Green bonds -
market barriers and investor motives

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Abstract

This study addresses the green bond market, a young and upcoming market that has received increasing attention in recent years. Academic literature in the field is limited, therefore the aim of this study is to identify investors’ main barriers and motives behind green bond investments. In order to examine Swedish fund companies’ requirements to invest in green bonds, questionnaire responses were linked to interviews. The overall result shows the importance of financial incentives in investment decisions. In terms of market barriers, the low return of green bonds was the main reason that investments were restrained. It has been stated that green bonds are issued at a premium due to an additional reporting related administrative cost for the issuers. Another defined limit was the concern for issuers not fulfilling their 'green' obligation. The main motive behind green bond investments was to invest in a sustainable environment followed by the possibility to gain a combined financial and environmental return. In addition to the financial attributes, investors find a utility function in the green bonds that account for the premium price that these investors seem to accept. Furthermore, social norms are shown to influence the investment decision to a lesser extent.

Keywords: Green Bonds, Socially Responsible Investment, Sustainable Finance, Investment Decisions, Investment Barriers, Investment Motives
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1. Introduction

The financial market has never been so strongly influenced by investors wanting to do good by doing well, which is reflected in the increasing market demand for social responsible (SR) assets (Tripathy, 2017; Roselle, 2016). As a response to this demand Skandinaviska Enskilda Banken (SEB) together with the World Bank initiated the development of the green bond concept in 2008 (Andersson, 2017). Sweden follows the socially responsible investment (SRI) trend, with a growing green bond market. In December 2015, the first legally binding global climate agreement was signed by governments from 195 nations, including Sweden. Their primary goal was to keep temperature rise well below two degrees Celsius by 2030, which is estimated to cost USD 95 billion (OECD, 2017). To meet the agreed objectives, governments worldwide are taking actions, primarily in the energy sector, to find ways to reduce their carbon emission. The Swedish Government received a report on 10 January 2018, about how to stimulate the market for green bonds (Andersson, 2017). This action is in line with the agreed objectives since green bonds have been recognised as an important funding source to reduce the temperature rise (CBI 2018a). For the financial market, instruments like green bonds could be essential for investors wanting to contribute to a more sustainable society and environment (Kaminker et al., 2013). The investment capital needed to enter the green bond market is usually too large for private investors. An option is that they turn to a fund company to enter the market. The Swedish fund wealth reached an all-time high in 2017 (Fondbolagens förening, 2018), which shows how trustworthy they are among investors and what a strong market group they are. Thus, they are a desirable investor group for issuers.

Despite the global consensus that an action on climate change is needed, few regulations exist that forces investors to invest green. Further, neither the shown high market demand for SRIs nor the higher social return on these investments is incentive enough to scale up the market growth. Hence, the market does not grow fast enough to gain the investments needed to meet the objective of the global climate agreement. This is shown by CBI's (2018a) estimation that the green bond market needs to grow from the current USD 300 billion to one trillion by 2020 to have a significant impact on climate change. Managers need to understand the importance of SR-related actions to stay competitive in the market (Sullivan and Mackenzie, 2006). ‘Assuming that the direction of business social responsibility is decided, then business institutions must move vigorously toward integrating social values into their decision-making machinery. The business which vacillates or chooses not to enter the arena of social responsibility may find that it gradually will sink into customer and public disfavor’ (Davis, 1973, p.321). Jensen (1982) state the importance of incentives or reasons to make decisions and adapt to change. Bauwens (2016) found it is a necessity to understand the investment motives to influence investors investment decision. What is needed for the green bond market to grow, is to define which barriers discourage investors to invest, together with an increased knowledge of the investors’ motives behind them entering the market. Hence, understanding fund companies’ attitude towards green bonds is crucial for both bond issuers and academics. Thus, this knowledge can be applied in the strategic decision making for the issuer and in the process of upscaling the implementation of green bonds in both the local- and global markets. Researchers will also be able to use this research to understand investor behaviour in general,
what factors influence a green bond investment decision and as the area is relatively unexplored it opens up the green bond market to the academic studies.

An increase in green bond investments would increase the sustainable market capital, which when deployed, serves to benefit the society at large. Thus, there are clearly existing reasons to invest in green bonds, but are there incentives enough for fund companies to invest? The green bond market is growing so there must be some factors that influence the investors’ decisions. At the same time, it is suggested that the market is not growing fast enough, so what factors restrain investors from investing in green bonds? Do market actors really believe green bonds underperform conventional bonds? Reports suggest green bonds are sold for a premium (Harrison and Boulle, 2017) If so, why do investors still invest in green bonds? It is not easy to understand investor behaviour. According to research acknowledgement, do investors not act in line with typical traditional finance theoretical assumptions. (Beal et al., 2005) Therefore this research will look at some systematic differences in the way investors behave in the green bond market and discuss some of the literature on SR investment. Further, for a better understanding of the green bond market, this study will, in addition, look into the performance of Swedish bonds in relation to conventional bonds. As no such assessment and comparison have previously been made, as we are aware of, this assessment will bring new insightful knowledge to our green bond market discussion as well as to the Swedish green bond literature.

Given that green bonds have been on the market for a decade, they are barely mentioned in the academic literature. A few reports have addressed the subject and cited potential market barriers, but very limited research exists on the underlying factors that influence the investment decisions of green bonds. Besides the fact that market actors’ knowledge about green bonds seem to be limited (Naturskyddsföreningen, 2017; Kaminker et al., 2013), regulatory changes and new accounting standards were implemented in 2018 that bring new challenges to investors in the market. These changes affected both the trading and reporting of the bonds (Brooks Callaghan, 2017; IFRS, 2017). In addition, there is no regulated definition of what is ‘green’ for investors to rely upon (OECD, 2016; Labbé, 2017; Tripathy, 2017; Ehlers and Packer, 2017), which leads to concern about the sincerity behind bonds that claim to be green. Cecilia Reyes, at the time chief investment officer at Zurich Insurance Company Ltd, said: ‘In capital markets, trust is key. If there is going to be a lot of ‘greenwashing’, this market will die’ (Reyes in Baghdijan and Arnold, 2014, p.1). In terms of investors motives behind investments decision in the broader SR spectrum, there is research with a mixed result of the underlying motives. In line with the literature, is it reasonable to assume that strong environmental preferences drive this decision (McLachlan and Gardner, 2004; Beal and Goyen, 1998; Riedl and SMEETS, 2017) or an ethical duty (Brom and Vidaver-Cohen, 2009; Everett, 2013). Another possible motive is the financial (Jansson and Biel, 2011; Jansson and Biel, 2014; King and Gish, 2015), investors may believe SR ratings can achieve an abnormal return (Kempf and Osthoff, 2007) or it can diversify or hedge the portfolio against environmentally related financial risks (Andersson et al., 2016; Ehlers and Packer, 2017). A third could be that investors hold green bonds for strategic reasons to following regulations or
norms of the society as to boost their social image or reputation (Bengtsson, 2008; Riedl and Smeets, 2017). It is also reasonable to believe that fund companies motivation for investing in green bonds differ from different investors intention to make SRI. Since SRIs contains a much broader spectrum of criteria that need to be considered in an investment decision, the SRI and green bond literature are not entirely interchangeable (SIF, 2017). The factors that influence investors green bond investment decisions are not well understood nor are the market barriers. This study intends to fill this gap in the literature and contribute with new and specific knowledge of the green bond market. Most of SRI literature according to comprehensive literature studies (Capelle-Blancard and Monjon, 2012), focus on higher costs (Geczy et al., 2005; Everett, 2013) and performance of SRI (Cortez et al., 2009; Bello; 2005; Kempf and Osthoff, 2007; Junkus and Berry, 2015). Financial performance is of high importance for investors, but as Capelle-Blancard and Monjon (2012) mention, it is an issue that potentially has received too much attention. Nilsson et al. (2010) also stress the importance of further research of the interaction between financial and social motives in the investment decision.

