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Private Equity Firms and ESG - Friends or Foes?

How Private Equity ownership affects sustainability performance in portfolio companies.

by

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Abstract

The aim of this paper is to study the effects of private equity ownership on sustainability performance in private equity backed companies. The paper initially makes an introductory explanation of the private equity business model and covers indications that the industry is facing rapid change within the ESG space. Furthermore, it analyzes the current state of sustainability from a corporate perspective. Using three ratings, Sustainalytics, RobecoSAM, and ISS Quality Score, a single rating, a Portfolio ESG Score, is constructed as an average of the chosen ratings. Two groups are studied, private equity-backed companies having gone public via an initial public offering (IPO), versus other companies that have gone public without a private equity backer. A hypothesis is built on the basis of the literature review, with the consensus that private equity backed firms likely perform higher in ESG performance than the comparator group. The hypothesis is tested through a two sample t-test showing statistically significant results indicating a circa 10% higher ESG performance for private equity backed companies based on the Portfolio ESG Score. The results from the study can guide policymakers, investors and other stakeholders in the private equity industry to drive better informed decision making, such as weighing investment choices between public equity or private equity while incorporating ESG criteria.

Keywords: private equity, ESG, socially responsible investing, environmental, social, governance, finance.

Word Count: 22916

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1 Introduction

1.1 Background

Since the late 20th century, one of the most predominant megatrends worldwide has been that of sustainability. This focus on sustainability can today be seen in not only the private life but also the public and corporate life. Together with the increase in recognition of the need for sustainability there is also the recognition of a high, and continuous rising, impact of firms in the life of people. The combination of a greater focus on sustainability along with increasing corporate power has raised the question of the degree of accountability and responsibility to which firms can be held accountable in regards to sustainability. The question of the responsibilities of corporations is nothing new, however the answer to this question is not agreed upon.

The extent to which corporations should be held accountable for their actions is something that is discussed with wildly opposing views. In 1970, a now famous article titled “The Social Responsibility Of Business Is To Increase Its Profits” was published in the New York Times by Milton Friedman. In this article Friedman argues what now is known as the Shareholder’s view, which is that it is the government's role to handle social issues, and that firms contribute to society by maximising their total value and any other focus of firms is wasting the shareholders resources. Friedman continues with saying that firms should only care about social and environmental questions to the extent that is legally required of them because the primary and single responsibility a firm has is towards its shareholders, which means increasing its long term value and profits (Friedman, 1970; Jensen, 2001; Gyves & O`Higgins, 2008).

An opposing view to the Shareholder’s view was published 14 years later (1984) in a book named “Strategic management: A stakeholder approach” by R. Edward Freeman. In the book Freeman argues what is today known as the Stakeholders view, which is that firms are social entities which are linked independently with the people it affects, its stakeholders (Freeman,

2006 /1984). Later in his career, Freeman also argued that firms have the moral obligation to acknowledge and address the impact of their activities (Freeman, 2006).

The stakeholder view is today widely spread and can even be considered as the mainstream view. There is a positive trend among firms to act in a more sustainable way and to measure their work in that area. The work of Freeman and the proponents for the stakeholder view have helped impact this trend of more widespread adoption and acceptance of what is known as Corporate Social Responsibility (CSR) (Alfonso-Ercan, 2020; Crifo and Forget, 2012; Pagano, Sinclair and Yang, 2018).

Another trend, which is not as big as that of sustainability but still noticeable within its industry, is that of increasing scrutiny and criticism against private equity (PE) firms by a broad variety of commentators, mainly politicians and occasionally regulators. This criticism might vary based on geographics, what is true in western PE might obviously not be true for the rest of the world. However, in the US, which is seen as the home of PE, there are clear signals that PE firms are to expect increased regulatory scrutiny (Mungovan, et al. 2021). The view of rising criticism is further echoed by Drew Maloney, President and CEO of US private equity lobby group American Investment Council: “I generally agree with the premise that there has been an increase in anti-private equity rhetoric, and that the industry continues to get more attention.” (Private Equity International, 2020a).

The root cause for the criticism of PE firms being greedy and exploitative is unclear, but what is known is the big control over and contribution to the economy that PE firms have. In 2018 the US private equity sector’s value added $1.1 trillion to the US economy, which is equal to approximately 5% of US GDP (EY, 2019). It is not unreasonable to believe that this degree of power to some extent has contributed to the attention the PE industry receives.

1.2 Problematization and Relevance

The increased rhetoric in regards to PE firms signals a real concern from society as society is a major stakeholder in the private equity business model. Society's major stake in the private equity business model is not only through the gains or losses realized by pension funds investing in PE firms, but also through environmental, social and governance aspects that

affect the lives of many who might not have the chance to share the large profits realized by private equity professionals. This thesis aims to partially capture that concern by diving into the performance of private equity backed companies from a sustainability performance perspective by measuring sustainability ratings of previously private equity backed companies that subsequently went public, versus the broader public markets without a private equity firm exiting at the public offering. The results from this could help bring clarity and a better foundation for arguing about what the future of the private equity industry should look like, and whether or not it serves society, as well as itself, in the way that private equity firms often want to claim.

Our analysis indicates a high rate of change in how private equity firms work with ESG in the last few years, and that this change has not been given enough attention in academia. In comparison to the public equity market, private equity is given low attention, especially at the intersection of sustainability. A recent, influential 200-page report from the interdisciplinary research center EIKV, European Institute for Knowledge & Value Management, by Jens Hoellermann (2020), on the state of private equity and ESG summarizes the state of research in the field with the following,

> *... research in relation to ESG matters and what asset managers have accomplished so far focuses on public financial markets and mutual stock funds. The potential impact concerning PE and other alternative asset classes has received less attention, and not much has been published that links the topic directly with what the industry has achieved until now in relation to ESG.* (p.3, Hoellerman, 2020).

There is a clear gap in the current research for measuring ESG performance within the private equity asset class. This thesis aims to bridge that gap in order to provide stakeholders in the private equity business model a better understanding of this. The best example would be a public pension fund who strives to invest without disregarding the ESG aspect of its investments. This study can assist their decision making process in creating guidelines for allocation across different asset classes.

1.3 Outline of the Thesis

This study consists of 7 chapters. The next chapter, Chapter 2, Literature Review, covers a literature review exploring the business model and industry trends in private equity, a deep dive into sustainability with a focus on measuring ESG performance in corporations, as well as a walkthrough of the principal agent problem with a perspective based on the private equity industry. Chapter 3, Hypothesis, presents our hypothesis, which states that companies that have gone public with a private equity backer making an exit between 2014-2020 have had a significant difference in ESG performance compared to companies without a private equity backer going public during the same time period. Chapter 4, Methodology, presents our methodology for testing our hypothesis through designing a proprietary ESG measurement, called a Portfolio ESG score, derived from three real world ratings, and exploring the appropriate choice of statistical test through testing assumptions, which was deemed to be a two sample t-test. The chapter also analyzes the three real world ratings the portfolio ESG score is based upon in order to understand the underlying methodology for each rating. Chapter 5, Empirical Results, shows the results from applying the two sample t-tests which are significant to reject the null hypothesis. Chapter 6, Analysis and Discussion, covers a discussion of the results, indicating a difference in ESG performance between the two groups, while also discussing several factors that could indicate problems with the study. Chapter 7, Conclusion, concludes our research findings and the implications of our findings as well as proposing further research that would be valuable for the field.

2 Literature Review

The purpose and aim of the literature review is to present an extensive understanding of the previously performed work on the relevant theoretical aspects. For that reason, a lengthy inquiry was conducted into the relevant aspects of private equity, sustainability and the principal agent problem, which are presented in three subsections below. The literature was retrieved from a variety of sources, mainly focused on research articles, media articles, opinions from industry experts, and books. Relevance was achieved by actively focusing on recently published sources, in order to correctly portray the current state and latest developments of ESG in the private equity industry. In general, a lack of recent research articles at the intersection of ESG performance and private equity forced the use of empirical evidence such as industry expert opinions and media articles. The research articles were mainly selected based on the following criteria: relevance, dominance of the research, and citation frequency.

2.1 Private Equity

Private equity refers to the asset class that is equity in companies not traded in the public stock exchange. This naturally includes several sub-groups of asset classes due the broad definition, which covers venture capital, growth capital but also mezzanine, distressed, buyout and late stage venture capital (Cumming, 2012). The latter four areas are often what is referred to when someone talks about private equity, rather than the overarching definition. However, private equity firms, the companies in the business of investing in these four areas, do sometimes also invest in debt, for example through the issuance of loans to companies, either in or outside of their equity portfolio. The four areas previously discussed is what we will henceforth refer to as private equity, which is different compared to venture capital (VC), and growth capital. Venture capital refers to several subgroups of private equity such as pre-seed, seed, Series A, Series B and so forth, but the main idea is that the capital is invested

into companies in the earlier stage of their lifecycle (Kaplan & Strömberg, 2009). For the sake of reference, well-known venture capital investors are firms such as Sequoia, Andreessen & Horowitz and Khosla Ventures. Growth capital, sometimes also called growth equity by industry players, is the next stage, leaving venture capital but not yet mature enough to be the investment target for private equity capital. The growth capital stage is usually focused on businesses with proven traction and generating revenue, but needing further capital to fund their expansion, such as sizing up their sales and marketing operations. Examples of growth capital firms include Summit Partners, TA Associates, and the growth arm of TPG called TPG Growth. Private equity targets the late stage of the company lifecycle, generally when companies are mature, and have stable recurring revenues and cash flows. Examples of private equity firms include Carlyle, Blackstone, and KKR.

In order to fully grasp the mechanics in the world of private equity, it is valuable to understand private equity firms and their business model. Private equity firms are specialized investment firms, often partnerships or limited liability companies that focus on raising capital, purchasing firms, improving firms, selling firms, and finally returning capital (Kaplan & Strömberg, 2009).

Private equity firms raise capital in funds that are separate vehicles structured as a limited partnership, where the private equity firm, also called general partner, manages the funds and investments, while limited partners provide the lion's share of capital in the fund. Limited partners are usually institutional investors such as pension funds, university and charity endowments, insurance companies and high net worth individuals (Nielsen, 2012).

The fund generally has a fixed lifetime around 10 years. At the end of the funds life is when the investors, limited partners, gain back their invested capital plus any potential returns (Knyphausen-Aufsess and Koehnemann, 2012). Often an option to extend the lifetime of around three years is added to give the general partner flexibility to exit all investments in order to return capital to investors. The limited partner has little to no influence on the investment, leaving the general partner free to invest capital within the fund's basic covenants, such as maximum amount per investment and eligible security types (Axelson, Strömberg and Weisbach, 2009).

A typical private equity transaction, according to Kaplan & Strömberg (2009) is a buyout of a public company with a premium of 15 to 50 percent on the stock price at time of bid. This

buyout is subsequently financed by a mixture of the funds invested, the limited partners money, as well as loans from a bank. The loans are often a mix of lower interest loans using the target company assets as collateral, as well as unsecured high yield loans. The share of debt in a transaction is usually in the range from 60% going as far as up to 90% in certain transactions, with the remaining portion of the bid being the funds' money. A minor share of the equity could also be sourced from a new or existing management team, due to private equity firms often focusing on alignment of incentives between manager and owner to try and solve the principal agent problem, which the study will briefly look at through the lens of private equity.

Private equity firms, after having bought a company, strive to increase the value of the company through a variety of methods. According to Boston Consulting Group (2016), the most common strategies are operational improvement, deleveraging and multiple expansion. Operational improvement refers to a variety of strategies that focuses on creating value through top line growth or increased margins. These could be developing new products, expanding into new geographics, price optimization, M&A activity or improving the sales force, leading to higher top line growth. Margin increases can come from reduction of operating costs or general & administrative costs, through for example an IT overhaul project. Deleveraging refers to reduction of the initially high debt to equity ratio that a recently purchased portfolio firm likely has, requiring the portfolio firm to have high and stable cash flows in order to be able to repay debt. Multiple expansion, according to Corporate Finance Institute (n.d.) refers to selling a portfolio company at a higher multiple than what you purchased it for. For example, if a portfolio company was bought at an enterprise value of 10 times its earnings before interest, taxes, depreciation and amortization, called EBITDA, and subsequently sold at 12 times its EBITDA, then there has been multiple expansion. In order for investors to value a certain level of EBITDA at a higher multiple, they need a good reason why. According to Boston Consulting Group (2016), multiple expansion can happen through for example reducing the risk profile of a company, clarifying its strategy, conveying to the buyer a credible growth story, but also external factors such as conditions of the market and the macroeconomic environment at time of sale. Boston Consulting Group's (2016) consensus from 2012 was that 48% of value creation during the improvement phase comes from operational improvement, 40% from multiple expansion, and 12% from deleveraging. This provides an indication of which areas private equity firms focus the most on.

At the end of the improvement phase, the private equity firms must sell the company in order to realize returns. Baker, Filbeck & Kiymaz (2015) describe the three main options available to private equity firms looking to make an exit from their investment. The first option is a trade sale, where the private equity firm sells the portfolio company to a strategic buyer, which could be another company active in the same industry as the portfolio company. The second option is an initial public offering on the stock exchange, taking the portfolio company public through offering shares to the public markets. Going public also means higher expectations of disclosure and being subject to for example ESG assessments, which supports the formulation of this study through higher ESG data availability. Generally, the IPO route is most attractive when the public stock markets are bullish, creating an opportunity to realize a higher EBITDA multiple exit than a private buyer might consider. This can likely lead to significant variances in the amount of private equity backed companies available to study for each year. The third option is selling the portfolio company to another private equity firm, often called a secondary buyout or a sponsor to sponsor buyout. The rationale behind selling to another private equity firm is that private equity firms have different skills as active owners. Some are better equipped to support firms in a growth phase, and others in a more mature phase. The difference in what private equity firms are able to support and do with the portfolio company warrants a difference in how much each individual firm would value a portfolio company at. A fourth, but rather unlikely option, is a write-off, simply writing off the investment in the portfolio company after, for example, a bankruptcy.

After exiting the investment, the private equity firms return capital to the investors at the end of the fund's lifetime. As previously mentioned, this phase usually happens after 10 years from the inception of the fund, depending on the use of options to extend fund lifetime by the general partner, which can vary from fund to fund.

Kaplan and Strömberg (2009) states that private equity firms earn money in two different ways, fees and carried interest. Fees break down into different kinds, with the main one being a management fee charged to the limited partners around 1-2% of the committed capital, very similar to that of a mutual fund. Secondly, the private equity firm can charge deal and monitoring fees that are charged to the portfolio company, rather than the limited partner. In some cases the monitoring fees are split between the portfolio company and the limited partners. All in all, the private equity business model can roughly be broken down into fundraising, investment, value creation & management, and exit. This business model has

worked for a long time, but there has been an increased focus on what private equity firms invest in and how they develop those firms from a sustainability perspective.

The private equity industry has been facing increased pressure to focus on ESG issues, as previously mentioned. The Nordic head of a major private equity firm mentioned in a webinar, How to Accelerate Value Creation for Your Portfolio in 2021 (PE Insights, 2021), how ESG used to be just another box to tick about five years ago. Now, according to that person, ESG is a real consideration that private equity must pay a lot of attention to. Furthermore, the interviewee mentions that in current times, as opposed to the past, deals that look very lucrative from all traditional metrics can even get killed by the private equity firm's investment committee if the ESG criteria are not fulfilled. Secondly, he mentions that private equity firms that are ESG compliant can gain several basis points lower interest rates on equity bridge facilities, which is essentially a loan that delays the private equity firm's need to use limited partners' capital (Deloitte, 2018). Furthermore, Private Equity International (2020b) reported that three of the largest limited partners, CalSTRS, GPIF, and USS Investment Management, a group representing $2 trillion in assets under management, collectively published a statement that the investors are highly likely to discriminate against private equity firms that do not focus on the ESG aspect. This is further supported by Bain & Company's Hugh MacArthur, Head of Global Private Equity Practice, actively working with private equity firms on strategy, geographic footprint, fund raising, portfolio company due diligence, among other things. MacArthur mentions in his podcast 'Dry Powder: Is the Classic Buyout Model Still Working?' (2021) that private equity firms need to move away from just saying that they have an ESG plan but instead use ESG to drive customer satisfaction, gain market shares, reduce waste and costs, and finally show the market that the portfolio company is socially responsible in order to warrant a higher exit multiple at sale.

Contrasting this, there is also evidence indicating that profit still trumps ESG work, which is very likely when the two goals are not perfectly aligned. For example, private equity firm Blackstone is involved in Amazon deforestation through their investment in Brazilian infrastructure company (Grim, 2019), and experienced a severe governance failure through the misuse of the Abraaj Group company funds leading to insolvency (Financial Times, 2019). There are plenty of examples like these with outright failures, but also examples with investments in the gray zones, often including high amounts of debt in distressed companies, leading to being unable to pay and finally having to declare bankruptcy leaving employees

without jobs. How to view those scenarios can definitely be debated, some see the private equity firm as giving a dying company a last chance whereas some view it as the private equity firm not doing enough to keep the business running and avoiding letting go of employees.

