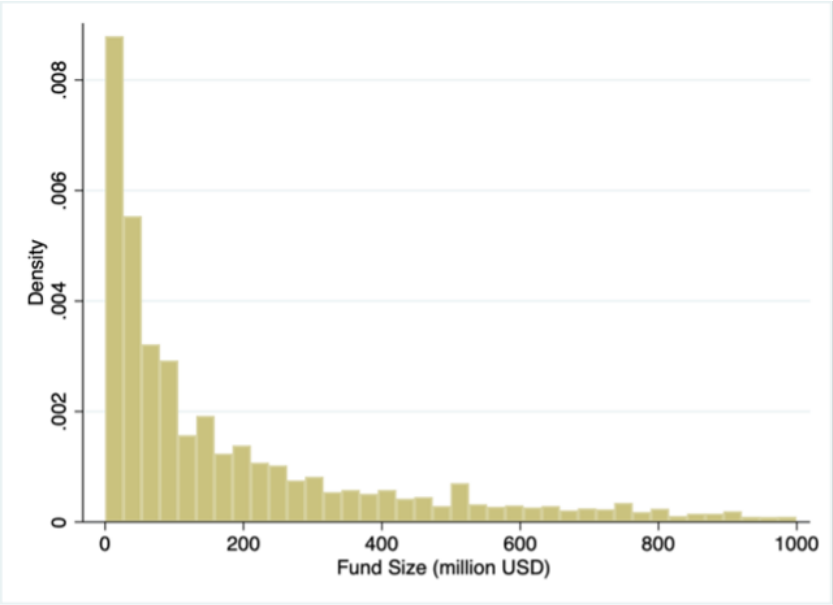

Figure 8.4: Histograms of the variable Fund Size measured in a million USD.

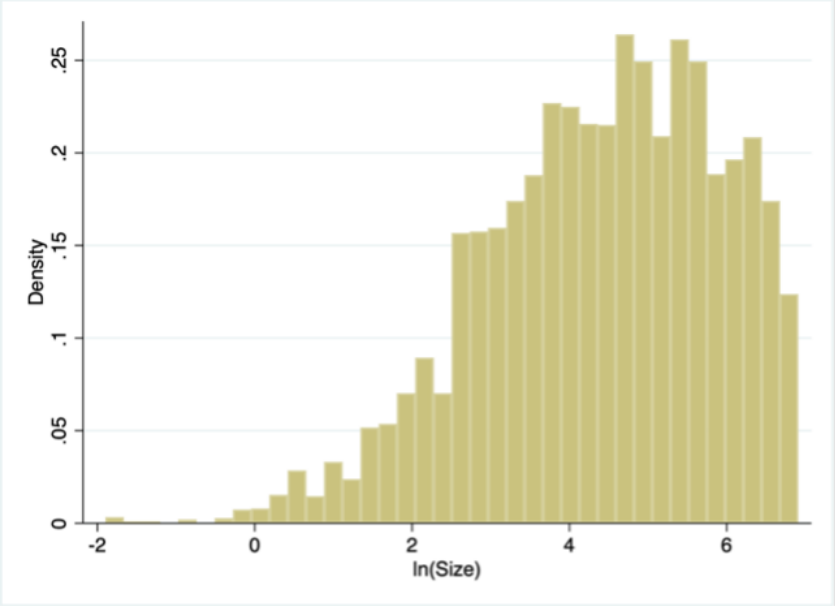

Figure 8.5: Histogram of the logarithmic transformation of the variable Fund Size.

8.3 Appendix C

Table 8.3.1: Results of specification link tests run for models 1 - 5

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-0.033	-0.023	-0.038	-0.019	-0.026
	(0.046)	(0.046)	(0.046)	(0.046)	(0.053)
$\widehat{Y}$	0.998***	0.998***	0.998***	0.999***	1.003***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
$\widehat{Y}^2$	0.014	0.010	0.016	0.008	0.011
	(0.013)	(0.013)	(0.013)	(0.013)	(0.018)

Note: Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$