Looking into the data collection of previous studies, a majority of the SRI researches are based on data from exclusively SRI holders, these investors have already decided to make an SRI (Beal and Goyen, 1998; Nilssons, 2009; Nilsson et al., 2010; Riedl and Smeets, 2017). These results cannot be generalised across the whole investor market. Therefore, this research has decided to include both none- and green bondholders. In addition, previous studies have collected their data either through qualitative interviews or quantitative questionnaires. This study aimed to use a combination of the two collection methods to obtain a higher quality and in-depth data. Further, in order to enable a greater understanding of the market, other market actors and academics have also been questioned as well as a visualization of the current green bond market. Knowledge of the market's financial performance aimed to contribute to the financial discussion, which is inevitable due to green bonds as SRI are not considered a charity (Nilsson, 2008). Further, an understanding of market actors’ attitude to the financial aspects of green bonds is important for the market to grow.

1.1 Purpose and Research question

The purpose of this study is to identify investment barriers restricting investments in green bonds and the main motives behind investments in green bonds, in order to explain what Swedish fund companies require to invest in green bonds. This study considers strategic, financial and distortion and conception barriers restraining green bond investments and the influence of strategic, financial and altruistic attributes respectively on the decision to invest in green bonds. To answer the objective of the study, the following research question is addressed: ‘Which are the main barriers preventing Swedish fund companies to invest in green bonds?’ and one sub-questions is addressed: ‘Which are the prime motives for Swedish fund companies to invest in green bonds?’
1.2 Disposition

The disposition of this study is organised as follows. Section 2 reviews the literature on green bonds and SRI as well as barriers restraining green bond investments and the investor motives behind them. Section 3 outlines the study’s methodology and choices made to achieve the purpose of the study. Section 4 contains the results of the study, which are analysed and compared to literature in section 5. In section 6, the main findings are concluded follow by a sub-category addressing limitations and areas for future research.

2. Theory

2.1 Green bonds

Green bonds differ from conventional bonds in regard to the funding project they are connected to (UNDP, 2017). Some argue there is no general definition of this financial instrument (OECD, 2016; Labbé, 2017; Tripathy, 2017; Ehlers and Packer, 2017). Although, the Green Bond Principles (GBP) coordinated by the International Capital Markets Association provide guidelines (ICMA, 2017). These guidelines are voluntary but are also officially recognised and used by a majority of the market as well as policymakers and regulators (Jun et al., 2016; Flynn, 2014). The GBP’s definition of green bonds will be used in this study, which is: ‘Green Bonds are any type of bond instrument where the proceeds will be exclusively applied to finance or refinance, in part or in full, new and/or existing eligible Green Projects and which are aligned with the four core components of the GBP’ (ICMA, 2017, p.2). The categories of green projects are presented in Table 1 and shall be in alignment with the four core components of the GPB, which are: Use of Proceeds, Process for Project Evaluation and Selection, Management of Proceeds and Reporting (ICMA, 2017).

Table 1. Green Bond Principle's categories of green bond projects

<table>
<thead>
<tr>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable energy</td>
</tr>
<tr>
<td>Energy efficiency</td>
</tr>
<tr>
<td>Pollution prevention and control</td>
</tr>
<tr>
<td>Environmentally sustainable management of living natural resources and land use</td>
</tr>
<tr>
<td>Terrestrial aquatic biodiversity conservation</td>
</tr>
<tr>
<td>Clean transportation</td>
</tr>
<tr>
<td>Sustainable water and wastewater management</td>
</tr>
<tr>
<td>Climate change adaptation</td>
</tr>
<tr>
<td>Eco-efficient and/or circular economy adapted products, production technologies and processes</td>
</tr>
<tr>
<td>Green buildings which meet regional, national or internationally recognised standards or certifications</td>
</tr>
</tbody>
</table>

Source: Adjusted from ICMA (2017)
Green bonds can be either labelled or unlabelled (UNDP, 2017). A labelled bond has been labelled green by the issuer (CBI, 2018b) and is thereby certified as green (UNDP, 2017). Unlabelled bonds, on the other hand, are issued by corporations with daily operations that are naturally favouring the environment (Preclaw and Bakshi, 2015). Further, Jun et al. (2016) experienced a shortage of labelled and certified green bonds in the market, which could partly be explained by the high certification costs and subsequently required reporting costs for the issuer. For an investor to evaluate a green bond there are several classifications and rating schemes available, like CBI Climate Bonds Certification, Green bond indices, Cicero Second Opinions, Moody’s Green Bond Assessments and Standard & Poor’s (S&P) Green Evaluations, but legalised and officially recognized green bond identification schemes are non-existing. Further, there are limitations within all of them and in addition, they measure slightly different factors. (Ehlers and Packer, 2017) Nilsson and Stockenstrnd (2015) write that trust and reliability in trading, according to regulators, depend on uniformity, which thereby creates strong demands for standards. The most common way to trade bonds has until recently been at the ‘over-the-counter’ (OTC) dealer market, where trading has been made on a bilateral basis or through arrangements like broker networks. Trades are now taking place on a regulated market (RM), through a systematic internaliser (SI) or one of two platforms; a multilateral trading facility (MTF) or an organised trading facility (OTF) (EU Directive 65, 2014). Banks are generally not investing in the green bond market because they rather invest in financial stability for the short term than environmental sustainability for the longer term. Insurance companies on the other hand, as well as pension fund companies, have a pronounced strategy to invest more sustainable with an increasing interest in green bond investments. Likewise, county councils and regions are working on sustainable finances to reduce climate impact. They thereby hold green bonds as part of their asset management. (Andersson, 2017)

For a better understanding of the green bond market, Table 2 presents the market in figures. The table shows its tremendous increase in later years, even though it still is considered a niche market (Tripathy, 2017).
Table 2. Quick facts of green bonds and the green bond market in 2017 and 2018

<table>
<thead>
<tr>
<th>Source</th>
<th>Tot. market globally (Q1’18)</th>
<th>SEK3281bn (USD381bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Tot. market outstand. globally (Q1’18)</td>
<td>SEK3138bn (USD355bn)</td>
</tr>
<tr>
<td>Source</td>
<td>Tot. market outstand. Sweden, Aug 17</td>
<td>SEK102bn (USD12.9bn)</td>
</tr>
<tr>
<td>Source</td>
<td>No. of countries with green bonds outstand. (Q1’18)</td>
<td>47*</td>
</tr>
<tr>
<td>Source</td>
<td>No. of issuers globally</td>
<td>441</td>
</tr>
<tr>
<td>Source</td>
<td>No. of new issuers in 2017</td>
<td>156</td>
</tr>
<tr>
<td>Source</td>
<td>No. of new issuers in Q1’18</td>
<td>26</td>
</tr>
<tr>
<td>Source</td>
<td>No. of issuers in Sweden (Jan 18)</td>
<td>36</td>
</tr>
<tr>
<td>Source</td>
<td>Largest foreign issuer</td>
<td>Fannie Mae, US</td>
</tr>
<tr>
<td>Source</td>
<td>Largest Swedish issuers</td>
<td>Specialfastigheter, Swedbank, Nordea Bank</td>
</tr>
<tr>
<td>Source</td>
<td>No. new issuances globally in 2017</td>
<td>1480</td>
</tr>
<tr>
<td>Source</td>
<td>No. new issuances globally by Q1’18</td>
<td>330</td>
</tr>
<tr>
<td>Source</td>
<td>No. outstanding bonds globally (Q1’18)</td>
<td>2800</td>
</tr>
<tr>
<td>Source</td>
<td>Highest outstanding vol. globally (Apr 18)</td>
<td>Republic of France</td>
</tr>
<tr>
<td>Source</td>
<td>Top investors globally (no specific order)</td>
<td>Institutional investors, Specialist SR investors, Corporate Treasury, Governments/Municipalities, Retail investors</td>
</tr>
<tr>
<td>Source</td>
<td>Avg. time to maturity globally</td>
<td>10 years</td>
</tr>
<tr>
<td>Source</td>
<td>Avg. time to maturity Sweden</td>
<td>5 years</td>
</tr>
</tbody>
</table>