Taking a step back, in general, ESG considerations have been a growing concern as well as opportunity for private equity firms in the last decade. PitchBook (2020) says that 95% of limited partners surveyed in their annual Sustainable Investment Survey mentioned that evaluating ESG risk factors is either something they are already incorporating or will be increasing their focus on in 2021. EY (2021) claims further that private equity purpose and transparency, a commonly seen complement to ESG, is being driven by "demand from limited partners (LPs), the dynamics of origination, regulatory developments, and being able to attract the best talent." (EY, 2021). EY further claims that the covid-19 pandemic, has forced private equity firms to reassess operating models and priorities for investments, which provides the firms an opportunity to embed purpose and transparency in the business across all levels from firm, fund to portfolio company. The authors of this thesis interpret the purpose and transparency as a rather sufficient proxy to ESG, and increased focus on and opportunities for the former should mean the same for the latter.

2.2 Sustainability

In this section, an overview will be given on the literature regarding corporate sustainability. First, the measuring of sustainability will be covered, along with the major two concepts equated with corporate sustainability (CSR and ESG) as well as a discussion regarding which one will be utilised in this paper (ESG). With the background given, the chosen measurement of sustainability (ESG) will be put into the context of reality and an in-depth dive into the ESG industry will be presented. This in order to provide a relevant understanding of the industry providing the measure of sustainability upon which this study will be based.

2.2.1 The Measuring Of Sustainability

There is an old business saying: what gets measured gets managed. Since this paper is concerned with quantifiable results on how the management of sustainability work is affected in a firm by PE ownership, sustainability needs to be measured in order for a comparison to be made. However, measuring sustainability is harder than it appears due to problems in regard to definition of terminology. Depending on how one defines sustainability, where one decides to draw the line, the area in need of examination can vary greatly. The problem of defining sustainability is hermeneutics, which Frickera (1998) refers to as “messy, interpretive and time-consuming”, and this may be the reason for why there does not exist a unanimously agreed upon definition. Frickera (1998) does however also state that even though we cannot define sustainability in an objective and unambiguous way, the attempts to measure it should not be abandoned or deferred. It is also important to note that sustainability is more than just another “thing” to be measured (Frickera, 1998), but it is of greater social necessity.

So how does one go about measuring sustainability? In both academia and industry, the main way to assess a company's level of sustainability without performing audits yourself, is to rely on third parties, and according to Frickera (1998) these sustainability indicators have been maturing into better measures of sustainability. In the literature there are two major concepts equated with the sustainability work of a firm, which are CSR and ESG. These two concepts will both be presented, starting with CSR and then ESG. It will also be explained why one of these will be preferred over the other in the context of this paper.

The first formal definition of CSR (Corporate Social Responsibility) was given in 1953 by Bowen in his book *Social Responsibilities of the Businessman* (2013) where he defines it as “the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society” (p.6). Other and more recent definitions include “The social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time” (Carroll, 1979, p. 500) and also an international standardized definition (Moratis, 2016).

The above stated definitions hints that corporations today are expected to take more of a stakeholders approach. According to Michael S. Pagano, Graham Sinclair and Tina Yang,

(2018) this is actually the case, corporations today are expected to take social responsibility and behave sustainably on a wide variety of issues. However, even though these expectations are broadly adopted, they are just vaguely defined. This is because it is harder than it appears to define CSR (Sheehy, 2014). There is actually no unanimous clear and unbiased definition of what CSR is, even though there have been many attempts to combat this (Dahlsrud, 2008). However, some believe that referring to CSR without a clear definition is also doable. This is because most definitions usually agree on what is important, even though the specific wording of this may differ (Dahlsrud, 2008; Crane, Matten and Spence, 2019). Using the above stated definitions, the unity in theme but difference in definition is something we also can see for ourselves.

Whenever measuring, having a clear definition will help determine which data to exclude or include in the process of measuring. As already stated in the beginning of this section, this thesis is concerned with quantifiable results on how the management of sustainability work is affected in a firm by PE ownership, and sustainability needs to be measured in order for a comparison to be made. Since this is the case, the clearer the definition the more preferable for the sake of data gathering. However, it is not only CSR that suffers from a lack of clear definition, but also ESG, which stands for "environmental, social, and governance" and is as a concept much younger than CSR. It was on the invitation of Kofi Annan, the then Secretary-General of the United Nations (dubbed the father of the modern corporate sustainability movement according to Kell, 2018) that the ESG framework was developed by 20 financial institutions in 2004 from 12 countries.

The lack of clear definitions for both CSR and ESG makes it hard to distinguish between the concepts, resulting in them sometimes being used interchangeably. For example Boubaker, Cumming and Nguyen (2018) in their book "Research handbook of finance and sustainability" recognise that in practise the terminology "sustainable investment", "environmental, social, and governance" (ESG), "corporate social responsibility" (CSR), and "sustainable, responsible, and impact investment" (SRI) mean different things for different users. The authors still use the terminology interchangeably, the reason given for this is simplicity (p. 367).

The possibility of interchangeable use is important to recognise when deciding on the concept to use as a measure for sustainability in this thesis. However there are other things that also need to be kept in mind. The primary one is this thesis's more pragmatic focus on a concept's usability as a measure of sustainability. This means that the focus is not put on the definition of concepts of sustainability per se. Having the more pragmatic approach allows for this thesis to avoid the already stated messines of hermeneutics (Frickera, 1998), and instead of trying to end the debate of defining CSR and ESG, focus on identifying the most usable measure for the context of this thesis. It is the key function of usability and measurability that has led to the decision of using ESG as the measure of sustainability for this paper.

Out of the two concepts, CSR and ESG, the latter is the closest tied to the act of measuring sustainability. Not only does the term ESG tend to be more expansive in comparison to CSR (Gillan, Koch and Starks, 2021), so-called ESG scores, which by definition encapsulate ESG, are even used to measure CSR (Yoon, Lee and Byun, 2018). By utilising ESG as the measure for sustainability, it will not only encapsulate CSR, and be consistent with the majority of current literature concerned with measuring sustainability, it will also be in line with the industry (Alfonso-Ercan, 2020; Crifo and Forget, 2012). The availability of data in the form of ESG scores and an existing extensive body of literature, along with industry alignment, are the reasons for choosing ESG as the measure of sustainability.

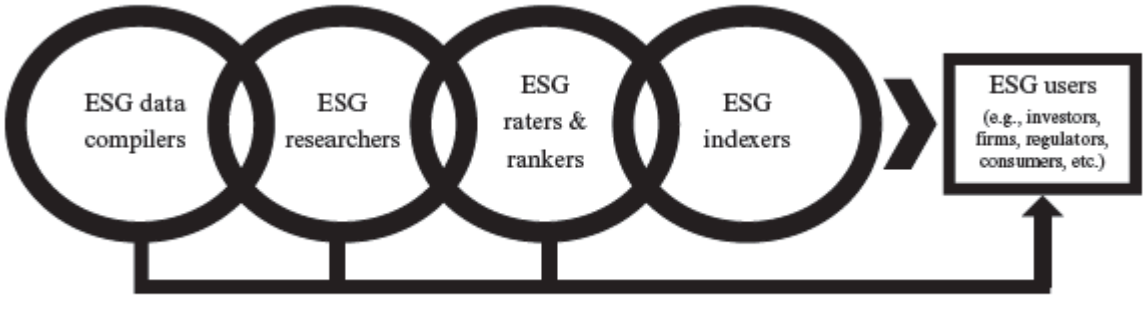
As stated earlier, the main way to assess a company's level of sustainability in both academia and industry, is to rely on third parties. It has also already been explained that ESG scores are used to measure sustainability in the concept of both CSR and ESG. This widespread well-established usage of ESG scores in both academia as well as industry, along with it encapsulating both the CSR and the ESG concepts of sustainability, makes ESG scores the best measurement of sustainability for this study. However, ESG scores are not perfect. In order to utilise them, ESG scores and the industry behind them needs to be understood.

The definition of ESG scores (also referred to as ESG ratings) and how they are best calculated is, like the definition of sustainability, debated but not agreed upon (Pagano, Sinclair and Yang, 2018). But as with the case of sustainability, this should not defer from its quantification, which it has not. One definition of ESG scores favoured by the authors of this thesis as perceived to capture its essence is the definition by Michael S. Pagano, Graham

Sinclair and Tina Yang, (2018), which describes ESG scores as “a scoring framework” used to measure and evaluate a company's performance on ESG factors (p.341). These factors are systematically measured and often combined into a single overall ESG score.

The service of providing ESG ratings have gone from a small industry focusing on non-governmental organizations (NGOs), human rights activists and environmental consultants to becoming a fast growing industry with an increasingly important role in the due diligence performed by financial institutions (Pagano, Sinclair and Yang, 2018). A survey conducted by SustainAbility (2021), which is a sustainability think tank, found that 65% of the surveyed investors used ESG ratings at least once a week, and Amel-Zadeh and Serafeim (2018) found the number one reason investors use ESG ratings is due to its relevance to investment performance, followed by client demand, product strategy, and then ethical considerations.

The ESG ratings are provided in ESG indexers which are value-added products developed by ESG ratings firms. An ESG ratings firm can do one of two things. The first is to calculate and then license out its own indexes. The other is to partner with index vendors to help the rating firms market, calculate, or sell the ESG index (Pagano, Sinclair and Yang, 2018). The value chain of ESG ratings firms is as illustrated in the figure below (Figure 1). There has however lately been a series of acquisitions and mergers resulting in a consolidation of the market (Sustainability, 2020). The consolidation was driven by both demand-pull and supply-push factors like a need for scale, more globalized portfolios and increased data availability (Pagano, Sinclair and Yang, 2018).



Note: Value increases through the value chain.

Figure 1 - The value chain of ESG ratings firms, (Pagano, Sinclair and Yang, 2018)

2.3 Why PE Firms Work With Sustainability

Based on the research, the main concern of PE firms appears to be to maximise profits. This shareholder centric view of the responsibility of PE firms, as perceived by themselves, invites the questioning of why PE firms would be concerned with sustainability, as the evidence covered in the introduction indicates. The reason behind this is twofold.

The first reason for PE firms being concerned with sustainability while having a shareholder centric view, is that they are internally incentivised. This means that there are perceived benefits of working with ESG that can be realised when the PE firm is the principal in the relationship. The second reason is that PE firms are externally incentivesed by their principal, meaning that they are the agent in the relationship.

This section will cover the principal agency relationships of the PE firm via expanding the traditional principal agency relationships using two levels into a three part principal agency relationships. It will then cover the PE firms external and internal motivations for being concerned with sustainability, and lastly how PE firms work with sustainability.

In order to understand what incentivises PE firms to be concerned with sustainability, one needs to understand the unique principal agent relationship a PE firm finds itself in. In order to apply the principal-agent problem to the context of PE firms, it is first needed to be familiar with the relevant aspects of the principal-agent problem.

The principal-agent problem originated from the research of Jensen and Meckling in 1976. It refers to the issue of a conflict between two parties where one, the agent, is not incentivized to act in the best interest of the other, the principal, yet having been essentially employed to take decisions on the principal's behalf (Jensen and Meckling, 1976). Common real life issues illustrating the principal agent problem are shareholders (principal) and management (agent), voters and politicians, financial institutions and rating agencies.

There are two common solutions in order to appropriately incentivise the agent to make choices which will maximise the principal's welfare. The first solution is through the utilisation of contracts (both explicit and implicit) which aims to create a contract thorough

enough to ensure the agent does not act outside of the principal's interest (Jensen and Meckling, 1976). Contracts like these are of course hard and costly to construct and enforce (Fama and Jensen, 1983).

The second solution is to utilize incentives structures, which aims to solve the principal agent problem by connecting the compensation with performance of the agent (Fama and Jensen, 1983). A common solution to reducing the downsides of the principal agent problem in a corporation is through the use of stock options, which aims to align the compensation of the principal and the agent (Shan & An, 2018). The main goal is trying to allocate as much as possible of the agent's potential benefit as a share of the benefit of the principal.

The usage of the Principal Agent problem to the context of PE firms becomes multi-faceted, and we have to structurally break down the incentives of all main layers in the private equity industry. In accordance with Milton Friedman's perspective, which was mentioned in the introduction, the first layer would be the limited partners. Limited partners, as previously described, refers to the investors in the funds managed by the private equity firm. In this scenario, the limited partners become the principal, hiring the general partner to invest money on their behalf. The second layer is the general partner, or private equity firm which, as also previously described, manages the investments of the fund, essentially being both agent to the limited partner as well as principal to the portfolio company management. The third layer is the portfolio company's management, which would be the final agent in this case, answering to the private equity firm both directly as well as indirectly through the board of the portfolio company.

By analyzing these dynamics, we can find an argument as to whether or not the final principal, being the limited partner, requesting ESG performance of the portfolio company, is answered by the portfolio company management who is in the position to drive that in the company's operations. Stating this in a different way: does the Final Principal affect the Final Agent with PE firms as the middle layer?

In order to illustrate the relationship between the agents and principals, we have summarized it into a graphic, Figure 2.

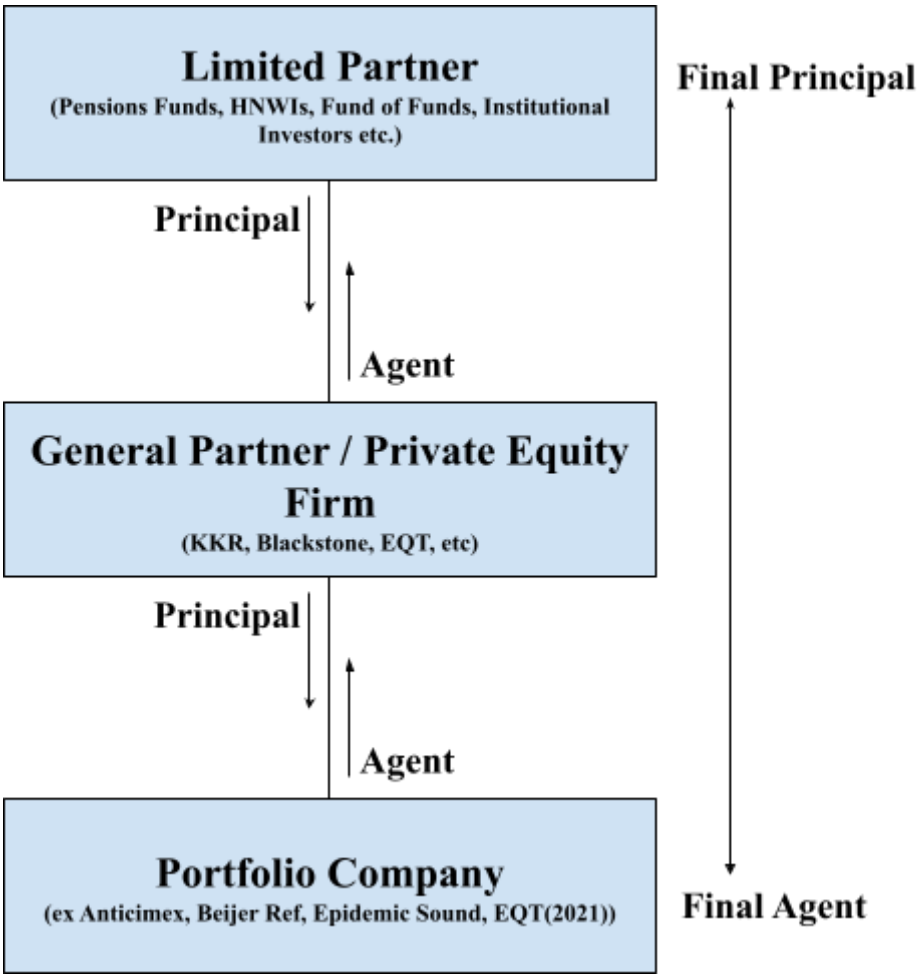


Figure 2, Several Layers of Principal-Agent (authors own illustration)

In reality, the limited partner is not the final principal, nor the portfolio company the final agent. For example, the limited partner, in case it would be a state pension fund, would be an agent hired by the government, taking the role as principal. However, since these three stakeholders are the main subjects of our research, we limit our principal agent analysis to them.

So how does the principal agent concept connect to ESG work within PE firms? The reason for PE firms working with ESG is as already mentioned twofold. The first reason for PE firms being concerned with sustainability is due to being internally incentivised. Being internally incentivised reference to the incentives experienced as the principal, when there is no "higher power" imposing their external will. This is in opposition to being externally incentivised, when there is an external power incentivising you to act on their behalf, meaning that they are the principal and you the agent.