* USA, China, France, Germany, Netherlands, Sweden, Spain, Canada, Mexico, India, Japan, Italy, Belgium, Australia, Brazil, UK, Norway, Denmark, Poland, China HK, South Korea, New Zealand, Indonesia, Finland, Austria, South Africa, Malaysia, Switzerland, Singapore, UAE, Chile, Argentina, Costa Rica, Lithuania, Colombia, Morocco, Luxembourg, Philippines, Iceland, Peru, Taiwan, Latvia, Estonia, Fiji, Nigeria, Slovenia, Ireland

2.2 Socially responsible investment

Investments favouring the society have taken place for centuries (Sparkes and Cowton, 2004; Bengtsson, 2008) and received distinguished attention among both investors and academics in recent years (Cortez et al., 2009). Due to the limited literature on green bonds, the literature review of this study is mostly grounded in SRI literature. The concept of SRI is an investment philosophy (Sparkes and Cowton, 2004) that became a global practice in the early 2000s, due
to increased awareness of the triple bottom line's effect on financial values (Sparkes, 2002). The logic of triple bottom line suggests corporations consider social and environmental aspects related to people and the planet as equally important as the financial (Elkington, 1999). Thus, for an investment to be advised as socially responsible it needs to create a positive social impact beside the financial gain (Nilsson, 2009; SIF, 2017). The social values shall be valued as an investment return (Junkus and Berry, 2015; Emerson, 2003) and not only represent the minimum legal requirement for social incentives (Davis, 1973).

Social motives are not automatically subordinated to economic motives in an investment decision anymore (Boyle et al., 1997). Instead, managers will be assessed upon SR factors, in combination with the essential economic performance in their investment decision (Brønn and Vidaver-Cohen, 2009), which is a positive step in the development of a sustainable financial market (Tripathy, 2017). Nilsson et al. (2010) showed that private SR-investors put more weight on information regarding social and environmental features than the financial aspects of their search process of information for their investment decisions. Beal et al. (2005) also conclude that the psychological benefit of feeling good about an investment, in combination with the financial return, is a strong motive for social investments. Generally, the literature presents a contradicting view of possibility to both do good and well while investing shown by Junkus and Berry (2015) in a comprehensive study. Some argue sustainability investing does not necessarily mean a trade-off between financial and social return (Emerson, 2003; Nilsson, 2008). The scenario of blended return is captured in the so-called Blended Value proposition developed by Emerson (2003) and concludes that ‘All investments are understood to operate simultaneously in economic, social, and environmental realms. There is no trade-off between the three, but rather a concurrent pursuit of value - social, financial, and environmental.’ (Emerson, 2003, p. 45). This result suggests the non-monetary utility SRIs provide can result in an arbitrage opportunity, which is caused by social investor bidding up the price of the SRI in combination with a corresponding under-performance. Opposingly, Kempf and Osthoff (2007) showed that SR attributes had a significant positive influence on the financial return. Whereas other literature found a neutral performance when comparing SR funds to conventional funds (Cortez et al., 2008; Bello, 2005). Challenging literature was represented by the Pareto assumption (Nicholls, 2010), suggested it is inevitable to achieve greater social and environmental impact without mitigating financial capital return. In other words, investors must accept a lower return on an SRI (Everett, 2013). Hence, Everett (2013) showed there is a so-called social discount on the investments. Several studies have researched the issue of added costs related to SR funds and found they entail larger fund fees (Geczy et al., 2005; Riedl and Smeets, 2017), being overpriced (Geczy et al., 2005) and have worse Sharpe ratio figures and provide lower financial returns than a conventional fund (Riedl and Smeets, 2017). The performance discussion has had an influence on early adopters who have taken a rather sceptical view of SRIs' financial performance (Roselle, 2016; Jansson and Biel, 2011). Further, Emerson (2003) suggested that corporations often use the zero-sum dissonance argument, sacrificing financial value for social, as an excuse not to consider a wider social impact in their investments assessments. Figure 1 explains how the triple bottom line, SRI and green bonds are related.
Figure 1. Green bonds and SRI in relation to the triple bottom line

2.3 Market barriers

Literature has identified several potential barriers preventing investments in the green bond market. To structure the review of the literature, which refers to market barriers on the green bond market. The different market barriers identified in the literature are categorised into three groups: Strategic, Financial as well as Distortion and Conception barriers. Due to lack of previous research, this categorization has not been presented in previous research, it has been created and adjusted from literature of investments motives (Noppers et al., 2014; Nilsson, 2009; Brønn and Vidaver-Cohen, 2009).

2.3.1 Strategic barriers

A considerable market barrier is the limited knowledge market actors have in the green bond field (Naturskyddsföreningen, 2017; Kaminker et al., 2013). Further, despite fund managers have little exposure to the asset risk of bonds (Cochu et al., 2016), they are required by law to act in the best interest of the beneficiaries (Hoepner et al., 2011). Kaminker et al., (2013) suggested it depends on the institutional investors' investment requirements and policies. Insurers and pension funds have to consider the best interest of both beneficiaries and policymakers, which mean SR aspects as well as highest risk-adjusted return. Whereas investors with fiduciary responsibilities could prioritise the highest risk-adjusted return over ‘green’ incentives. Thus, investors are affected by their operating environment and they comply with formal and informal rules, such as legislation and norms (Eriksson-Zetterquist, 2009; Bauwens 2016). These rules can cause market barriers. As previously mentioned, there are classifying and rating schemes available. Because the methodologies used in their classifications are not legally standardised and the schemes do not fully assess the same factors (Ehlers and Packer, 2017). They do therefore not completely serve the purpose as tools for increasing investors’ confidence, but still act as a support in their investment decisions (Louche, 2004; Tripathy, 2017). The issue with lack of market standards has been defined as a major barrier in the green bond market (Baker, 2018; Labbé, 2017; OECD, 2016; Tripathy, 2017). Tripathy (2017) stated that the lack of legalised standards restricts the investors’...
possibility to take legal actions against unfaithful issuers. Meaning the possibility for taking legal actions against greenwashing is limited (OECD, 2016).

Structural reforms and regulations that followed the financial crises have forced financial market actors to incorporate stability into their operations (Correa, 2014). The Markets in Financial Instruments Directive II (MiFID II) and Markets in Financial Instruments Regulation (MiFIR) were fully applied on 3 January 2018. The aim was to create a safer financial market by improving the transparency of trading and encourage responsibility among market actors, through increased requirements on positions disclosure, bids and transactions (EU Directive 65, 2014). The most prominent regulation in MiFID II affecting the bond market was the introduction of OTF that restricted the OTC trading. The OTC was created to bring more clarity on all types of trading platforms contributing to better market transparency. (Brooks Callaghan, 2017) The regulatory framework was also meant to benefit the competitive trading environment and increase the market efficiency (EU Directive 65, 2014). Although, Norberg and Stockenstand (2016) suggested prior to implementing MiFID II that there is a risk of the directives not having the expected effect on the market and rather decrease market transparency. A decreased transparency would be caused by changes in relationships and knowledge exchange between banks and firms since such concerns usually not are considered by regulations. (Norberg and Stockenstrand, 2016) Related requirements affecting the Swedish bond market are the Basel III capital requirements. They contain regulations, risk management and supervision to strengthen the banking sector. The Basel III includes capital-, leverage- and liquidity coverage ratios, aiming to restrict excessive leverages and secure market actor’s short-term ability to pay for loss or other unplanned liquidity and credit expenses (EU Regulation 575, 2013; EU Regulation 61, 2015; EU Regulation 62, 2015). The liquidity requirements have increased the demand for covered bonds since they can be used as a liquidity coverage when certain criteria are met (EU Regulation 61, 2015; Avesani et al., 2007) Finansinspektionen, 2015). The liquidity requirements also increased the demand for green bonds (Zerbib, 2017). In Europe, the covered mass on Treasury bonds are mainly loans with housing-related securities. These bonds, therefore, hold a good investor protection (Avesani et al., 2007). New accounting standards for financial instruments were also implemented on 1 January 2018, requiring assets to be measured at fair value, implying that a bond’s market price will affect the booked value of the asset. (IFRS, 2017) Different types of legal market implementations are according to Ehlers and Packer (2017) the greatest risk for green finance investors because policymakers changing environmental regulations can cause disadvantages for climate bonds.