As already mentioned, based on the research, the main concern of PE firms appears to be to maximise profits, and this shareholder centric view of their responsibility would mean that what PE firms are internally motivated to do is to maximise profits. In order to find out if the internal motivation, seeking profits, is lined up with acting sustainably we need to look at why any firm is interested in ESG. The reason for this has to do with the nature of the business of PE firms. Since PE firms buy other firms they are concerned with how firms in general are affected by ESG work and whether or not it is aligned with their internal motivation; making money.

The reason firms in general are interested in ESG is multifold. Some studies have found that firms working with ESG reduce their risk and increase their profit. Margolis, Elfenbein and Walsh (2009) also found three other reasons: external expectations, generalized reciprocity, and guilt. The risk reduction comes from reductions in reputational and regulatory risk (Duke, 2015; Hoepner et al., 2016; Teti, Dell'Acqua and Zocchi, 2012). There have been a lot of studies conducted on the linkage between ESG and profitability. Zara (2018) found that ESG-funds are more profitable compared to non-ESG funds according to a range of measures. Teti, Dell'Acqua and Zocchi (2012) also found ESG to be more profitable in economic terms. Ashwin Kumar et al. (2016) say that firms incorporating ESG factors show lower volatility in their stock performances than their peers in the same industry, and that ESG companies generate higher returns. However, they note that different industries are affected differently by ESG. Also, the effects of ESG works appear to be asymmetrical. Bad ESG performance impacts investment decisions more than good ESG performance according to Crifo, Forget and Teyssier (2015). There are of course more sceptical interpretations. Margolis, Elfenbein and Walsh (2009) performed a metastudy of 251 studies presented in 214 manuscripts on the relationship between corporate social performance (CSP) and corporate financial performance (CFP). They found the overall effect to be positive but small and when CSP was assessed more broadly through third-party audits and mutual fund screens, the association was the weakest. Based on these findings, CSP may be a waste of free cash flow (Margolis, Elfenbein and Walsh, 2009). Another large meta study, this one looking at the relationship between ESG and financial performance was done by Friede, Busch and Bassen (2015). They looked at over 2200 unique primary studies. This study incorporated 25 meta studies, including the study by Margolis, Elfenbein and Walsh (2009), in the sample to arrive at their conclusion. The results showed that the profitability case for ESG investing is empirically very well founded.

Roughly 90% of studies find a nonnegative relationship between ESG financial performance. More importantly, the large majority of studies showed positive findings.

Why PE firms specifically care about ESG is also something that has also been well studied. PE firms' reasoning to work with ESG is found to be very much in line with “regular” companies, which is risk management and value creation, with value creation being the dominant reason (Süsi & Jaakson, 2020; Zaccone & Pedrini, 2020). As already stated, non compliance with ESG criterias can result in deals getting killed even if they appear lucrative by all traditional metrics, as well as being ESG compliant can result in several basis points lower interest rates on equity bridge facilities. Zeisberger (2014) claims that private equity firms are increasingly cognizant of the ESG trend due to cost-savings potential, activities of competitors as well as regulatory aspects. A final reason found for why PE firms work with ESG is because developing socially responsible practices is a way for them to differentiate from other PE firms (Crifo & Forget, 2012).

Based on the above reviewed literature, the conclusion can be drawn that PE firms are internally incentivised to work with ESG in their portfolio companies. The reason for this is to maximise profit. There seems to be a positive relationship between ESG and financial performance, but this is debated. Whether or not working with ESG has a positive impact on the value of a firm, the consensus seems to be that it does have a nonnegative effect on financial performance (Friede, Busch and Bassen, 2015). So even if there is no increase in profit from working with ESG there will be a reduction both in the risk in the portfolio company and deals being killed, cost savings in the form of lower interest rates on equity bridge facilities along with differentiation opportunities. This can be interpreted as being incentivised enough. However, as also mentioned earlier, there is evidence that the incentive for profit still is not perceived as being aligned with ESG work; examples have been given about major PE firms involved in companies with severe environmental and governmental failures.

So what about the second reason for PE firms working with ESG, the one referred to as external motivation. How does this align with PE firms working with ESG? As mentioned in the introduction, the private equity industry has been facing increased pressure to focus on ESG issues with, 95% of limited partners surveyed by PitchBook (2020) saying that

evaluating ESG risk factors is either something they are already incorporating or will be increasing their focus on in 2021. The literature agrees on this, Crifo and Forget (2012) found that there has been a rapid adoption of ESG issues within PE firms, and the reason for this is because it has been pushed from large conventional actors. De Klerk (2021) echoes this, with the finding that PE firms are facing increasing pressure from their investors to consider ESG factors in their investment processes. However, the literature is not unanimous. Lopatta, Jaeschke and Chen (2017) say that institutional investors as a stakeholder have no impacts on CSR performance. Based on this, the findings are not unanimously conclusive but it appears to point in the direction that PE firms should be externally motivated, motivated by their principals, to be concerned with ESG work. However, as covered in section 2.1, evidence shows that PE firms do not always work with ESG, even though it appears that PE firms should be both internally and externally motivated to do so. Whether working with ESG is the norm or uncommon for PE firms is not known, but how PE firms work with ESG has been studied. By understanding how PE firms work with ESG it can indicate what in practise is motivating them and where that motivation is coming from, whether it is internal or external.

Zeisberger (2014) looks at the intersection of ESG and private equity and how the firms more concretely work with ESG issues in their portfolio as a whole as well as individual portfolio companies. This is done by portraying a snapshot of conversations with 11 leading private equity firms. Zeisberger states that developing and applying a framework in order to manage ESG considerations in a potential investment is a rather new and emerging practice in the private equity industry, which has previously focused on factors in isolation. At time of writing, the author claims that the industry is still in search of clear-cut best practice. Zeisberger identified three non-mutually exclusive frameworks for approaching ESG among the interviewed firms:

- Risk Focus
- Program Driven
- Integrated Approach

Risk Focus, refers to firms who primarily look at ESG risk factors during the process before investment, in order to assess a target company’s compliance with laws and regulations in

order to control reputational and legal risk. An analysis indicating high risk can kill a potential investment opportunity (Zeisberger, 2014).

Program Driven, refers to private equity firms who manage ESG investment considerations through specific initiatives. Often with tangible steps in a program focused on either the entire portfolio, an industry within the portfolio, or a specific portfolio company. This framework usually leverages external ESG expertise in order to assess the needs of the portfolio companies to identify investment opportunities, execute subsequent initiatives, and validate and measure ESG performance (Zeisberger, 2014).

Lastly, Zeisberger (2014) describes ESG activities across the various functions in the private equity firm such as legal, investor relations, operating teams working hands-on with portfolio companies, and investment teams. This approach usually utilizes staff dedicated to ESG practice, ensuring a broad outline for tackling ESG considerations across the entire private equity firm and including all stages of a fund’s lifecycle.

The three frameworks Zeisberger presents as PE firms use when approaching ESG paints a quite positive picture of PE firms taking a serious and structured approach to ESG. What it does not indicate however is whether the incentive to do so is internal or external, both seem to be possible. In order to get a clearer view, drawing on other sources is necessary. When doing this, the results become clearer and seem to be pointing towards the inventive being external. Bracking (2012) found that institutional investors use “thin, partial and pseudo‐mathematical methods" for assessing their environmental impact, basically greenwashing themselves. This view was later echoed by Long and Johnstone (2020) saying that PE firms ESG compliance is more talk than action. This indicates that PE firms' motivation is mainly external.

It is our assumption that the goals the final principal aims to achieve through the final agent, likely will be harder to reach depending on the amount of unique agents active in the chain, essentially emphasizing the common problems in a standard principal agent analysis involving just two parts. The limited partner essentially employs the portfolio company indirectly to achieve its goals, and as is known, the limited partner tries to achieve the maximum returns while also generally trying to be ESG compliant, by looking at ESG risk factors (PitchBook, 2020). The general partner is subsequently employed to maximize returns while being ESG compliant, and employs the portfolio company management to make sure

that returns are driven by developing and increasing the value as previously described, while also supposedly trying to be ESG compliant as per the limited partners goals. However, it is unclear whether or not the general partner is sufficiently incentivized by other factors rather than simply trying to be perceived as sufficiently compliant with ESG in order to retain the limited partner as an investor in the fundraising stage. As previously discussed, there is evidence, provided by PE Insights (2020) and others, that general partners have further incentives rather than just trying to be perceived as ESG compliant by the limited partner. However, it is unclear if these incentives are strong enough to warrant the time, money and resources needed to understand and effectively integrate ESG into the business of the portfolio company. Looking at the actors through the lens of the principal agent problem, the extra layer of the general partner will most likely further increase the difficulties experienced in a principal agent relationship. If PE firms had no internal motivation to work with ESG performance, the difficulties of aligning incentives, especially across two agents, rather than just one, would most likely result in portfolio companies having a lower ESG performance. But since there now seems to be both internal and external motivation for PE firms to work with ESG, portfolio companies will probably present a higher ESG performance than companies not owned by PE firms.

3 Hypothesis

Based on our theoretical framework we have been able to find several different predictions, some indicating that PE ownership has negative effects, and some indicating it has a positive effect on ESG performance. There are a few reasons why PE ownership might outperform the comparator group. According to EY (2021) there is social pressure on the private equity industry's informal license to operate. The industry is under greater scrutiny than ever before and private equity firms need to improve their capabilities on tracking and capturing the net value driven from the impact of their activities, not only in terms of bottom line. The increase of pressure is however not unique for PE firms, and in extension PE owned firms, but it can be felt by all firms. It was in the 1970s that many writings began to suggest the importance of a managerial approach to CSR (Carroll, 2008), and in the last 30 years there has been a stark increase in the sustainability efforts of firms (KPMG, 2020). A rising tide lifts all boats. However, PE firms experience what is perceived to be additional pressure beyond the global trend for sustainability. EY Global Private Equity Leader Andres Saenz (2021) says that the regulatory angle is an increasing concern for private equity firms to ensure they are ESG compliant in terms of reporting, due to increased regulatory action in the industry. Saenz also states that for private equity firms "Environmental, social and governance issues are becoming a core basis for competition." (Private Equity International, 2021).

On the contrary, there are a few reasons why PE ownership could indicate that ESG performance could be worse than the comparator group. As previously mentioned, viewing the relationship between limited partner and portfolio company management as an extended principal agent problem, should indicate that the limited partners' goals of being ESG compliant has reduced likelihood of being executed at the portfolio company level. Secondly, growing critique of the private equity business model from real world failures previously mentioned, such as Blackstone investing in companies driving deforestation and the Abraaj Group's alleged mismanagement of funds. Thirdly, Hoellermann (2020) also mentions that private equity firm professionals are purely in it for the money, heavily emphasizing the bottom-line focused culture within the industry. This drive for profit, without other goals in

mind, could very likely come at the cost of ESG performance if incentives are not well aligned, hence providing a negative indication to the construction of our hypothesis.

Since PE ownership generally has a positive impact on management practises (Bloom, Sadun, and Reenen, 2015) and disclosure policy (Beuselinck, Deloof and Manigart, 2008), it is believed that if PE firms are incentivised to work with ESG it will result in higher ESG performance. Our impression based on the aggregation of the evidence is that PE firms are both internally and externally incentivised to work with ESG and therefore PE ownership will most likely have a positive effect on ESG performance as measured by our selected ESG ratings.

Based on the above-mentioned aims and objectives for this thesis, in order to investigate if PE ownership has an effect on ESG rating, a two-tailed test will be performed with the null hypothesis being that PE owned firms will not present a ESG-ratings that statistically differs from non-PE backed firms. The null is rejected if the p-value is less than 5 %. The test is a two-tailed test. The two hypothesis that will be tested in this study have been formulated as follows:

H_0: PE ownership before IPO does not have a performance difference, either positive or negative, as measured by the subsequent ESG rating of a public firm compared to non-PE ownership.

H_1: PE ownership before IPO has a performance difference, either positive or negative, on the subsequent ESG rating of a public firm compared to non-PE ownership.

This can be restated mathematically as the following, with ESG Score (PB) representing the PE Backed Group and ESG Score (NPB) representing the non-PE Backed Group.

H_0: ESG Score (PB) - ESG Score (NPB) = 0

H_1: ESG Score (PB) - ESG Score (NPB) ≠ 0

To conclude, the point of this study is to evaluate if there is a difference in ESG performance between the two groups, with a literature review indicating a slightly higher performance for the PE Backed Group versus the non-PE Backed Group.

4 Methodology

In this chapter, a thorough explanation and motivation is provided on the methodological choices made in regards to collecting and analyzing the data with the intent to answer the research question. First outlined is the research design. After the research design comes the data, and it consists of multiple subsections. First within the data section are the time frame choices covered and what informed them. Then the drawbacks of ESG ratings, how to mitigate them and the method for choosing ESG scores is presented. The chosen ESG scores (ISS Quality Score, Sustainalytics ESG Risk Ratings and RobecoSAM) are presented and adjusted to fit the same range and order to calculate a portfolio ESG score in order to mitigate the drawbacks of ESG ratings. Lastly in the data section is the presentation of the sample. After the data comes the data analysis section covering the analysis of normality, how this thesis will find out if the results are of statistical significance as well as the effect size. Lastly in the methodology chapter is a discussion on the validity and reliability of this thesis.

4.1 Research Design

For this paper, the abductive approach to theory development will be used, meaning that the study will not be deductive (moving from theory to data) or inductive (moving from data to theory), but in effect combine these two approaches (Saunders, Thornhill & Lewis, 2019). The methodology utilised will be a Mono method quantitative approach, meaning that only a single data collection technique will be used as well as the comparable analysis procedure (Saunders, Thornhill & Lewis, 2019). The plan of action to go about answering a research question is referred to as the research strategy. Here, an experimental strategy will be utilised in order to test the probability of change in a dependent variable (ESG performance) as a function of change in an independent variable (PE ownership).

4.2 Data

This section covers the data used for this paper. First the chosen time-frame for the study is presented since this will dictate the data. After that, the drawbacks of ESG ratings are covered and how to mitigate them (by calculating a Portfolio ESG Score). Then the method for choosing ESG scores is presented. The selection method is applied, and the chosen ESG scores (ISS Quality Score, Sustainalytics ESG Risk Ratings and RobecoSAM) are presented. The chosen ESG scores are adjusted to fit the same range and order. Using the adjusted ESG scores, a Portfolio ESG score is calculated for each company in order to mitigate the drawbacks of ESG ratings. Lastly, the sample is presented.

4.2.1 Time Frame of the Study

Finding data for a study utilising ESG scores comes with the problem of time sensitivity. As already mentioned in the introduction, the focus on sustainability is not static but growing, as well as evolving. One of the critiques against ESG scores is that they are not comparable over long stretches of time due to a lack of standardisation because the methods for calculating the ESG scores are updated. This is not a problem if scores published with a long interval in between are not compared, but instead comparison is kept within a small window of time. However, for a comparison to be performed even within a shorter time frame, there needs to be available data of a sufficient sample size at that given window of time. This means that the time span this study will cover will be dictated by the availability of data. More precisely, the number of firms with an IPO with a PE exit that received an ESG rating near the IPO.

Having too narrow of a time span will lead to a sample size too small for any meaningful statistical analysis. If any effect found is small, a large sample will be especially important. The sample time frame first set for this study, in order to make sure that any findings would be of statistical significance, was between January first 2000, and December 31st 2020 for firms performing an IPO with a PE exit while also receiving an ESG rating. However, upon inspecting the data it was found that ESG ratings were available for virtually no companies prior to 2014. Therefore, the time frame covered by this study had to be shortened to January first 2014, and December 31st 2020.

Another time frame needed to be taken into account is that of how long after the IPO a firm can receive an ESG rating while still remaining in the sample. A too short of a window would drastically reduce the available sample, while a too big of a window would reduce the effect the PE firm has on ESG rating received. Our assumption is that the level of ESG performance as measured by a rating can reasonably be ascribed to the private equity firm owner up to two years after IPO date and exit.

4.2.2 Drawbacks of ESG Ratings and How To Mitigate Them

When utilising ESG ratings as a measurement of the sustainability of companies, it is important to be aware of the flaws and limitations of ESG ratings. The main ones identified are:

- A lack of standardisation
- A one-size-fits-all approach
- Firm size bias
- Deficient at measuring absolute performance and for making predictions

The first two of the main problems of ESG scores appear at first glance to be contradictory, as one is not enough standardisation while the other is a lack of nuance. However, when taking a closer look it will be clear that no contradiction exists and the two different problems stem from the same source.

When it comes to a lack of standardisation, this is one of the main criticisms directed at ESG scores, not only in how the scores are presented but also how they are calculated. Olmedo, Torres and Izquierdo (2010) performed an exhaustive overview on six sustainability indices and ten ESG agencies, looking at the different criteria for evaluation used by sustainability indices and ESG agencies. They found that the methods currently being used by ESG agencies and sustainability indices are diverse and show a lack of standardisation, which is confusing and fatiguing both from the perspective of the company and the investor. Coca-Cola's Sustainability team stated that already in 2014, the early days of ESG reporting, they received "over 300 questionnaires to fill out, each question being unique and overwhelming, and this occurrence is not uncommon" (Pagano, Sinclair and Yang, 2018, p.361). From the investors point of view, Ailman et al., (2017) found that institutional

investors believe that standardization of ESG data is essential for it to be successfully integrated and applied in the use of large mainstream investors. There have been efforts to do this by SASB (Pagano, Sinclair and Yang, 2018).

The one-size-fits-all approach is another criticism of ESG ratings and it is twofold. The first critique comes from the lack of nuance for not taking context into account, for example industry or country. This has been attempted to be solved by Thomson Reuters which tried to build a region specific model within each industry-specific environmental model. This would have helpt counter the geographical/economic bias of the overrepresentation of companies with ESG ratings from regions with higher living standards. Another criticism is the oversimplification of most ESG scores. Having a single number representing such a complex and multifaceted issue as sustainability is a grave oversimplification which does not deliver a full and representative image.

Another problem of ESG scores is firm size bias. The bias is towards larger listed companies (Drempetic, Klein and Zwergel, 2019; Pagano, Sinclair and Yang, 2018). The reason for this is because the main source of data used for ESG research is publicly available data. Providing this data requires firms to have the resources, both in terms of financial and human resources, to dedicate to the implementing of ESG processes and maintaining ESG initiatives. Not only do larger firms have the resources needed for reporting, they may also be incentivised towards it via the positive connection between raising capital and brand value. Lastly, there may also be more pressure on larger corporations to perform ESG reporting from various stakeholders. This is in line with the findings of Margolis, Elfenbein and Walsh (2009) on why firms work with CSP.

Lastly, the main identified criticism towards ESG scores are that they are bad at measuring absolute performance (Frickera, 1998) and for making predictions. Since the scores usually rely on reported data, this means they are based on what has already happened and only give a snapshot of where the company was at the time of reporting. A critique based on this is that ESG ratings are not able to identify fraud.

In order to mitigate the identified main problems (a lack of standardisation, a one-size-fits-all approach, firm size bias and a deficiency at measuring absolute performance and for making predictions) relevant countermeasures need to be identified. To offset the problem of a lack of standardisation in terms of ESG rating calculations, a simple way is to calculate the average

of some chosen ESG ratings. This will result in non-reliance on one measure and that data gathering and weights given to each pillar of the ESG score, results in an unrepresentative picture. Utilising multiple ESG scores is a common industry practice among large institutional investors to “fill the gaps” (Sustainability, 2020 p. 19) and decrease reliance on a single measurement (Sustainability, 2020). The case for utilising multiple ESG scores is also found in academia. Dimson, Marsh and Staunton (2020) looked at the causes for, and degree of disagreement among the leading suppliers of ESG ratings. In their opinion, using an ESG rating in isolation is unlikely to have a material effect on the portfolio return.

When calculating this average of ESG scores, it will come with the risk of outliers skewing the result. However, this risk seems to be easily reduced by utilising ratings from major ESG ratings shops. Pagano, Sinclair and Yang (2018) says that (p. 359):

> *While obvious methodological differences exist among the indexes, the major ESG ratings shops provide a wide range of research, ratings, rankings and index products to meet the diverse demand of investors. Therefore, the actual differences across the major ratings providers may be smaller than at first glance.*

The lack of standardisation, no matter if it is a problem or not, may not persist for much longer. In September 2020, five of the leading framework and standard-setting organizations (CDP, CDSB, GRI, IIRC and SASB) announced a shared vision for a “comprehensive corporate reporting system that includes both financial accounting and sustainability disclosure” (SASB, 2021). In December 2020, they published a prototype climate-related financial disclosure standard (SASB, 2021).

When it comes to the problem of the one-size-fits-all approach, the same solution of utilising multiple scores can be applied. The reason for the over simplified score is the same as why the earlier mentioned attempt by Thomson Reuters to build a region specific model within each industry-specific environment failed: usability. In order to mitigate this, multiple ESG scores can be used to get a fuller picture. However, the problem of having one number representing a complex issue still persists. By looking at the data used to calculate the final score, more nuance can be incorporated in the calculations. Finding this data is not that hard since most ESG providers provide the background and scores of the subsection culminating in the final score (Pagano, Sinclair and Yang, 2018). Looking at the subsections is however not something this paper will be concerned with due to limitations of time and data. Bloomberg

terminals limit the data output, both via its terminal and API which is a limitation of this study. Since the weight given to each of the subsections of an ESG rating varies across agencies, this can explain some of the variance in the ESG scores of a single company (Dimson, Marsh and Staunton, 2020). Looking at the data points different ESG ratings uses, instead of their cumulative score, would remove the limitation of difference in weighing and the oversimplification of only one score representing such a vast issue. Approaching this study without data limitations being able to use more nuanced data, would be an interesting avenue for further research.

The third identified main drawback of ESG scores is that of firm size bias. Unlike the previous drawback, the firm size bias is not one which could be mitigated without data limitations. Since this study looks only at companies having performed an IPO, which by definition will be listed companies, the data set will be biased towards firm size. That there is a relation between firm size and the companies with available ESG ratings is a reasonable assumption. It may very well be that it is only the biggest firms that provide the ESG scores. It is not known if this is the case for the data used in this study. For this study, the firms looked at have not been separated based on firm size. Without data limitations, the question of whether or not there is a firm size bias could have been answered. Knowing the answer to that question would have been interesting, but it would not help solve the problem so data access was prioritised towards answering the hypothesis. If the firm size bias holds, then the data will be overly represented with large firms. Unfortunately filling the gap of data is not feasible for this study given the time restrains. Without any practical way to mitigate the possible skewed data, the firm size bias is recognised as a limitation.

As for the last drawback, when it comes to absolute performance, that is not a problem this study is concerned with. When looking at the relative performance between PE and non-PE backed firms, the absolute performance is not of interest. The grounds for this criticism is not assessed since whether it holds true or not would not make a difference to the result of this study.

There is some merit to the critique of ESG scores utility in prediction making. In regards to fraud, an example is the Volkswagen emissions cheating scandal in 2015. Volkswagen was removed from indexes like RobecoSAM, but it was first after the scandal (RobecoSAM, 2015 cited in Michael S. Pagano, Graham Sinclair and Tina Yang, 2018). However, Sustainalytics flagged Volkswagen for governance concerns months before the scandal (Kerber, 2021). This

only highlights the differences between scores. Any shortcomings are not universal, but are present to different degrees in different ESG scores. In order to mitigate this, multiple scores can be used.

Based on the findings presented above, multiple of the drawbacks that exist with ESG ratings can be mitigated by not relying on one single score. It is our belief that aggregating these scores into one score, a Portfolio ESG Score, is the best way to mitigate for the drawbacks relevant for this tesis. This would also provide simplicity in comparing individual firms on overall ESG performance as well as a more clear cut distinction between any potential differences between the PE backed group and non-PE backed group.

4.2.3 The Choice of ESG-ratings

When choosing an ESG-rating there are three main factors that need to be taken into account. The first is quality, the ESG rating chosen will need to be of high enough quality to accurately represent reality in order for the results to be of value. First the academia and industry perception of a score will be evaluated, then a more in depth analysis of the score will be presented in order to confirm congruence with the study as well as to gain a better understanding of the underlying data. The second is quantity. The ESG ratings chosen must be applied to a sufficiently large number of companies in order for the study to be able to achieve a sample size of sufficient magnitude. Here there is a tradeoff between quality and quantity. The more accurate to reality the ESG score is, the more data underlying the final score will be needed. With a finite amount of time and resources, there will at some point need to be a tradeoff between digging deeper into a company or starting to evaluate the next one. Lastly is availability. In order for the data to be able to be analysed for this study, it needs to be available for access.

To narrow the sample and not having to filter through the over 600 existing ESG scores (SustainAbility, 2020), the focus was first put on accessibility. The following ESG rating were available to utilize for this study:

- Bloomberg ESG Disclosure Score
- CDP Climate Score
- ISS QualityScore

- MSCI Rating
- Refinitiv ESG
- RobecoSAM
- Sustainalytics
- Thomson Reuters

With accessibility established, the second thing to assess was quality, starting with the first part of the quality assessment. Pagano, Sinclair and Yang, (2018) outlined some best practises for ESG ratings and indexes. In their assessment they looked at 6 factors (Rule-based methodology, Context specific, Transparency, Data credibility, Continuous revisions, and ESG ratings methods, from negative screening to best-in-class). Of the ESG ratings available for this study, the authors applied the six previously stated factors to *MSCI ESG Ratings*, *RobecoSAM*, and *Thomson Reuters ESG Scores*. The result of their analysis shows that both *MSCI ESG Ratings* and *RobecoSAM* fulfills all but one of the criterias while *Thomson Reuters ESG Scores* fulfills only two. Pagano, Sinclair and Yang (2018), notes on the factor of Data credibility that RobecoSAM is the only provider of ESG scores in their review that not only relies on publicly available information but also uses privately provided data, utilising a number of checkers to validate the data, which contributes to what the authors referred to as "the quality and quantity of corporate ESG disclosure" of RobecoSAM's ratings (p. 357).

When assessing the quality of ESG ratings, the industry's assessment was also taken into account. SustainAbility (2020) surveyed both investors and ESG experts with the goal to evaluate the usefulness of different ratings. *Sustainalytics*, *RobecoSAM*, *CDP* and *MSCI* topped the list for both investor and expert. *Sustainalytics' ESG Risk Ratings* received the highest number of investors rating at high quality.

Both *RobecoSAM* and *Sustainalytics* fulfills the availability and the quality requirement. However, when it comes to quantity they are lacking. To counter this, the *ISS QualityScore* was also chosen. It was ranked high in quality by investors, and low in drawbacks by industry experts. *ISS QualityScore* was the ESG rating with the third highest number of industry participants ranking it as high quality. *ISS QualityScore* also had the third lowest number of experts assessing it as low quality.

Based of these findings, the following ESG ratings will be employed in this study:

- Sustainalytics

- ISS QualityScore
- RobecoSAM

The reason multiple ESG ratings was chosen is, as mentioned earlier, to offset the drawbacks any one rating might carry. Since all three of the above ESG ratings are major, this will reduce the risk of having an outlier among the chosen scores, in accordance with Pagano, Sinclair and Yang's (2018) view on the small differences between major ratings (p. 359).

With the first part of quality, the quantity and the availability assessed, the second part of the quality assessment was performed. Here follows an in depth analysis of each of the chosen scores in order to confirm congruence with the study as well as to gain a better understanding of the underlying data.

Sustainalytics' ESG Risk Ratings

Today's Sustainalytics, a Morningstar subsidiary, is a private company founded in 2009 with the merger of Jantzi Research and Sustainalytics, with roots tracing back from the 90s. The company has a research staff of more than 350 covering more than 20,000 companies worldwide. Sustainalytics provides ESG research, data and ratings to corporations and investors.

The ESG Risk Rating initially looks at material ESG factors, which are factors that could have a material impact, either positive or negative, on the business model or fundamental value drivers of the company. These could be growth of revenue, gross or operating margin, risk, and required capital. Concrete examples of material ESG factors include management of the supply chain, policies around worker health and safety, policies around environmental issues, and corporate governance (Robeco, 2021). In total, the ESG Risk Rating covers 20 different material ESG issues, which is one of the rating's three building blocks, together with corporate governance and idiosyncratic issues, also called black swans.

Individual companies are able to get an ESG Risk Rating within five different categories, negligible, low, medium, high and severe. Companies within 0-10 are deemed negligible, 10-20 are deemed low, 20-30 are deemed medium, 30-40 are deemed high, while companies above 40 are deemed severe. The maximum ESG Risk Rating is 100. Subsequently,

companies can use their individual rating to benchmark with other relevant companies within their industry in order to help drive future ESG processes and improvements (Sustainalytics, n.d.).

Sustainalytics ESG Risk Ratings (n.d.) subsequently breaks down ESG related risk for an individual corporation into six different categories, Total Exposure, Manageable Risk, Unmanageable Risk, Managed Risk, Management Gap, and Unmanaged Risk. Total Exposure refers to the sum of risk exposed to through each material ESG issue, determined at sub industry level. Secondly, Manageable Risk refers to a subsection of the Total Exposure which managers at portfolio company level are able to influence and act upon to reduce risk. As opposed to Manageable Risk, Unmanageable Risk is just that, the second exhaustive part of Total Exposure that managers at portfolio company level are unable to realistically influence or coordinate around to reduce risk. Moreover, Managed Risk refers to the subsection of Manageable Risk that managers of a portfolio company are influencing, and is subsequently reflected in their strategies, policies, programs and quantitative metrics. Management Gap, is the opposite of Managed Risk, and the second exhaustive part of Manageable Risk, and refers to what management of a portfolio company is able to actively influence and coordinate around but for whatever reason not currently integrating into their strategies, policies, programs and quantitative metrics, among other things. By combining the Management Gap and Unmanageable Risk, Sustainalytics are able to derive the ESG Risk Rating through calculating the sum of the amount of unmanaged risk for each material ESG issue at sub industry level. All 138 sub industries collectively cover more than 350 different indicators and more than 1,300 data points (Sustainalytics, n.d.), with no industry using less than 70 indicators (Huber & Comstock, 2017).

Sustainalytics (2018) raises five different key features of the ESG Risk Rating, Innovation, Materiality, Granularity, Comparability, and Dynamic Weighting. The Innovation feature comes from the introduction of several new concepts, including exposure, unmanaged risk, and ESG issue beta. Materiality refers to the fact that the focus on financially material ESG issues makes the rating more meaningful and relevant. Granularity refers to individual modeling on sub industry level, which supposedly makes the rating more granular and insightful. Comparability; Sustainalytics claims that the ESG Risk Rating is comparable across sub industries, while at the same time providing best in class measurement for individual sub industries. Dynamic weighting refers to the continuous changing of weighting

to individual ESG issues as the importance of each individual ESG issue is changing over time.

Sustainalytics analyzed all rated companies in order to see the distribution of ratings at. Figure 3 shows the rating to be almost normally distributed, however with a skew to the right tail. A majority of firms can be found within the Low to High range.

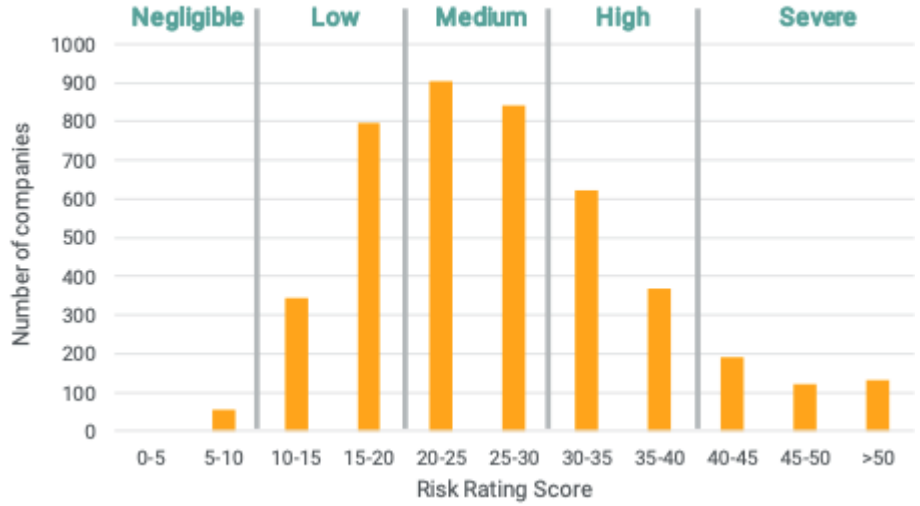


Figure 3: Score Distribution for Sustainalytics Rating. Sustainalytics (2018)

Sustainalytics review and update individual companies' ESG Risk Rating on an annual basis via a thorough research process. The sources for the update include corporate publications, news and other media, NGO reports and websites, multi-sector information sources such as Global Reporting Initiative and the Carbon Disclosure Project reports, as well as company feedback. Furthermore they include a review of ESG controversies as well as run the analysis by quality and peer review. Sustainalytics partially collects data directly from the analyzed company, which might open up a possibility for the company to provide misinformation to the research analyst. How Sustainalytics works with this issue is unclear, however, due to the amount of complementary external sources, it is our belief that the possible error is quite negligible.