2.3.2 Financial barriers

Milton Friedman (1970) underlined that the sole aim of corporations is to maximize profits and all other activities apart from those of the core business are made at the expense of the profit. Further, Nicholls (2010) addressed the Pareto assumption, suggesting social good are made on behalf of financial return or else unachievable. Several studies have found significant additional costs related to SR funds, Geczy et al. (2005) and Riedl and Smeets (2017) identified larger fees related to SR funds. In addition, the funds were more likely to be
overpriced (Geczy et al., 2005), have worse Sharpe ratio figures and provide lower financial returns than a conventional fund (Riedl and Smeets, 2017). Everett (2013) showed there is a so-called social discount on the investments made by for-profit organisations with an addressed social purpose since the investors settled with a lower return. The market for green bonds is small (Tripathy, 2017) and in combination with a high demand has Harrison and Boulle (2017) in their report shown an oversubscription by the issuance of green bonds. These factors lower the secondary market liquidity, which results in a low possibility to re-invest after such a bond is divested (Finansinspektionen, 2015) and are suggested to increases the transaction costs (Jiang and McCauley, 2004). Some literature has identified a premium (issuer discount) of an average 2 bps (-2bps) on green bonds issued in EUR compared to conventional bonds (Zerbib, 2017; Ehlers and Packer, 2017) whereas others literature has not managed to identify such premium existence (Harrison and Boulle, 2017). A premium result in a lower yield for the investors (Harrison and Boulle, 2017). Further, Preclaw and Bakshi (2015) write that green bonds are tradable for a premium price on the secondary market, but the opinion over whether green bonds outperform conventional bonds on the secondary market is split. Harrison and Boulle (2017) observed that green bonds generally perform better than corresponding indices, but the result is not tested statistically. Opposingly, Ehlers and Packer (2017) did not find a significant difference in the price development of green and conventional bonds on the secondary market, the performance was rather equal.

In general, the basic risks related to green bond investments are the same as for their conventional alternatives (Andersson, 2017) and investors shall be compensated for their exposed risks (Pouzo and Presno, 2016). The bond price is sensitive to interest-rate changes on the secondary market (Finansinspektionen, 2015) and when the interest-rate decrease the bond price rise and vice versa. The percentage using other reference rates than the Swedish Government’s 10-year bond rate has risen in recent years, primarily due to that the Treasury bond's rate is judged to be too low to be considered as a long-term risk-free reference rate (Andersson, 2017). The official bank rate in Sweden is -0.5 per cent in 2018 (Sveriges Riksbank, 2018). The rates impact on the bond prices was shown by the distinct drop in the sale of covered bonds in relation to outstanding volume, between the years 2008-2015. This decreased demand was probably caused by a lower risk-adjusted return. (Finansinspektionen, 2015) The interest-rate risk also increases with the bond's maturity, due to the risk of loss if the holder wishes to sell before the bond expires. Green bonds are considered as long-term investments and many investors hold their bond to maturity (Flynn, 2014). Pension funds are an example, as they often are considered to be so-called buy-and-hold investors (Kaminker et al., 2013). Bonds are generally considered low-risk investments and green bond issuers are usually highly rated (Ehlers and Packer, 2017) but the literature opinion is split if SRI entails a higher or lower risk than a conventional investment. Lewis and Mackenzie (2000) found SRI and conventional investments entailed a similar level of risk whereas Hoepner et al. (2011) found a substantially lower downside volatility if corporate environmental criteria are integrated into pension fund investment processes. Oppose to Bello (2005) findings, literature argues that green investments reduce financial risk (Jansson and Biel, 2014) and that green bonds can be used to diversify or hedge a portfolio against environmentally related financial
risks (Andersson et al., 2016; Ehlers and Packer, 2017). The risk preference comes down to how risk-averse the investors are, whether a low or high risk is of preference, and the discussions shall potential rather be about the risk-adjusted return. However, there is still a risk that the counterparty fails to fulfil its contractual obligations. Further limitations mentioned by investors is the disadvantage of not having access to yield curves, credit ratings, risk instruments (Cochu et al., 2016; Jun et al., 2016) and the large initial capital needed for making a green bond investment (UNDP, 2017).

2.3.3 Distortion and Conception barriers

Literature has also mentioned that the green bond market struggles with low transparency, lack of trust (Tripathy, 2017), which can be caused by several reasons. If there is a high risk that the funded projects not meeting investor expectation in terms of environmental impact SR investors will not invest in the product. Another identified barrier is the risk of greenwashing when projects' environmental contribution is falsely marketed (Lane, 2012). The last two resulting in a great reputational risk and lack of trust (Lane, 2012; Cochu et al., 2016). According to Laufer (2003), the greenwashing risk is of great concern among market actors and the reports that are supposed to act as support for investors, could instead be used as a greenwashing tool to deceive them further. Hence, it is hard for an investor to assess if the projects related to the green bonds are ‘green’. In combination with the considerations mentioned above, do fund managers potentially find these investments less attractive.

2.4 Investment motives

To structure the review of the literature which refers to motives to invest in green bonds and SRI. The different investment motives are categorised into three groups: financial, strategic and altruistic motives, which are based on the research from Noppers et al. (2014), Nilsson (2009) and Brønn and Vidaver-Cohen (2009).

2.4.1 Strategic motives

Strategic motives are behaviours that drive investors to meet the expectations of their community (Noppers et al., 2014). The underlying incentives to engage in social investments according to the social motives are based on the institutional logics and its norms that control the relation between investor rationalities and investment logic (Bauwens, 2016; DiMaggio and Powell, 1983; Bengtsson, 2008; Nicholls, 2010). Meaning, investors decisions reflect what is generally accepted in the society. It is affected by other organisations and they comply to formal and informal rules, such as legislation, norms (Eriksson-Zetterquist, 2009; Bauwens 2016), or social trends (Doh et al., 2010) instead of acting rationally and maximising profits (Eriksson-Zetterquist, 2009). The financial corporations face institutional pressure from market actors both within and outside the financial system (Davis, 1973; Davies, 2003; Eriksson-Zetterquist, 2009). This pressure does to a certain extent shape the corporations view on SR incentives and influence corporations to engage in environmental and sustainable activities (Davis, 1973; DiMaggio and Powell, 1983; Hahn and Scheermesser, 2006;
Eriksson-Zetterquist, 2009) as well as the fund managers’ decisions (Riedl and Smeets, 2017). Hence, the fund managers’ task is to satisfy the investors and to stay competitively strong among market competitors (Sullivan and Mackenzie, 2006). Thus, responding to institutional pressures are crucial for the organisation's legitimacy (Davis, 1973). Further, as market demand for sustainable investments increases, it is likely that sustainable investments will have a greater influence on market actors and that it, in turn, could retain and attract new investors (Doh et al., 2010). According to Beal and Goyen (1998), fund managers create portfolios that reflect prior market research, as they are more likely to successfully attract funding.