ISS Quality Score

ISS, Institutional Shareholder Services, was founded in 1985 and consists of a group of companies focusing on servicing investors and corporates, and is majority owned by the

Deutsche Bourse Group. According to their website, ISS aims to empower companies and investors through high quality data, insights and analytics, in order to help them build for long-term and sustainable growth (ISS, n.d. a). The company employs more than 2000 people worldwide across 30 locations, in 15 different countries, while serving more than 3,000 clients including a large share of the world's leading institutional investors as well as large public companies (ISS, n.d. a). They are also active in several different business areas. These include Governance, ESG, Market Intelligence, Transaction Cost Analysis, Fund Services, Securities Class Action Services, Media, Economic Value Added, and ISS Corporate Solutions (ISS, n.d. a). ISS has a long track record and appears to be one of the leading data providers within its niche, according to ESG field experts (Huber & Comstock, 2017).

ISS Quality Score evaluates corporations and divides them into 10 deciles, with a corresponding score from 1 to 10, with 1 being the highest, and 10 being the lowest. ISS Quality Score is primarily focused on the Governance aspect of ESG, analyzing more than 200 different factors, divided into four overarching pillars: shareholders rights, audit & risk oversight, board structure and compensation. Weights between each factor can vary between regions based on variances in governance standards, ISS voting policy, and impact on governance practices. An example of factors are according to Huber & Comstock (2017) the following:

1. Board structure as in board, committee composition, board practices, policies, related party transactions, and controversies,

2. Compensation or remuneration such as use of equity, equity risk mitigation, non-executive pay, pay for performance, non-performance based pay, disclosure, termination and controversies.

3. Shareholder rights such as one-share one-vote, defenses against takeovers, and meeting and voting related issues

4. Audit and risk oversight such as external auditor analysis, and potential audit or account controversies.

ISS reviews their methodology annually. It is unclear whether or not there has been major changes during the period this article aims to study. Hence, there could be a degree of lower comparability between scores from 2014 and scores from the end of the time period; 2020.

Our analysis of ISS as an issuer of rating, as well as their methodology leads us to believe that the rating is of high enough quality and appropriately represents the governance aspect of ESG within the rated companies.

RobecoSAM / S&P Global ESG-Score

RobecoSAM was founded in 1995, originally operating as an independent firm focused on research within sustainable investing, accompanied by a long track record within the sustainability research space. Robeco's ESG Rating business was subsequently purchased by S&P Global in 2019 including the widely followed SAM CSA, Corporate Sustainability Assessment (S&P Global, 2019). S&P, abbreviated for Standard & Poor's, is a globally renowned corporation working with financial information, research and analytics. The measure will be referred to as the RobecoSAM score in this article, for simplicity.

In terms of methodology (S&P Global, n.d.) RobecoSAM score uses the CSA in order to assess 1,000 data points for participating firms. The firms answer 120 questions in the CSA, which is a partial basis for the calculation of the score. Subsequently, the findings based on the questions answered is segmented through a list of 30 criterias. After that, the raw data is aggregated into question scores and then into dimension scores which the score is apparently made up of. This is done through an algorithm and other techniques in order to ensure objectivity in the scoring process. Lastly, the final RobecoSAM score is produced through using predetermined weights based on financial materiality which vary across industries. In 2021, the CSA had individual weightings for 61 different industries allowing for very granular adaptation for individual companies. External factors outside of the CSA answered by the firms include, for example, corporate controversy screening, using media and third party sources to analyze potential controversies the individual firm is engaged in.

Based on our impression, in the previous literature analysis as well as studying the methodology, we are confident that RobecoSAM provides a good insight into the ESG performance of the company.

4.2.4 Calculating The Portfolio ESG Score

Based on the more in depth analysis of each of the chosen scores, congruence with the study can be confirmed. This leads to the mitigation of drawbacks of ESG scores, the calculation of a Portfolio ESG score.

When calculating a portfolio ESG score based on the three chosen ESG scores (Sustanalytics, ISS Quality rating and RobecoSAM), the differences in how the grading is carried out needs to be accounted for. Sustainalytics ESG-rating ranges from 1-100, where 1 is the best and 100 is the worst. The ISS Quality rating also has 1 as the best score, but it ranges from 1-10. RobecoSAM goes, like Sustainalytics, from 1-100 but has 100 as the best possible score and 1 as the worst. To adjust for the differences, the ISS Quality Score was converted into a 10-100 scale. This adjustment is not perfect since it does not include ratings under 10. The conversion performed is shown by the equation below.

$$\textit{Adjusted ISS Quality Score} = (11 - \textit{Actual ISS Quality Score}) * 10$$

The ESG-rating by Sustanalytics was also converted. How this was performed is shown in the equation below.

$$\textit{Adjusted Sustainalytics ESG Risk Ratings} = 100 - \textit{Actual Sustainalytics' rating}$$

The portfolio ESG score will be calculated as a mean of the Adjusted ISS Quality Score, the Adjusted Sustainalytics ESG Risk Ratings and RobecoSAM. The portfolio ESG score will thereafter be calculated for each of the companies in the sample and be the ESG score utilized in this paper.

4.2.5 Data Collection

The data for this study was collected via Bloomberg and the Bloomberg API. The central data used for acquiring subsequent ESG ratings was the ticker. A ticker is short for ticker symbol, which is a short abbreviation of companies names used to identify a unique publicly traded company on a specific stock exchange. Initially, the study was focused on a time frame between 2000-2020, and was intended to measure the change in ESG performance for a company that was public, acquired and taken private by a private equity firm and then

subsequently made public again through listing on a stock exchange. However, the initial data retrieved through Bloomberg gave a very low sample size of firms due to the extremely narrow set of criteria, with an even smaller subset that actually had an ESG rating before and after the period of private equity ownership. The choice of method was changed to looking at companies going public with a private equity exit at IPO and looking at the first available ESG score within up to two years after IPO date. An analysis of the distribution of scores across the period showed that there were virtually no public ratings accessible until 2014, hence the time period was shortened to cover 2014-2020 to secure adequate sample sizes. The choice of setting two years after IPO as the upper bound for accepting an ESG rating was based on our assumption that ownership effects can be delayed from initial decision to being reflected in the ESG rating. The initial plan for methodology can be illustrated in Figure 4.

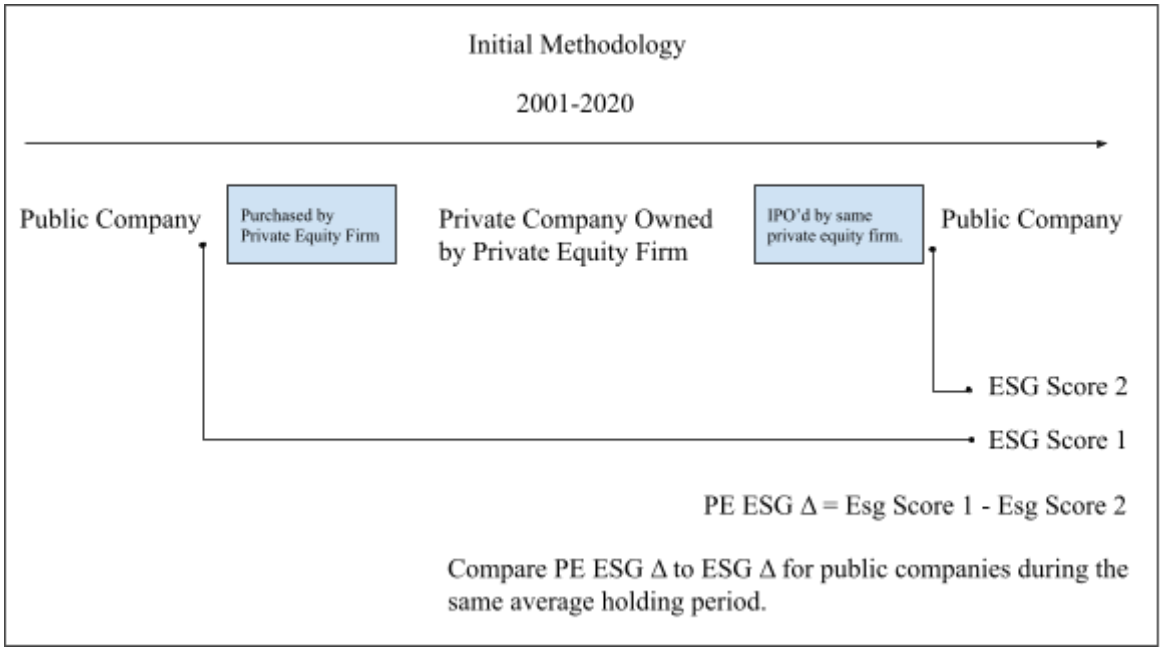


Figure 4, Initial Methodology (authors' own illustration)

Two separate data extraction processes were done, one for the PE-backed group and one for the non-PE Backed group. Due to far fewer IPOs with a private equity firm backing it and selling shares in the IPO than the non-PE Backed Group, the amount of entries for the respective groups were very different. The PE Backed group covered circa 2,700 IPOs worldwide during 2014-2020, with only a subsection of those ever getting one or more ESG ratings. The non-PE Backed group covered approximately 20,000 IPOs worldwide during

2014-2020. Due to restraints with extracting ESG data for such a large amount of tickers from the Bloomberg terminal (as mentioned in 4.2.2), we did a random sample of 5,000 IPOs from the larger population of approximately 20,000 IPOs. Similarly to the PE Backed group, only a subsection of those 5,000 had one or more ESG scores for the three ratings we looked at. The final sample size for the PE backed group was 338, and for the Non-PE backed group was 340. The updated methodology can be summarized in Figure 5.

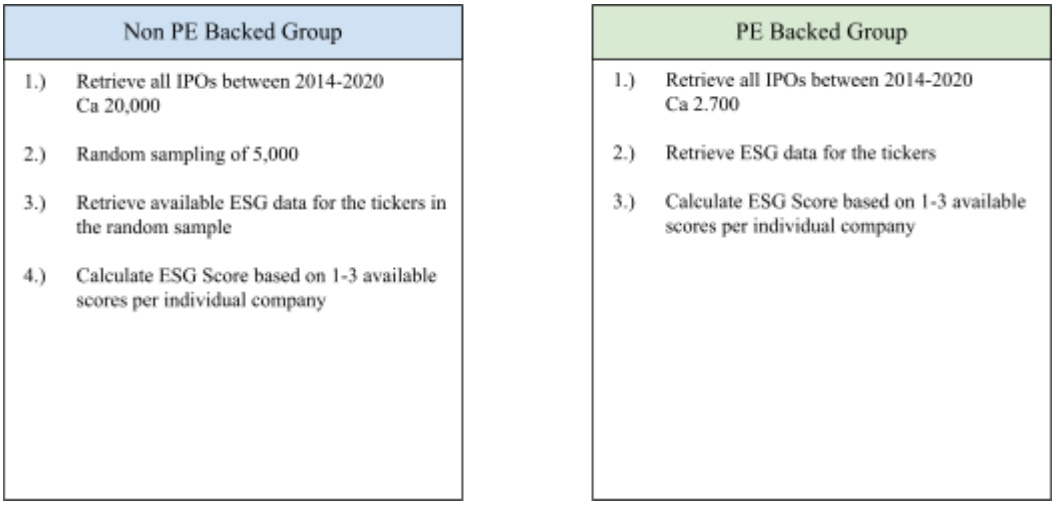


Figure 5, Updated Methodology (Authors' own illustration)

Another note to mention is the choice of methodology is being driven by the lack of ESG ratings for private companies. A more representative picture of the effect of private equity ownership on ESG performance could be shown in case more ratings were available for companies under private equity ownership. This motivated the choice of looking at private equity backed companies post IPO in order to access a reasonable sample size. However, this comes with its own problems.

The main goal of this thesis is to study the entire population of PE backed firms, and not just the PE Backed companies that have exited through an IPO. This means that PE backed firms is the population from which the sample of PE backed companies will be drawn from. However due to the data not being available in a reasonable amount for companies when any other exit strategy than IPO was used, the PE-Backed Group sample represents a non-random sample while the Non-PE backed group was randomly sampled. As an effect of not being able to randomly sample the PE-Backed Group, the results can not be confidently ascribed to the

entire PE backed population, but rather serve as an indication of the larger PE Backed population that could warrant further research in case of significant results.

4.3 Data Analysis

When analysing the data, a good place to start is with what is discussed in virtually all statistics textbooks, central tendencies. This will provide a general impression of values that can be seen as common. In business research the three most common ways to measure central tendencies are according to Saunders, Thornhill and Lewis (2019):

- Mode
- Median
- Mean

Once the central tendency is found, the dispersion needs to also be found. This shows how the data is spread around the central tendency. The two most commonly used dispersion measures according to Saunders, Thornhill and Lewis (2019) are:

- Interquartile range
- Standard deviation

Since there won't be a need for comparing the relative spread of data between distributions of different magnitudes, a coefficient of variation won't be calculated (Saunders, Thornhill and Lewis, 2019).

When the central and dispersion tendencies have been described, the statistical significance of the findings from the sample needs to be assessed. Out of the two main groups of statistical tests, non-parametric and parametric, parametric statistics will be utilised since the data in this study is numerical.

Before starting with significance testing, a test for normality needs to be performed in the cases where $n < 30$ in accordance with the central limit theorem (Kwak and Kim, 2017). For this Kolmogorov-Smirnov test will be used.

In order to test the statistical significance of the data there were two possibilities, a classic Two-Sample T-Test or the Mann-Whitney U test. The Mann-Whitney U test is a non-parametric test that can be used when the data are skewed or the sample size is small. The choice of which test to choose is dependent on if the data is normally distributed. If the data is normally distributed then the Two-Sample T-Test can be used (Kim and Park, 2019). If the data is not normally distributed, the Mann-Whitney U test will have to be used (Saunders, Thornhill and Lewis, 2019).

Since it turned out that the data was normally distributed, a two sample t-test will be used in order to compare if there is a significant mean difference between the PE-Backed Group and the Non-PE-Backed Group. The problem of the PE-Backed Group not being randomly sampled does not hinder the usage of a two sample t-test according to Björn Holmquist (interview, 24 May 2021) who approved the two sample t-test being used to assess the statistical significance of the data for this study. With the method for assessment of statistical significance established, the methodology can move on to effect size.

Because it is not unusual for a test to be significant in the world of statistics, but not in the real world, the effect size will be calculated. The measures that may be used are:

- *Cohen's d*
- *Glass's Delta*
- *Hedges' G*

The reason two alternative measures beside *Cohen's d* is used is to compensate in case of differences in standard deviation (*Glass's Delta*) and sample size (*Hedges' G*). The results are classified as having a small ($X > 0.2$), medium ($0.2 < X < 0.8$) and large ($X > 0.8$) effect in accordance with Cohen's suggestion (Cohen, 1992).

4.4 Validity and Reliability

When conducting research, it is of paramount significance to assure that a high quality is maintained throughout the full process of research (Silverman, 2011). To ensure a high quality, the process of gathering information as well as interpreting said information needs to be valid and reliable. The reliability refers to the ability of reperforming the study in a

comparable way and achieving results consistent with the finding of this paper (Kumar, 2014).

For this paper, the literature used and the theoretical frameworks presented were analysed attentively and are believed to be from reliable and satisfactory sources. The articles used as theoretical ground for this paper were published in journals which are perceived possessing a high degree of respect. The journal's systems for peer review are assumed to be credible and conclusive. The anecdotal evidence was singled out based on a tradeoff between credibility of the author and the impact of the author's statement on the construction of the hypothesis. To give an example of how we reasoned around this tradeoff, one source that emphasized very, very strongly how private equity firms were detrimental to ESG was removed due to complete lack of credibility of the author due to it being an anonymous blog post with unclear motives.