Humans are motivated to appear positive in the eyes of others (Goffman, 1959), which relates to these motives in terms of investors wanting to signal status or to be associated with a special identity. These motives are particularly considered in the renewable energy sector, by individuals who want to show the public that they are aware of the environment and the climate problems (Noppers et al., 2014). Zerbib (2017) proposed there are investors that compete over the green debt available. Although, critics argue that the increased sustainable behaviour in organisations do not necessarily mean they are taking greater responsibility, rather that they reflect their stakeholders’ expectations (Laufer, 2003) and their actions favouring the society are then rather superficial (Laufer, 2003). These literature show social investments increase company reputation (Gardberg and Fombrun, 2006) and that reputation (Davies, 2003) and social norms are the reason for making such investments (Riedl and Smeets, 2017; Laufer, 2003).

2.4.2 Financial motives

Financial motives are the category of motives related to the rational choice theory. This view is shared by most of the conventional economists and by the finance sector in general. The logic assumes individuals make rational decisions by always choosing the option with the highest expected outcome (Nicholls, 2010; Jansson and Biel, 2014), along with considerations of risk, diversification (Beal et al., 2005), dividends and the firm's financial stability (Baker and Haslem, 1974). Jansson and Biel (2011, p.141) stated: ‘As fund managers are monitored and rewarded on their skill to track or beat an index on a short-term basis and to maximize risk-adjusted financial return to their beneficiaries, and not on their ability to be socially responsible investors, they may lack both incentives and motivation to act as long-term responsible investors.’ Literature proposed that investors who were making SRIs and investments in renewable energy were driven by this motive (Noppers et al., 2014) for several reasons. As literature (Andersson et al., 2016; Ehlers and Packer, 2017; Davis, 1973) suggested, these investments contributed to diversification and thereby reduced portfolio risk. They argue for that the index will outperform the benchmark once limits on carbon dioxide emissions are introduced. Hoepner et al., (2011) found that the integration of environmental and social criteria in pension funds does not result in negative financial effects and thereby neither conflict with their fiduciary duty. It may rather benefit those who save in pension funds, as it can reduce the risk of the asset falling in value (Hoepner et al., 2011). Kempf and
Osthoff (2007) showed also that SR attributes had a significant positive influence on the financial return, which gives an incentive to invest.

Literature has shown the importance of good financial performance when making SRIs among market actors (Nilsson, 2008; Jansson and Biel, 2011). Bond investors are suggested to be driven by the bonds in upcoming future returns, which according to King and Gish (2015) was crucial to attract more investors to the sustainable financial markets. However, Everett (2013) found that social beliefs influence both prices and returns on investments. Studies have also shown that investors usually hold on to their sustainable investments, including those with poor performance (Lewis and Mackenzie, 2000). Similarly, SR investors are more tolerant of additional investment costs, if it allows them to fulfil their ethical duty (Lewis and Mackenzie, 2000). Rubaltelli et al. (2015) stated how moral values can compensate and make a profitability loss of a project, feel less unsatisfying for the investor. Implying there is a paradox when applying rational logic to SRI decisions reflected in investor’s willingness to pay a higher price and are pleased to settle with a lower equity return on SRI (Riedl and Smeets, 2017; Lewis and Mackenzie, 2000; Everett 2013). If market actors with same information sometimes hold different beliefs, it implies that some are not acting rationally.

2.4.3 Altruistic motives

These motives are driven by emotions and a desire to obtain a social utility, suggesting investors decisions are based on either personal feelings and affections (Nilsson, 2009; McLachlan and Gardner, 2004). It is correspondingly shown, that actions protecting the environment are considered of high importance amongst humans (Noppers et al., 2014). According to Everett (2013), investors obtain psychological benefits from their social investments in terms of personal utility. Davis (1973) described that managers are driven by a utility function that is stronger than the financial satisfaction. They take part in a shared social responsibility (Rai and Fiske, 2011), driven by an ethical duty to build a sustainable future (Brenn and Vidaver-Cohen, 2009; Beal and Goyen, 1998) and expand the well-being of the society. Nilsson et al. (2010) showed that private SR-investors put more weight on information regarding social and environmental features than the financial aspects of their search process for information for their investment decisions. Further, SRI investors are suggested that they base their decisions on the perceived environmental impact (Noppers et al., 2014; McLachlan and Gardner, 2004) with the purpose to maximize current, including their own, and coming generations lifetime utility (Armitage, 2014). Beal et al. (2005) stated that it does not seem to matter how small the ethical proportions of an investment is, some investors will still find it ethical enough and be pleased with the psychological return the investment create. There are investors that perceive the utility of the environmental impacts higher, than the utility received from financial attributes (Beal and Goyen, 1998). An SRI investor could, therefore, hold more of these particular assets than what could be explained by payoff attributes.
2.5 Summary

The theoretical review represents a snapshot of the green bond market and contains the current literature of barriers preventing investors to engage and motives to invest in social incentives. As concluded in the presented literature there are several green bond market barriers and motives identified which can affect market engagement. Figure 2 shows a summarising picture of how the identified groups of barriers and motives influence investors decisions. The solid line arrows show the three suggested groups of motives: strategic, financial and altruistic. The dotted line arrow symbolises a funnel where a single or a various combination of the motive groups can represent the main reason to invest. As green bond investments are not charity activities (Nilsson, 2008) there will always be a financial incentive to make a green bond investment, but it might be of minor interest and may not be the main motive to make an investment. The dotted lined box contains the three suggested groups of barriers: strategic, financial and distortion and conception. Investors make several considerations before deciding on an investment but there are some concerns which are more likely to have a larger influence on the investment decision than others. This is symbolised by the dotted frame, which proposes that a single or a various combination of the barrier groups might be possible. Below the box, there is a fully drawn line which symbolises the identified barrier groups in the box could prevent investments.

3. Methodology

3.1 Research design

This study aimed to, in an exploratory manner, examine the main barriers that prevent Swedish fund companies to make green bond investments and to define their primary motives for such investments. The chosen research approach is based on previous studies (Brønn and Vidaver-Cohen, 2009; King and Gish, 2015; Nilsson, 2008; Nilsson, 2009; Riedl and Smeets, 2017; Lewis and Mackenzie, 2000; Bengtsson, 2008), which aimed to seek new insights into comparable subjects. A theoretical framework of existing research from academic journals and recently published reports from highly engaged market actors create an informative base
for this research. It involved an empirical investigation of the green bond market as well as investors motives and barriers related to SR investments. Despite previous academic research on green bonds are limited, literature addressing SRIs made it possible to apply a deductive process within the research to revise existing theory and reach logically definite conclusions (Saunders et al., 2009).

The survey strategy is an appropriate approach to use in an exploratory research (Saunter et al., 2009). Further, Lock and Seele (2005) suggested that questionnaires are well suited for the purpose of a study with social elements in a business environment since it enables coding and provides numerical data that creates possibilities to analyse normativity without losing content and context. Although, quantitative approaches are often criticized by qualitative researchers for simplifying and neglecting the context of the coded content (Lock and Seele, 2005). For this reason, data has also been collected through interviews. The presented literature related to investment decisions has either applied a qualitatively or a quantitative approach with questionnaires or interviews respectively, which suggests that the two approaches are appropriate data collection techniques for the study research question. The combination of all the data collection methods, a so-called triangulation, enabled the methods to validate the results from the different methods used. The information from the different methods also compensated for each other’s limitations and made it possible to receive a more in-depth data. (Saunders et al., 2009) Additionally, to achieve a deeper understanding of the subject, participation took place at an investor presentation prior to a green bond issuance.