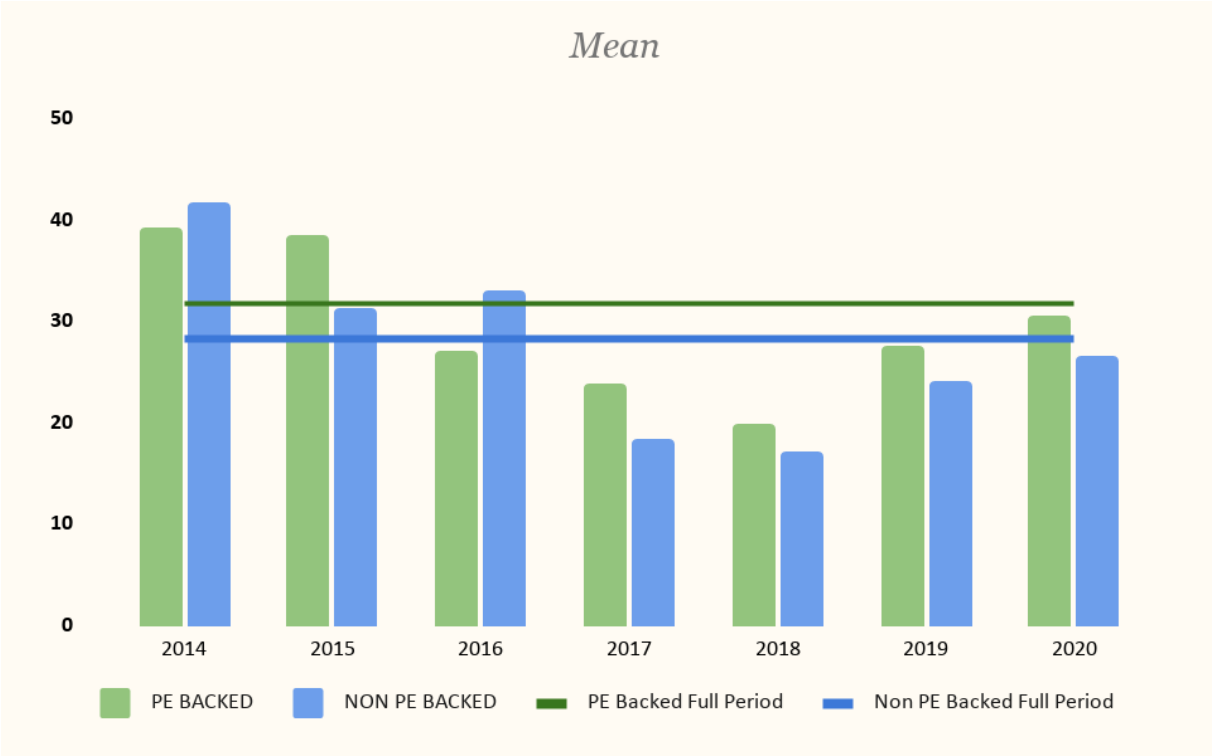
As for the data, the quality was assessed in 4.2.3 and is believed to be reliable. The data is available through Bloomberg.

Something which needs to be addressed is the lack of clear and commonly adapted definitions. It has already been addressed, but the notion of "Sustainability" and how to measure it is still opaque and subjective, even though a large number of literature covers the subjects. Recognising this, the subject of this paper is still believed to have a sufficiently strong theoretical rooting for it to be expedient for analysis and discussion, thanks to the pertinent literature from credible authors. With this said, it is believed that this study is both valid and reliable.

5 Empirical Results

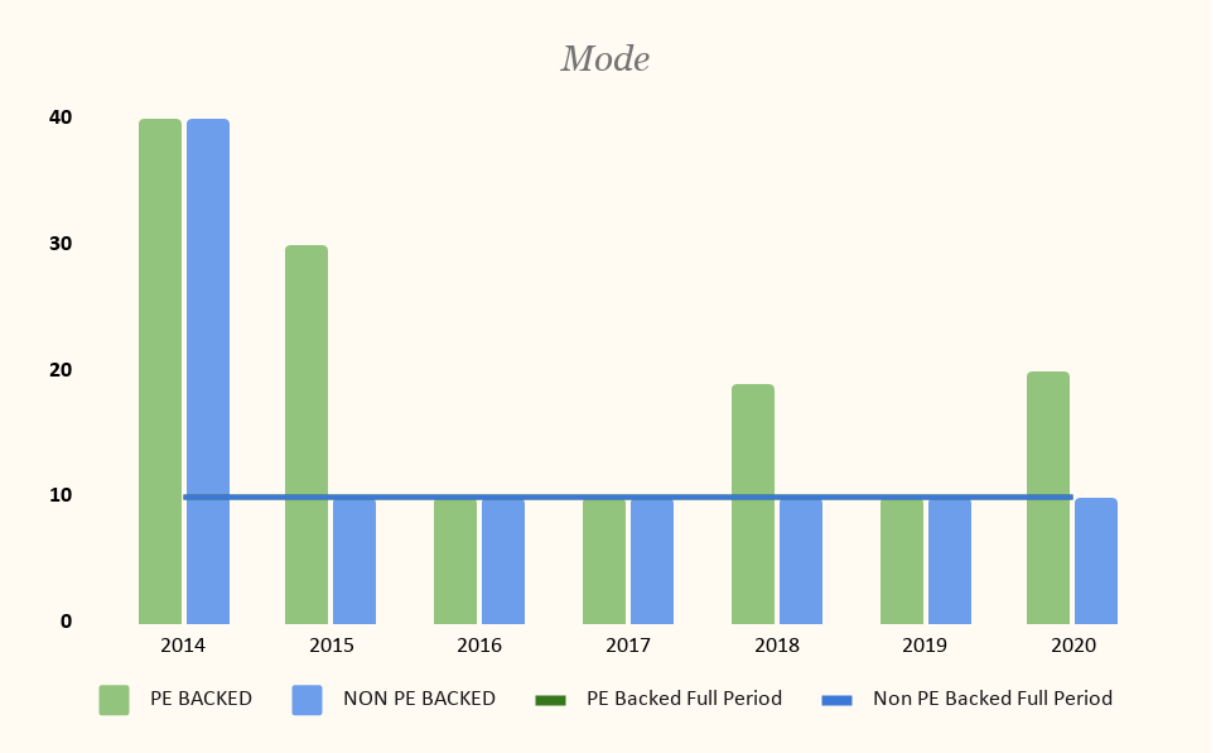
This Chapter presents findings which are considered relevant to the purpose of understanding the studied hypothesis of if PE ownership before IPO results in a performance difference, either positive or negative, on the subsequent ESG rating of a public firm compared to non-PE ownership. A mono method quantitative approach, as presented in the methodology, is used and is in accordance with the structure presented by Saunders, Thornhill and Lewis (2019) and the stated methodology of data analysis. First normality is examined, then the statistical significance is assessed, and lastly the effect size is calculated. For assessing normality central tendencies and dispersion are analysed along with the utilisation of a Kolmogorov-Smirnov Test of Normality. Varying degrees of normality were seen across the time period, however, the large sample size supports pursuing a two sample t-test to assess the statistical significance without significant loss of statistical power. It was found that PE Backed Group performs higher in terms of ESG Score than the Non-PE-Backed Group. Lastly a Cohen's d and Hedges' G test of effect size was used. It was found that the effect size of the finding is small.

Starting out with assessing the normality, we can see that the data exhibits central tendencies, both on a yearly basis and over the full time period. Beginning with the average, both the PE backed and the Non-PE backed group showed similar results. This also holds true for both groups over the full time period examined. As can be seen in Graph 1, there is a downward trend until 2018 when the average portfolio ESG score starts to climb again. Both of the groups follow this trend and no unexpected bumps or dips occur. From 2014 to 2016 the group with the higher average ESG score fluctuates, starting with the Non-PE backed, going to PE backed and then back to the Non-PE backed group. After 2016, the PE backed group shows a slightly higher average portfolio ESG until the end of the studied time frame (2020). The slightly higher average portfolio ESG score for the PE backed group also holds when comparing both the groups over the full time period, as showcased by the two straight lines, allowing for the comparison of each group each year against each groups portfolio ESG score for the full period.



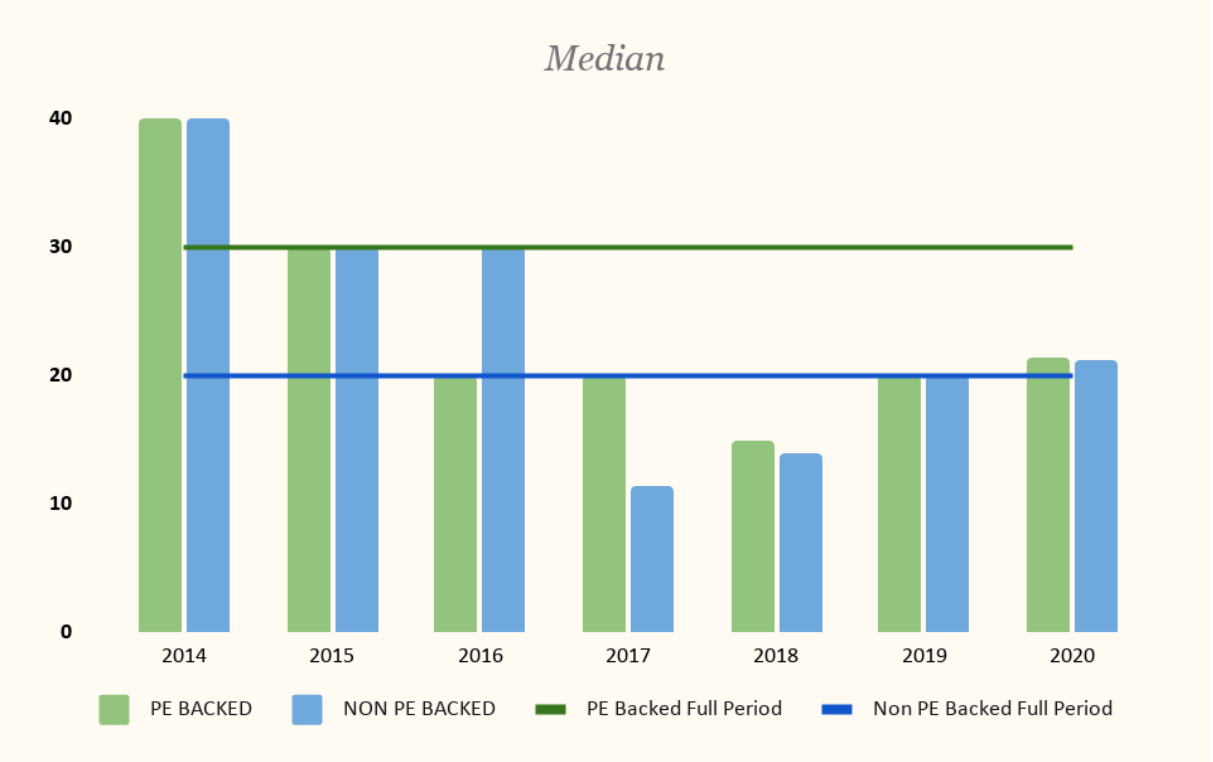
Graph 1, Mean of Portfolio ESG score per group per year and full time span

Unlike the mean, the mode does express some differences, both between the groups of the same year as well as between the years. There is a sharp drop of the mode for the Non-PE backed group from 2014 to 2015. The PE backed group also experienced a drop, but not quite as dramatic. However, from 2015 to 2016 the PE backed group dropped down to the same level as the Non-PE backed group. The modes of 2016 and 2017 are low but identical for both groups. During 2018 the PE backed group saw an increase only to drop down again during 2019, resulting in both groups once again having the same mode. The PE backed groups mode increases during 2020. Interesting to note is that in the cases that the modes differ (2015, 2018 and 2020) it is always the PE backed group that outperforms the Non-PE backed group. As for the mode for both groups over the full time period, they are identical.



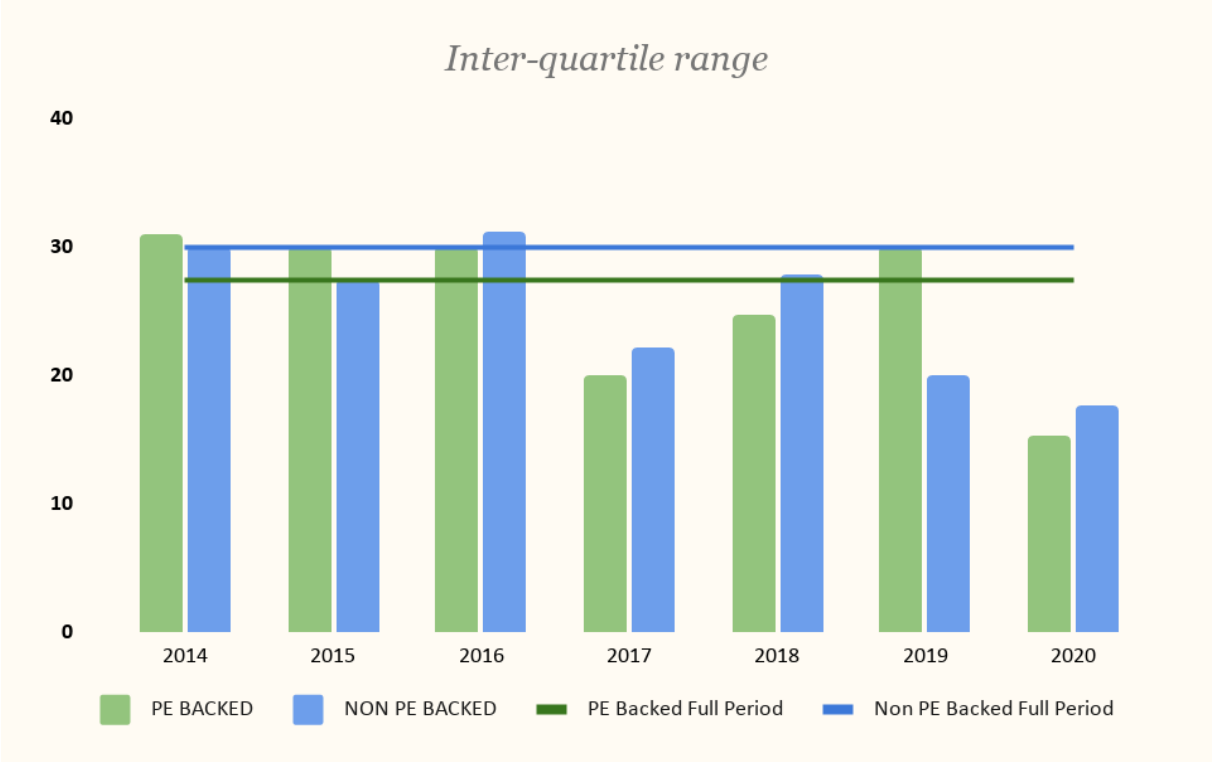
Graph 2, Mode of Portfolio ESG score per group per year and full time span

As for the median, it follows the same trend as the mean with decreasing values till 2018 when the trend turns upwards. Overall the median for both the PE and Non-PE backed groups are similar across each year. Looking at the full time period, the PE backed group displays a higher median than the Non-PE backed group.



Graph 3, Median of Portfolio ESG score per group per year and full time span

With central tendencies covered, the dispersion needs to be analysed before normality of the data can be assumed. The first measure of dispersion covered here is the interquartile range. As can be seen, the range of the middle half of the data is similar for both groups across the full timespan as well as for each year. The only bigger difference is in 2019 where the interquartile range of the PE backed group exceeds that of the Non-PE backed group.



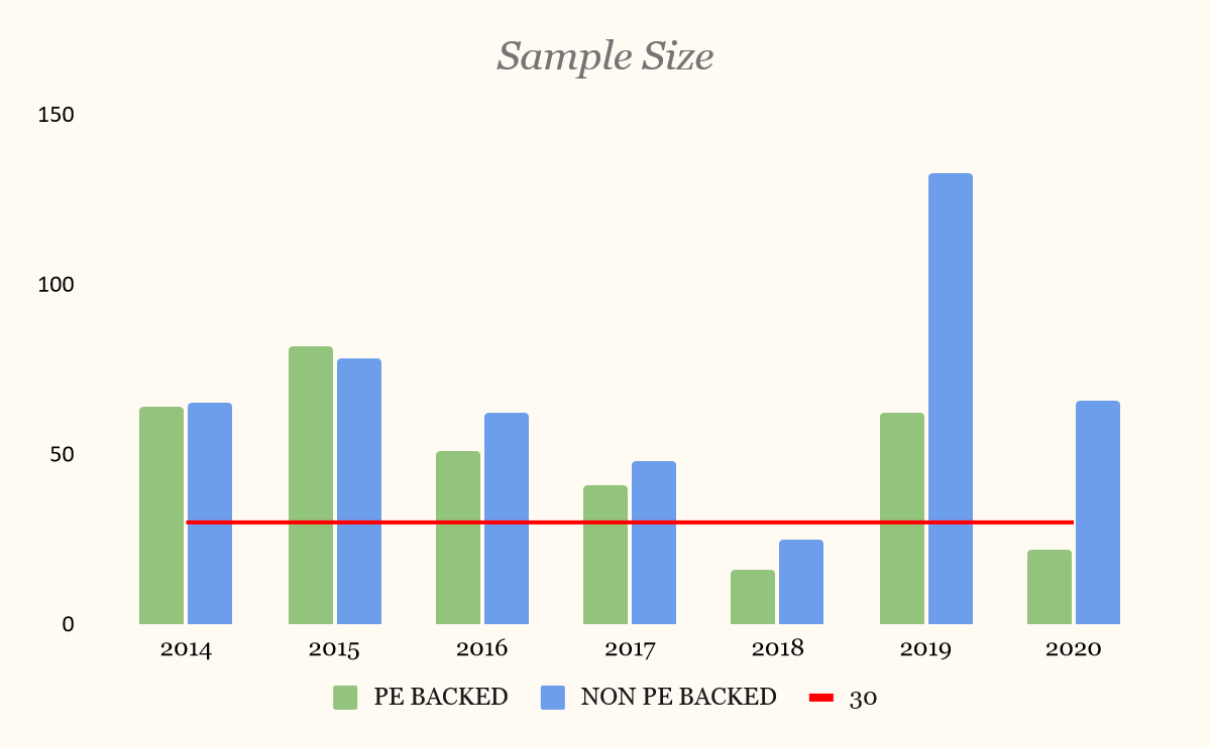
Graph 4, Inter quartile range of Portfolio ESG score per group per year and full time span

Another measure of dispersion is standard deviation. Also the standard deviation seems to follow the same trend as the mean and the median with decreasing values till 2018 when the trend turns upwards. The standard deviation of both the PE backed and the Non-PE backed group is similar in each year. There are some larger than normal differences for Non-PE backed firms in 2016 and PE backed firms in 2020, but the differences are not that large. When it comes to the standard deviation for both the groups for the full time period, they are very similar (PE backed = 21.546, Non-PE backed = 21.483).