To visualise and create a more informative analysis platform for this research, issuance details and the performance of a selection of bonds and green bond indices were presented. The aim of the visualisation was not to statistically test or examine green bond issuances and performance, rather show a picture of it. As green bonds like SRI are not considered a charity (Nilsson, 2008) was a discussion of investors financial attitude toward the bonds inevitable. Further, an understanding of market actors’ attitude to the financial aspects of green bonds is important for the problem statement. Similarly, is the knowledge of the current market situation and a potential capital increase scenario, shown in a sensitivity analysis important. The visualisation as well as the results from the sensitivity analysis shows a strengthened confirmation or neglection of similarities in results and adds content to the financial discussion in the analysis. Thus, they contributed to the triangulation and created a more in-depth market discussion.

3.2 Data collection

Data were collected from a total of 23 organisations through questionnaires and or interviews. There was a rather low response rate to the questionnaire, which could have a negative influence on how reliable the data is. Additionally, single comments from four different organisations were used in the study. For a visualisation of the green bond market, additional data from various indices and bonds from nine different Swedish green bond issuers were collected.
3.2.1 Questionnaire

The questionnaire was created to capture all the potential categories of motives and barriers identified in the theory section. It consisted of three sections and a total of 17 questions, which were developed based on literature (Riedl and Smeets, 2017; Brønn and Vidaver-Cohen, 2009). The layout and questions were carefully considered and tested in order to mitigate any misinterpretations errors.

In the first section, the fund companies were asked if they held green bonds or would consider investing in them. Additionally, they were asked to state their green bond share of their total assets under management (AUM). Further, they could in an open-end question describe how MiFID II had affected their bond trading. The second section included nine questions targeted potential barriers and motives reflecting fund companies’ attitude towards them and green bond market. They were asked to select their level of agreement, from ‘Disagree completely’ to ‘Agree completely’, on a seven-point Likert scale to provide a measure. One question ranged from ‘Much lower’ to ‘Much higher’. The scale is treated as an interval scale because the intervals between each of the seven values are assumed to be equal. The questions were coded and equally distributed amongst the three barriers as well as motivational drivers identified in the theory section. In the last section, fund companies were asked to state their main barrier preventing them from green bond investments and their prime motive to invest. The question let them select up to three reasons out of a possible 15 alternatives if they believed there was more than one reason preventing and motivating them. Additionally, they were given the option to address their own reason to reduce biased results. The greater selection derived a better understanding and creates more reliable and informative results of the fund companies’ opinion at the same time the risk of them selecting all alternatives were restricted. For each question, the alternatives were coded and equally distributed between the defined barriers and motives. A majority of the questions in the questionnaire were closed questions, due to their preparatory advantage for later coding, which facilitates data extraction (Fink, 2009).

The questionnaire was created online and distributed by e-mail to suitable executive managers in the selected fund companies. The e-mail included a research description instructing the participants to answer the questions in their professional role, a link to a Swedish and an English online questionnaire and a short information sheet about green bonds were attached. The online method increases the effectiveness of the administration in terms of both questionnaire distribution and data gathering (Fink, 2009). The online tool employed conditional logic to create a form that leads the respondents through the questionnaire and thereby decreased the risk of faults due to the questions being presented in the wrong order (Saunders et al., 2009). The tool also allowed the participants to remain anonymous. The fund companies were requested to complete the questionnaire within seven days. Thereafter a reminder including the original e-mail was sent out.
The result from the questionnaire was subsequently reviewed in a descriptive manner (Saunders et al., 2009) with the use of Excel. The provided figures of the fund companies’ total share of green bonds as a proportion of their AUM were used to represent the Swedish fund market. The average proportion of green bonds in their portfolio were taken as a representative of the market as a whole. Statistical calculations were made for the median, range and average score to enable an exhaustive analysis of the statements in the second part of the questionnaire. The choice of using range and median scores made it the possibility to show results with extreme outliers. As the multiple choices in the third part of the questionnaire were coded, the responses were grouped accordingly in order to define the barrier and motive groups. Responses also were compiled and ranked individually to define the single main barriers and motives. Collected data were used to identify trends which were connected to theory.

3.2.2 Interviews

In total, seven market actors with extensive experience and knowledge of both conventional and green bond trading were interviewed. Except for one in-person interview, the interviews were held over the phone. All portfolio managers who participated were briefly met prior to their interview. Two of the interviews lasted between 35-45 minutes, whereas the rest were between 60-70 minutes. The interviews shorter in length were due to a time limitation, which could be a potential limitation as it does not allow enough time to enable the gathering of data for exhaustive answers and valuable data could have been missed (Saunders et al., 2009). All interviews were held semi-structured with a guide that made it possible to link the interview data to the theory with similar coding as to that of the questionnaire. The interview-guide and the questionnaire were designed to complement each other to receive a more in-depth and comprehensive data. Thus, the interview guide was divided into three sections with questions referring to barriers, motives and general perceptions of the market in a similar manner to that of the questionnaire. All questions were coded according to the different barrier and motive groups identified in the theory section and equally distributed between the three barrier and three motive groups respectively. This was made to facilitate a more efficient processing of the data and to combine the results of interviews with those of the questionnaires. Further, to reduce bias, the interview participants were also invited to give possible barriers and motives not identified in the interview guide and the theory section. Semi-structured interviews give the opportunity for interviewees to explain their answers more deeply and to freely add opinions or thoughts. Hence, the method enables market actors to share opinions that not yet been identified in the theory, and thereby not stated in the interview-guide nor the questionnaire. Therefore, risks of biased interpretations, common risk when using the survey strategy, is reduced. (Saunders et al., 2009) Further, to reduce the risk of the interviewee drifting away from the subject (Saunders et al., 2009), they were sent an e-mail with the main content of the interview to have as support. The same interview-guide were used in all interviews and a few additional questions regarding the issuers' experience of the market were addressed to receive a broader understanding of the green bond market.
During the interviews, participants' answers were written down immediately as questions were answered. Non-verbal information such as the interviewee’s tone when answering the questions was also noted. Hence, non-verbal information could provide extra depth to questions and are therefore considered valuable information (Saunders et al., 2009). The collected interview data were transcribed, and key findings were summarised. The interviews were individually assessed before connected to theory and other results. All interviews were held in Swedish, therefore as well as due to secrecy reasons, will no participants be cited.

3.2.3 Market visualisation

The chosen performance data were based on the market value bid price and was gathered online from S&P Dow Jones (2018) and Bloomberg (2018). Further, were bond data from nine selected Swedish issuers gathered to compare a green bond and a conventional bond from the same issuer. A quality matching was made on a total of nine bond pairs from these issuers. Comparison between their performance, nominal value, coupon rate, the bonds' duration, issuing amount and rating have been expressed. All information for the quality matching of the ‘bond pairs’ were collected from Eikon (2018) and Nasdaq (2018). To show an informative comparison of the ‘bond pairs’ a summarising chart were created with use of Excel. In order to visualise the Swedish green bond market and its performance, the selected Swedish green bonds were compared to a Swedish IG corporate- and 10-year Treasury bond. The performance curves of the Swedish market were also viewed and analysed in relation to the performance of international green bond indices. Results from the market visualisations were analysed together with the results of the questionnaire and interviews before it were connected to theory.

3.2.4 Participants

The population selected for this study were Swedish fund companies domiciled in Sweden. Why this market is suitable for this study, is summarized in four reasons. Firstly, Sweden was involved in the green bond market from the start and was an important contributor to opening the market (Filckova, 2018). Secondly, Sweden has a long history in socially responsible and environmental activities, from AktieAnsvar Aktiefond established by the Temperance movement and the Baptist Church in 1965 (Bengtsson, 2008) to present time, which is reflected by the country receiving the highest environmental, social and governance (ESG) ranking within EU in 2015 (Baker, 2015). Third, the Swedish fund market's considerably high market experience makes them well suited, for example, the SPP Green Bond Fund is one of the world's largest green bond fund (Storebrand, 2018). Finally, pension funds and other long-term saving funds are generally well suited for these types of investments, which makes it interesting to assess the study from the funds perspective (Flynn, 2014).

3.2.4.1 Questionnaire

Morningstar (2018), Thomson Reuters Eikon (2018) and Nasdaq (2018) were used to identify and create a list of Swedish domicile fund companies. The three sources’ search filters
differed slightly, hence information from all three was assembled and used to create a list. To capture a larger market than previous SRI literature, both holders and non-holders of green bonds were contacted. In total, the questionnaire was sent out to 70 suitable fund companies. To obtain good quality data, top or second level executives were selected as participants due to their investments expertise, insight into their organisations’ investment policy and knowledge about their stakeholders. They were all asked to answer in their profession, representing the fund company. 19 fund companies participated in the questionnaire, resulting in a response rate of 27 per cent and an additional 10 fund companies kindly declined a participation per e-mail due to lack of knowledge in bond trading. 21 per cent of the responding fund companies did not trade green bonds.

3.2.4.2 Interviews

The basic selection criteria for the interview participants were the same as for the questionnaire. At the end of the questionnaire, fund companies were asked to write their e-mail addresses if they would like a copy of the full study. This e-mail list acted as a base for inviting portfolio managers to participate in interviews, as their interest in the study potentially made them more likely to contribute further. Although, in order to understand the broader market picture of the problem statement, other stakeholders were also considered. More specifically, academics from the SR field and green bond issuers. A list of potential issuers to interview was created out of the selected Swedish bond issuers used to visualise the market. All participants were asked to answer the questions from an investor perspective. Other stakeholders were also requested to share opinions from their professions' perspective with the aim to give depth to- or confirm what already had been addressed by the investors.

The following text presents those interviewed. Mikael Yman, Helena Lindahl at Storebrand/SPP Fonder and Erika Wranegård at Öhmans Fonder. They are all portfolio managers, the latter two are both managing green bond funds. Further was Ingrid Albinsson, chief investment officer at the seventh AP-fund, and an anonymous green bond expert, interviewed. The titles of the last two will not be specified further in text for anonymity reasons. Two companies that have issued several green bonds in recent years was also interviewed. The issuer participants were Jacob Bruzelius, chief financial officer at Rikshem AB and Sofie Moosberg, chief financial officer at AB Stångåstaden.

Several highly qualified market actors and academics could unfortunately not participate in interviews, but they still agreed to contribute to the study with their opinion of the green bond market or have provided research material. These market actors are Simon Reinius, chief executive officer at Optimized Portfolio Management, Bo Becker, professor and program director and at Stockholm School of Economics and Mistra Center for Sustainable Markets respectively. Anonymous participants were representing Credit Suisse and Kommuninvest AB. No other results than the single comments from these market actors are addressed as comments in the text.
3.2.4.3 Market visualisation

International indices were used because there is yet no green bond index available for the Swedish market and S&P Green Bond Index, Solactive Green Bond IG Index and Bloomberg Barclays MSCI Green Bond index are three commonly used green bond indices on the market. In order to have comparable indices S&P/Citigroup International Treasury Bond Index, Sweden 10-year Treasury Bond, S&P International Corporate Bond Index and S&P Sweden IG Corporate Bond Index (S&P Dow Jones, 2018) were used. All of the chosen bond pairs and green bond indices are based on investment grade (IG) bonds, which indicates that many green bond issuers are highly rated in line with previous reports (Ehlers and Packer, 2017). This makes S&P/Citigroup International Treasury Bond Index, Sweden 10-year Treasury Bond, fair comparison variables. Likewise, the majority of green bonds are IG bonds that are issued by corporations (CBI, 2018a; CBI, 2018d), which make S&P Sweden IG Corporate Bond Index and S&P International Corporate Bond Index good comparable variables and representative as conventional bond indices.

For the quality matching, a green and a conventional bond from the same issuer creates a pair. To select which ‘bond pair’ that should be included in the quality matching following variables were applied. The bond was issued by a Swedish bond issuer that issues both green and conventional bonds, the bond trades in Swedish Krona at Nasdaq OMX, the bonds in a pair have the same type of interest structure, similar durations and issue amount as well as approximately the same issue date. A total of nine 'bond pairs' met the criteria and were used in the visualization. These variables were controlled for in order to do a reliable quality matching and to show a fair and correct view of the market since considerable variation in the variables would show a false picture of the quality matching.

4. Results

Results from the data collection including the questionnaire, interviews and comments are presented in this section, starting with the main barriers and the main motives. This is followed by a market visualization that shows the bond price, the return and performance of selected bonds and indices. The sensitivity analysis present market figures of an investment increase in green bonds. The interviews and comments have been used as a complement to the questionnaire to contrive a deeper understanding of the questionnaire result, as well as to resolve potential interpretation errors. The questionnaire results have not been tested statistically (Saunders et al., 2009) due to the low response rate of the questionnaire. Despite Sweden is considered highly active in the green bond market trading, several fund companies declined to participate in the survey due to lack of experience and knowledge of green bonds. This is a considered barrier for the green bond market (Naturskyddsföreningen, 2017) since a lack of sufficient knowledge about these instruments restrains investors from engaging. At the same time a market actor, who although did not invest in green bonds, seemed to speak for the entire market when making a comment of the market's positive attitude towards green bonds.
The main barriers and motives are ranked according to the results. To show a more detailed picture of the data are responses shown in per cent and group per cent scores based on the three barriers and motives groups are shown. Main findings are clarified in the text.

4.1 Main barriers

The main barriers from the questionnaire are shown in Table 3, which presents the investors rather sceptical view of the financial return of green bonds.

Table 3. Main barriers to the green bond market

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Rank</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial barriers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The bond is not meeting our financial target</td>
<td>1</td>
<td>29%</td>
</tr>
<tr>
<td>The liquidity is low</td>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td>The investment entails excessive risk</td>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>Lack of yield curves, credit ratings and other risk instruments</td>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>The large financial resources that an investment requires</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Strategic barriers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our investment policy limits us</td>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td>Lack of unified standards</td>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>Our stakeholders do not consider the climate issue as primarily from an investment point of view</td>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>Limited possibility of legal enforcement of greenwash</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>Pressures from stakeholders to maximize profit</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Distortion and Conception barriers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The risk of greenwashing</td>
<td>2</td>
<td>14%</td>
</tr>
<tr>
<td>We consider it not meaningful</td>
<td>5</td>
<td>6%</td>
</tr>
<tr>
<td>We do not assume green bonds will contribute to reducing the carbon footprint</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>It does not contribute to a more sustainable environment anyway</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>It does not give us a positive feeling</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The group of financial barriers were given the highest scores with a support of 51 per cent. Fund companies believed that the single greatest barrier preventing them from engaging in the green bond market was financially related. A majority of the investors, with a response rate of 29 per cent, stated that they are limited by the expectation of the bonds not meeting their financial target. In addition, all interviewed participants agreed green bonds often are sold at a premium, which supported the questionnaire result. Several investors defined the financial barriers as the concern over a lower potential for financial return from green bond investments.
The strategic influence of ... response rate of 26 and 23 per cent respectively. The greenwash risk was however considered as the second strongest main market barrier by fund companies, with a response rate of 14 per cent. In addition, a few interviewed portfolio managers described their experience of opportunistic issuers on the green bond market and considered it a market barrier. The results also showed that a few investors did not believe green bonds contributed to a reduction of carbon emission, nor that they were considered meaningful investments. Thus, these two statements could be addressed in the context of greenwashing as the investments are not fulfilling their ‘green’ purposes. Opposingly, a portfolio manager stated that the market is being cleared of these opportunistic issuers and that such issuers no longer are a considerable concern. Further, several portfolio managers stated that it is up to the investors to be prudent and deselect the deceiving bonds and that a committed investor does a risk analysis of the issuer to prevent greenwashing. An issuer agreed with this statement and further cited that information about their green projects are provided and it was completely up to the investor to assess the investment. However, the issuer also underlined the importance of transparency in this context.