Graph 5, Standard deviation of Portfolio ESG score per group per year and full time span

Based on the analysis it appears that the dispersion, as for the central tendencies, are similar on a yearly basis as well as for the full time period. This in combination with the central limit theorem, which says that normal distribution can be assumed at a sample size of 30 and above (Kwak and Kim, 2017) will result in the data being assumed to be normally distributed if the sample size is above 30.

Looking at the sample size, it can be seen that normality can be assumed according to the central limit theorem for all years (including the full period) excluding PE backed 2018 and 2020 and Non-PE backed 2018. In order to confirm whether or not PE backed 2018 and 2020 and Non-PE backed 2018 really is normal or not, a Kolmogorov-Smirnov Test of Normality was used. Having normality as the null hypothesis it was found that PE backed 2018 and 2020 and Non-PE backed 2018 is normally distributed. Therefore the normality assumption holds for all data. Worth noting is that even if normality was violated, a two sample t-test will still produce results with a high degree of accuracy given that sample size is high, which in our case it is (Boneau, 1960).



Graph 6, Sample size per group per year with n=30 marked

The Kolmogorov-Smirnov Test of Normality

		PE BACKED	NON PE BACKED
2018	D	0.20465	0.19193
	P	0.45459	0.27847
2020	D	0.23809	
	P	0.13968	

Table 1, Kolmogorov-Smirnov Test of Normality

Since the data is normally distributed, a two sample t-test was performed in order to assess the difference between the two groups in the constructed ESG Score presented in the Data section, which summarizes all available ratings for a company into a single score. All ESG Scores for the respective time periods were analyzed for each. The two sample t-tests reported the following information from the respective groups.

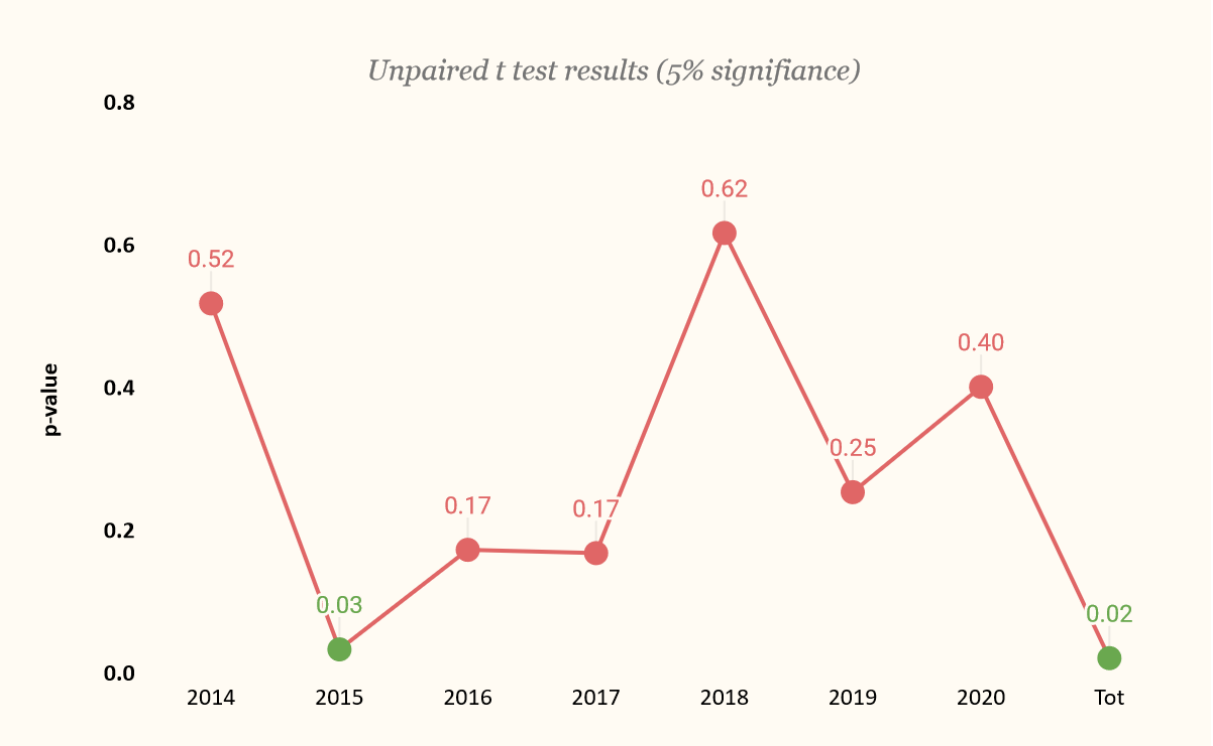


Table 2, Result of Two Sample T-Test

The two-tailed P value for the full time period equals: 0.0214, hence showing statistically significant results at a 5% significance level. This allows us to reject the null hypothesis stating that there is no difference in ESG score between PE backed and Non-PE backed at a 5% significance level. The mean difference between the PE Backed Group and the Non-PE Backed Group amounted to a positive 3.5, implying that the PE Backed Group performs higher in terms of ESG Score than the Non-PE-Backed Group.

There was also a statistically significant difference between the PE and Non-PE backed group in 2015, with the p value at 0,0337. Besides that, there was no statistical difference between PE backed and Non-PE backed any other year.

Lastly the effect size was calculated. Out of the three measures listed in the methodology, Cohen's d and Hedges' G are the ones of interest. The reason Glass's Delta is not needed is due to the low differences in standard deviation, meaning that there is no need to compensate for that. As can be seen in *Graph 6*, there are differences in sample size for the years 2014, 2015, 2019 and 2020, so Hedges' G will need to be used for those years.

Effect Size		
	Cohen's d	Hedges' g
2014		0.11
2015		0.34
2016	0.26	
2017	0.29	
2018	0.16	
2019		0.18
2020		0.21
Total	0.16	

Table 3, Effect Size for T Test with only the years relevant measurement

As can be seen, the effect size is small for the full time period and for the years 2014, 2018 and 2019. For 2015, 2016, 2017 and 2020 the effect is of medium size. The full effect size with all three measurements for all time periods can be found in appendix B.

To conclude, normality could be established and a two sample t-test was utilised to assess the statistical significance. It was found that PE Backed Group performs higher in terms of ESG Score than the Non-PE-Backed Group. The effect size of this result was however found to be small.

6 Analysis and Discussion

In this chapter the results presented in the previous chapter are analysed and discussed. First the result is analysed and discussed, both for the full time frame and on a yearly basis, as well as on a relative and an absolute basis. Then the usefulness of the results as a whole is discussed from the perspectives of limitations, in comparison to another study and ESG Scores. The possibility of PE firms just checking boxes, and the trustworthiness of the underlying ESG scores are also discussed before finishing with discussing the implication of this thesis.

The analysis of the results, mainly the two sample t-test, shows that there is a significant difference in ESG performance between private equity backed companies that subsequently went public during the time period 2014-2020, compared to other non private equity backed companies who went public during the same period. Although the effect size of this difference is not large, it still provides an indication that private equity ownership likely performs relatively well in terms of ESG. However, worth noting is that only 2015 of the individual years compared recorded a significant difference. The reason for this is believed to largely be driven by the lower sample sizes. Further development within the ESG reporting field in terms of data availability would open up for granular comparison over shorter time intervals.

The low sample size of each year can also help to provide an explanation when viewing the average portfolio ESG score not only on a relative basis, but also from an absolute basis. When viewing the average portfolio ESG score from an absolute basis we see an initial decline in performance up until 2019, where the trend is reversed. Based on the research it was believed that a steady trend upwards would be seen. One reason the initial decline is seen could be because the companies most willing to jump on the trend of ESG might be the companies that know they will perform well, and less sustainable companies and industries only follow when the pressure to get an ESG rating increases. It could also be due to differences in prevalence of each underlying rating of the Portfolio ESG Score. Of course, these kinds of variances might also be the byproduct of, as already hinted at, the smaller

sample size for each individual year. Furthermore, it is interesting to see that the years where Non-PE Backed outperformed the PE Backed group were earlier in the time period, 2014 and 2016, while the PE group consistently outperformed after 2016. This falls in line with the evidence communicated from private equity professionals.

An issue that mitigates the usefulness of the results of this thesis is the fact that the measuring of ESG performance has been limited to the share of private equity backed companies that went public. It is estimated that only a very small share of private equity backed companies ever do an initial public offering, Caselli (n.d.) claims in his course on private equity and venture capital that only 1 out of 100 private equity investments exit through an IPO. This means that the companies evaluated in the study might not be representative for all private equity backed companies in terms of ESG performance. The main reason for this is because companies that go public need to, according to PwC (n.d.), meet certain prerequisites such as compliance and regulatory requirements as well as effective and regular communication to investors. On top of that, in order to gain a favourable valuation, companies generally need to either have a strong track record or show high expected growth in the future, which is not the case for all private equity investments during their lifetime. It is reasonable to consider that successful companies that gain a favourable valuation in the public markets might have ESG performance. Hence, an indication that the results are less indicative of the PE backed population.

In essence, the profile of companies going public most likely differs from companies that do not go public. Hence, it is our belief that there are variances in ESG performance across the three main options available to private equity firms looking to make an exit from their investment (trade sale, initial public offering, and secondary buyout) which reduces the usefulness of our results since we can not confidently extrapolate the overperformance in ESG to the private equity backed companies that did not use IPO as an exit strategy. Although, this was expected on the basis of our methodology due to the inability of randomly sampling the larger PE backed population.

Even with a limited applicability, the results of the study might be surprising for some, at least from a US perspective. High Meadows Institute (2016) analyzed the level of ESG integration across several asset classes for the US markets in 2016. Public equity recorded 41% ESG integration across the total assets under management, whereas private equity recorded only

15% ESG integration across the total assets under management. With solely that data in mind, it is surprising to see overperformance from the private equity asset class and leads to three logical implications. Either that the subgroup of private equity studied is not representative for the broader private equity population, or that the private equity industry has rapidly caught up in ESG expertise and performance in the latter years of the study, or that there is a divide between the definition of ESG integration and ESG performance as measured by our study. Our impression of evidence from industry experts and non-academic sources leads us to lean more towards the two latter statements.

An important point to note about the results is that the positive effect that PE ownership before an IPO has on the subsequent ESG rating of a public firm compared to non-PE ownership, is just that: an effect on the ESG rating. PE firms are incentivized to work with ESG, not sustainability per se. Even though ESG is used as a measure for sustainability, it is important to note that they are not perfectly aligned. Since a good ESG score is what is incentivised, it needs to be taken into account that PE firms might not be more sustainable, but just better at fulfilling the requirements for achieving a higher ESG score. This is indicated by both Bracking (2012) and Long and Johnstone (2020) as covered in the literature review.

How well sustainability and ESG scores are aligned is another point worthy of discussion. There is potential for misreporting of ESG performance and of subjectivity and bias in each individual measure used to aggregate our Portfolio ESG Score. The analysis of the ESG ratings used shows the use of rule-based scoring, or similar elements, in order to reach objectivity between individual ratings. However, we have not analyzed the truthfulness in these statements given by the rating firms themselves, which have a motive of claiming objectivity. Therein lies an underlying risk for the study to not accurately represent each firm's real ESG performance in case the rating firms claim of objectivity does not uphold.

Another interesting factor in regards to ratings, which was previously mentioned in 4.2.2, is to discuss the change in methodology and rigidity of ratings over time. If the rating agencies make significant changes that would lead the same company to retrieve two different ratings depending on the year of rating even if the company has not changed, then that could lead the results to be less reliable. Analysis of if the methodology of the rating agencies change over time is outside of the scope of this study, although there should be a motive for the rating

agencies to maintain a comparable rating over time in order to represent changes in ESG performance. However, the firms are also likely incentivized to improve their methodology to build a competitive advantage, and needs to balance these two issues. We acknowledge the lack of rigidly analyzing methodology change over time to be a minor flaw of our study.

Lastly is the implications. It is our belief that the results presented in this thesis can help bring clarification to the ongoing and rather heated debate around private equity ownership. The public view of private equity ownership is arguably quite poor, and even if these results might not show if private equity firms are doing enough, they do show that PE ownership before an IPO exit is associated with a positive performance difference on the subsequent ESG rating of a public firm compared to non-PE ownership. To highlight this in the broader debate of investment, the results can help make more accurate assessments when discussing investment choices between different asset classes, something that is increasingly relevant for public funds, which likely weigh sustainability more into their investment criteria. However, each pension fund, or limited partner, can not view the findings in this thesis as a direct labeling of all private equity firms as the better asset class for ESG, as there likely are overperformers and underperformers within the asset class. A sizable share of public firms do most likely still outperform a sizable share of the private equity firms in terms of ESG performance. Strong due diligence by pension funds and limited partners will continue to be important in assessing each individual private equity firm's ESG strategy, and help remove the private equity firms that are underperforming in ESG. This will hopefully continue to raise the absolute level of ESG performance within the private equity asset class.

Concluding our analysis, it is clear to us that there is a strong indication that the private equity industry has increased their focus on ESG, going from simply being ESG compliant to actively working with ESG in their portfolio companies. However, the analysis of the results demonstrate a need for further research to dive deeper into the areas that could potentially misrepresent the result. Hence, one should be careful with using this thesis as proof that private equity is more sustainable that public equity, because that is not established. The private equity industry does however have incentive to drive transparency around sustainability in their business in order to meet the critiques from the public, assuming that the higher ESG performance is based on real change in the portfolio companies.

7 Conclusion

7.1 Research Conclusion

This paper studies the difference in ESG performance for private equity backed companies that undertook an IPO exit during the year 2014-2020 with companies that undertook an IPO in the same time period but without a private equity firm owning shares before the listing. The ESG performance is measured by three different ratings, Sustainalytics, RobecoSAM, and ISS Quality Score, which were subsequently used to design a single portfolio ESG Score which was averaged between the two groups to find the one with higher overall ESG performance. This is studied through a two-sample t-test, which showed a statistically significant difference in ESG Score between the two groups with the private equity backed companies performing roughly 10% higher than the comparator group on a scale from 1-100.

The results from this study can serve as an indication of the effects of private equity ownership on ESG performance and as a base for further research. Stakeholders in private equity firms, such as a limited partner or society through a regulator, can use the study as a basis for decision making regarding whether or not to invest in private equity as an asset class or as a basis for regulation of the private equity industry from an ESG perspective. The opponents of private equity can use this study to gain a clearer picture of what likely is and is not a real problem with the asset class, to give accurate critique. The private equity industry can see this as a testimony to increased efforts of driving ESG performance in their portfolio, however, only as an indication when discussing portfolio companies outside of the studied IPO subgroup. Proposed further research includes comparison to other ownership forms as well as diving deeper into private equity ownership effects on individual ESG factors, which is expanded on in the final chapter.

7.2 Future Research

It is our belief that the results from this study can provide further interest and warrant action on research into the effects of private equity as an ownership model from a sustainability perspective. Preferably, the next phase of research would take an in depth look at how private equity firms drive sustainability in their portfolio companies, and finally compare private equity's sustainability impact with other forms of ownership such as public ownership, family businesses, founder-led businesses, and venture capital.

Secondly, an interesting continuation of research within the field would be to look at performance within individual ESG factors for preferably all PE-backed companies since there could be a scenario where for example PE firms are very strong within governance, and weaker in social and environmental, but still comparably average when aggregating these into a single ESG metric such as Sustainalytics ESG Risk Score. Previous research by Filbeck, Filbeck & Zhao (2019) on public companies have shown that the market has rewarded companies achieving strong governance scores while penalizing companies achieving stronger environmental scores, and finally, showing ambivalence towards companies achieving strong social scores. This would indicate that quality of governance provides a more attractive risk reward profile for an investor in public companies. However, public companies are different by nature, and that same premium created in the public markets might not always exist in the private markets. A reason for this could be the fact that public companies have less active owners than private equity backed companies, since private equity firms are often very involved in their firms, likely being less willing than a public owner to pay a higher price for stronger governance. Research of that nature would require access to more governance data for private equity backed companies, not just previously private equity backed companies that were subsequently IPO'd as in the case of this article.

Furthermore, we suggest diving deeper into how private equity firms of different sizes work with ESG related topics. Previous research analysing larger private equity firms, in order to illustrate the major strategies in regards to ESG topics in portfolio companies, have been done by for example Zeisberger (2014). However, the ESG field is rapidly evolving, especially in a private equity context, which warrants at minimum a similar study for the current decade, but preferably going deeper and measuring in detail how private equity firms work with each

individual ESG factor as well as looking at potential differences in that work based on private equity firm size. A larger private equity firm will most likely have more resources to actively engage in developing operational ESG performance post-investment as well as measuring and assessing ESG factors in the due diligence phase. However, there seems to be a trend with up-and-coming private equity firms using ESG expertise as a differentiator as a general partner compared to larger incumbent private equity firms. ESG expertise can likely be a strong differentiator both when raising funds from limited partners but also for socially conscious corporations who incorporate ESG in their business model. An example of an ESG-focused private equity firm is Summa Equity, which has seen strong fundraising for their first and second fund, closing 440 million SEK in 2017, and 610 million SEK in 2019 respectively (Summa Equity, 2019). The results from the above mentioned research topic could be very helpful as a proxy for limited partners deciding between which private equity fund to invest in, while keeping ESG factors in mind. Furthermore, other stakeholders, such as society through regulators, could gain a clearer understanding of the role and impact of the private equity ownership model.

An overview of suggested research topics have been summarized below.

Topic	**Previous Related Research**	**Reason**
Comparing Industry Allocation between Private Equity and Public Equity	None found.	Finding a difference in industry allocation could help explain if the difference in ESG performance is driven by industry choice, given that industries have different ESG performance.
Comparing Geographical Allocation between Private Equity and Public Equity	Hoellermann (2020) found asset managers ESG affinity to vary across regions, which indicates differences	Finding a difference in geographical allocation could help explain if the difference in ESG performance is driven by geographical choice, given that geographies have different ESG

	in ESG performance at portfolio company level across geographies.	performance.
Comparing Size Differences between Private Equity and Public Equity	Hoellermann (2020) found asset managers' ESG affinity to increase with asset manager firm size, which often correlates with investing in larger companies, indicating a difference in ESG performance at portfolio company level across firm sizes.	Finding a difference in geographical allocation could help explain if the difference in ESG performance is driven by geographical choice, given that firms of varying sizes have different ESG performance.
Case study sampling all private equity backed companies, performing ESG evaluation, and comparing to public equities for the same time period.	This thesis.	Repreforming this study using a random sample from the private equity backed population could help clarify if the results from this study can be seen across the entire asset class. This would require support from ESG rating firms and a longer time frame than this study had.
Case study of similar companies divided across private equity and public equity in order to assess	This thesis.	Extrapolating the effects of private equity ownership by keeping constant other variables that correlate with ESG performance. Large scale

ESG performance increase under private equity ownership.		quantitative study is not feasible due to lack of access to ESG data on private companies.
Case study evaluating individual ESG factors compared to public equities.	Filbeck, Filbeck & Zhao (2019) evaluated public equities' individual ESG factors and stock price performance.	Giving insight at a granular level how private equity firms compare on each individual aspect of ESG. Results could support policy decisions related to a specific factor, and not ESG as a whole.
Construction of a harmonized framework for measuring and evaluating ESG performance based on current data sources.	Cort & Esty (2020) describe issues with the current state of sustainability measurement frameworks.	This would help with reaching a capability of accurately assessing ESG and sustainability performance for companies differing in nature by geography, industry, et cetera.

Table 4, Table Listing Future Research Ideas

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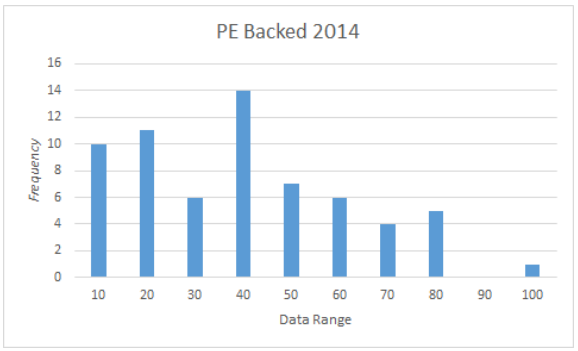
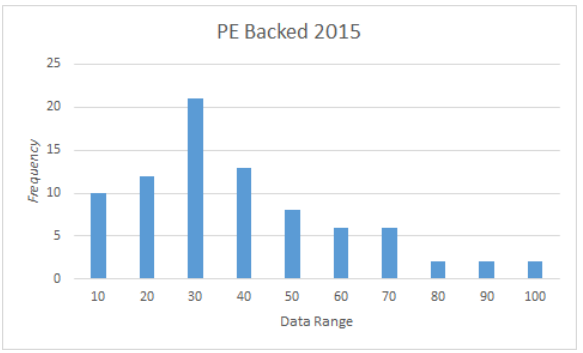
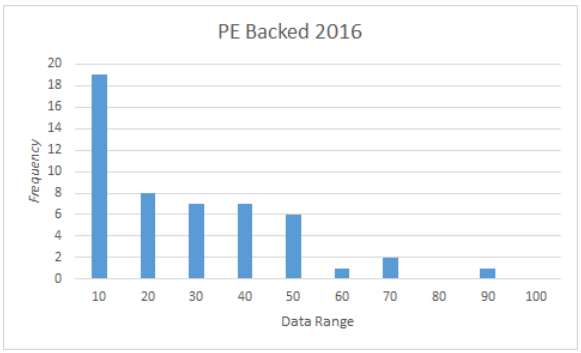
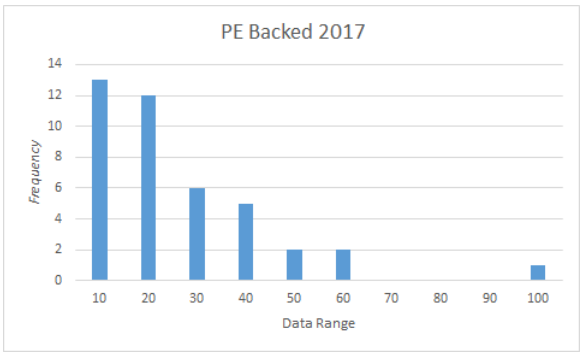
Appendix A

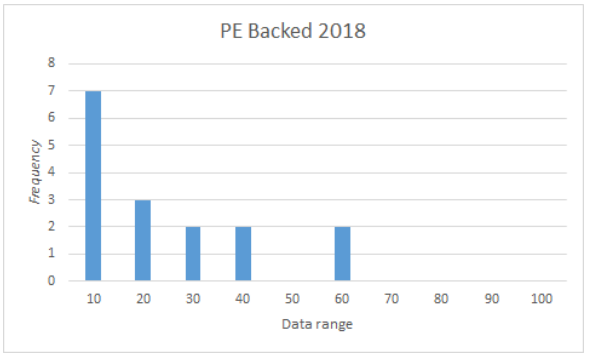
Distribution of the portfolio ESG score in bins of 10 with the displayed number being the highest number in that bin.

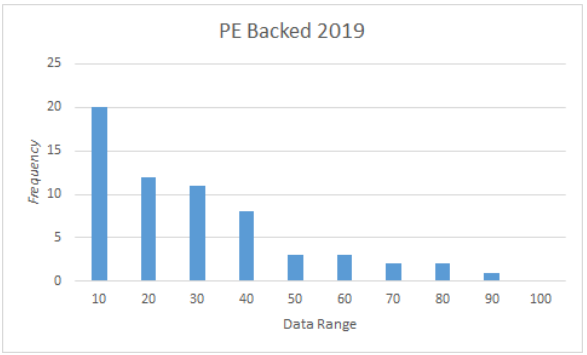


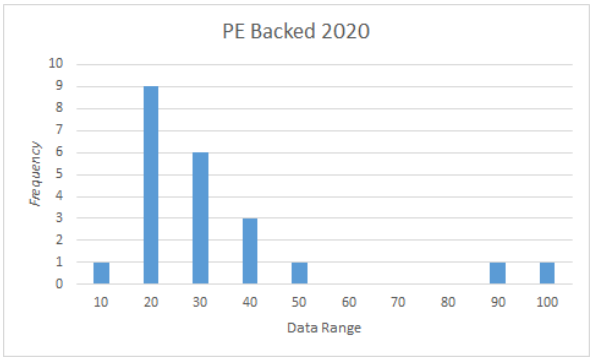


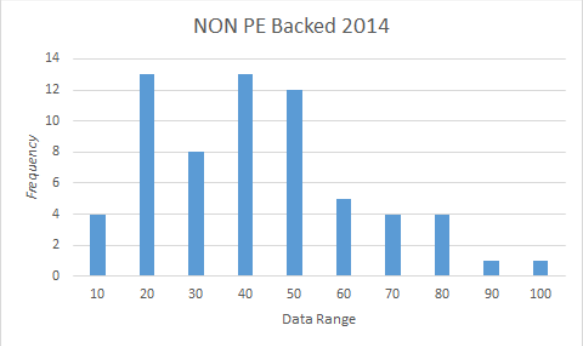


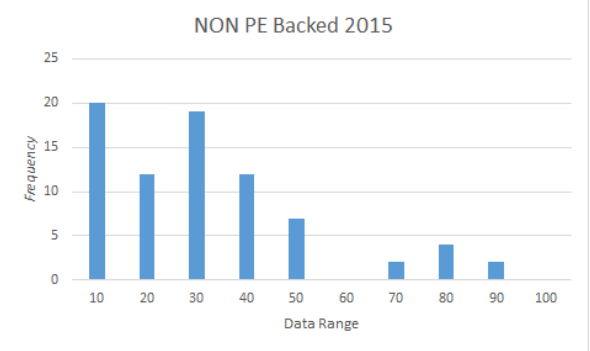









NON PE Backed 2014
Frequency
Data Range
0
2
4
6
8
10
12
14
10
20
30
40
50
60
70
80
90
100


NON PE Backed 2015
Frequency
Data Range
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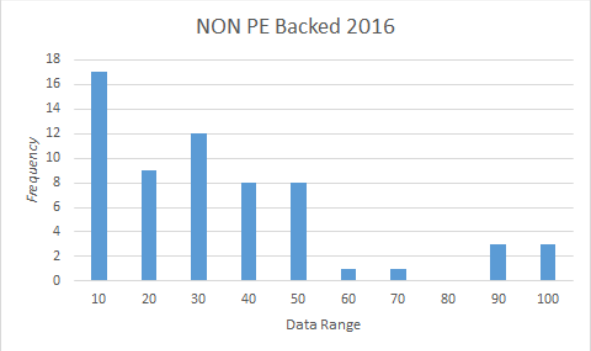
5
10
15
20
25
10
20
30
40
50
60
70
80
90
100


NON PE Backed 2016
Frequency
Data Range
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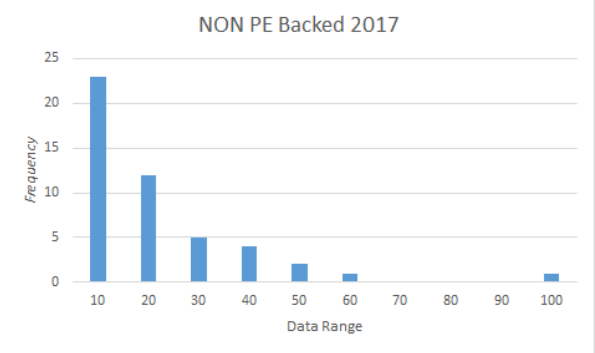
4
6
8
10
12
14
16
18
10
20
30
40
50
60
70
80
90
100


NON PE Backed 2017
Frequency
Data Range
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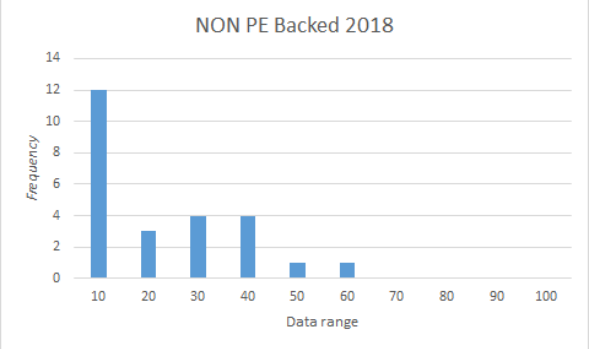
10
15
20
25
10
20
30
40
50
60
70
80
90
100


NON PE Backed 2018
Frequency
Data range
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6
8
10
12
14
10
20
30
40
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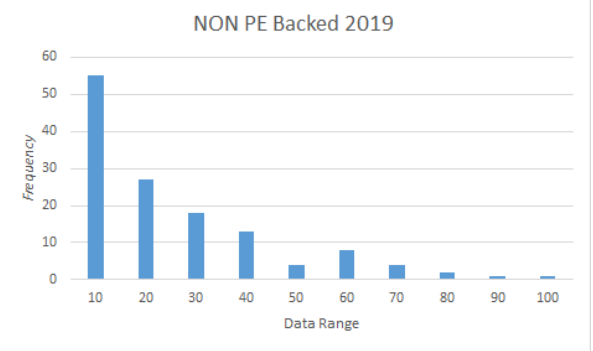
60
70
80
90
100


NON PE Backed 2019
Frequency
Data Range
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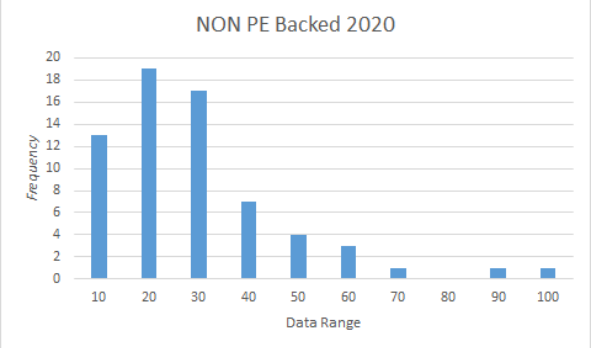
10
20
30
40
50
60
10
20
30
40
50
60
70
80
90
100


NON PE Backed 2020
Frequency
Data Range
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10
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14
16
18
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30
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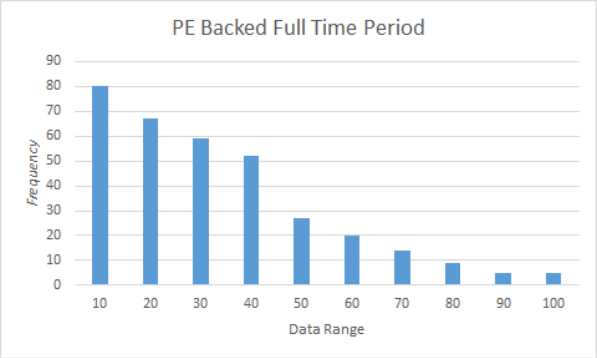
80
90
100


PE Backed Full Time Period
Frequency
90
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60
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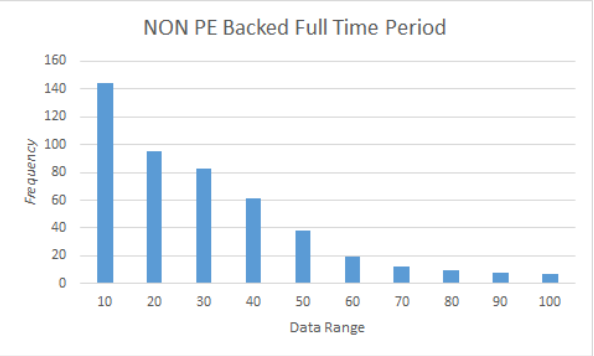
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
Data Range


NON PE Backed Full Time Period
Frequency
160
140
120
100
80
60
40
20
0
10
20
30
40
50
60
70
80
90
100
Data Range

Appendix B

Effect Size for T-Test

	Effect Size		
	Cohen's d	Hedges' g	Glass's delta
2014	0.1140	0.1140	0.1140
2015	0.3392	0.3389	0.3389
2016	0.2622	0.2592	0.2592
2017	0.2948	0.2952	0.2952
2018	0.1609	0.1613	0.1613
2019	0.1752	0.1759	0.1759
2020	0.1970	0.2075	0.2075
Total	0.1640	0.1640	0.1640