All interviewed participants shared the view that there is a high market demand for green bonds and participants implied that the majority of issued bonds tend to be oversubscribed. A few of the interviewed participants identified a shortage of green bonds as the main barrier preventing an increase in market growth and they believed that the market has room for more issuers. This is supported by the fund companies who defined a low liquidity as the main market barrier. The barrier had a response rate of 11 per cent in the questionnaire. Opposingly, a portfolio manager fully rejected the lack of green bonds as a considerable market barrier and described a market that is currently growing at the fastest pace possible for the system to manage. This was in line with a commented from a market actor who rather suggested an increase in market liquidity.

With a response rate of 11 per cent, fund companies addressed that their investment policy limits them to make investments in green bonds. This suggests that within the strategic group, the internal barriers of the fund companies were stronger than the pressure from external stakeholders. A portfolio manager defined policy limitations as differences in the fund companies’ investment strategies, and green bonds might not fit the structure. Further, investors of pure green bond funds have indirectly been given permission from their beneficiaries to invest in green bonds with the highest risk-adjusted return out of available green bonds without considering the rest of the bond market. Whereas portfolio managers of mixed funds or bond funds are obligated to choose the instruments with the highest risk-adjusted return out of the entire market. Depending on fund company these investment policies can be obligated. This was cited by another participant as a pension fund is obligated to; first, provide the highest risk-adjusted future return for their pension beneficiaries and second, incorporate environmental, social, and governance factors into their investment decision-making process. Further, a few investors said that they use bonds, due to their
features of low risk and high liquidity, to park money temporarily until they make an equity investment.

With a low figure of 6 per cent, the fund companies defined lack of standards as their main barrier in the questionnaire. As a portfolio manager implied, without a regulatory definition of a green bond, all bonds can be addressed as green. However, all interviewed participants agreed that the GBP is generally adopted beside various rating schemes. A portfolio manager discussed the complexity of making a standardised definition of what is ‘green’ and what is not ‘green’, as of how you find a unified definition of green bonds since they are dependent on their including projects and how shall green criteria be measured. However, according to several portfolio managers is it only a matter of time until the market will receive regulated standards. These standards would not be in terms of clear classification directives of a green bond, but rather regulated definitions of methodologies and process of how to report and follow green bond procedures according to a participant. Because countries have different perceptions of what is 'green'. Oppositely, an issuer stated that green standards rather could create new market barriers and affect the market growth negatively, because future projects could be disqualified from being called green. As a portfolio manager addressed, because a bond is not labelled does not mean it is not ‘green’. Further, an issuer stated that there may be investors that do not think that their green bonds are ‘green enough’, but that there still is a high demand for their bonds.

A portfolio manager stated that a great share of green bond issuers has a good credit rating, which reduces the investment risk. In addition, a majority of the interviewed investors believed green bonds entailed a lower risk than conventional bonds. This was due to the bonds extra reporting requirements, that creating an often close relationship between the issuer and the investor in a green bond trade. The good credit ratings were suggested to restrain investors with a less risk-averse investment policy from making green bond investments, even though they made other bonds investments. Interestingly, the selection 'the investment entails an excessive risk’ as the main market barrier had a support of 6 per cent, but the fund companies’ interpretation of excessive risk was not clarified due to the chosen multiple-choice answer design. The influence of the official bank rate was confirmed by both issuers, who stated that the current low rate was financial to their advantage. An issuer underlined that green bonds were a better alternative for them compared to conventional bonds. Thus, they would probably still consider green bonds over conventional bonds in a situation of a positive official bank rate. Further, issuers described a possible market drawback as a potential future recession, which would make investors request higher returns and thereby be more likely to choose alternative investments over green bonds.

4.2 Main motives

The fund companies defined the financial motives as their prime investment motives, represented by a response rate of 41 per cent. The group also contains the second and the third main single motives to invest in green bonds. These results were supported by a majority of the portfolio managers who stated that financial return is the main investment reason.
Table 4. Main motives for green bond investments

<table>
<thead>
<tr>
<th>Motives</th>
<th>Rank</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial motives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We can earn money through investments favouring the society (Dual-return)</td>
<td>2</td>
<td>17%</td>
</tr>
<tr>
<td>To achieve long-term financial gains</td>
<td>3</td>
<td>12%</td>
</tr>
<tr>
<td>To maximize our financial return</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>To decrease the portfolio risk</td>
<td>7</td>
<td>4%</td>
</tr>
<tr>
<td>It offers portfolio diversification</td>
<td>8</td>
<td>3%</td>
</tr>
<tr>
<td>Altruistic motives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To contribute to a more sustainable environment</td>
<td>1</td>
<td>18%</td>
</tr>
<tr>
<td>We consider it meaningful</td>
<td>5</td>
<td>9%</td>
</tr>
<tr>
<td>We do not want to contribute to harm the environment</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>We are concerned about the carbon footprint</td>
<td>8</td>
<td>3%</td>
</tr>
<tr>
<td>It makes us feel good</td>
<td>9</td>
<td>1%</td>
</tr>
<tr>
<td>Strategic motives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social norms advocate investing in favouring sustainability and &quot;green&quot;</td>
<td>4</td>
<td>11%</td>
</tr>
<tr>
<td>Improve the public corporate image, be recognized as a sustainable fund company with green investments</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>We do not want to be seen as an unethical fund company</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>It is required to maintain our position in relation to competitors</td>
<td>9</td>
<td>1%</td>
</tr>
<tr>
<td>If we do not invest in green bonds, the regulatory authorities can force us to do so in the future</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

As a portfolio manager implied, it is about buying a bond with the highest risk-adjusted return and only when everything else is equal will a green bond be chosen over a conventional. This statement shows the importance of financial return in an investment decision. Several interviewed portfolio managers stated the possibility to gain a dual-return, in terms of financial and social outcome as a prime reason to invest in green bonds. The statement was supported by 17 per cent of the fund companies’ questionnaire responses, making it the second single motive to invest in green bonds. In addition, green bonds are considered as long-term investments with expectations of future gains, which has been confirmed by several interviewed participants. The motive ‘to achieve long-term financial gains’, with a response rate of 12 per cent, was the third single reason to invest in green bonds. Thus, the long-term financial gain was the third largest reason to invest in a green bond. Despite the main group of motives to invest in green bonds are financial, a majority of the fund companies did not state the pure profit maximization as their main investment motive. Neither
did the result show that diversification or decreasing portfolio risk was any main investment purposes of these green debt instruments.

The second strongest group of motives, the motive of altruistic reasons behind the investment decision, had a support of 37 per cent of the fund companies. The group contains the strongest single motive to invest in green bonds, which according to the responding fund companies is the opportunity to contribute to a more sustainable environment. The motive received a questionnaire support of 18 per cent. Within the same group was also the motive ‘We consider it meaningful’, that received a response rate of 9 per cent and thereby was ranked fifth. Several of the interviewed portfolio managers did also state these as highly considered investments reasons. A portfolio manager stated that even though the green bond market is small, green bonds are the finance industry’s way of contributing to reaching the goal of the global climate agreement. Interviewed participants argued for the long-term sustainable impact these bonds have and underlined their contribution to the society and social welfare. A few portfolio managers pushed it as far as to say that SR investments are the only option for a sustainable future. Thus, a majority of the investors found the environmental impact as an important factor in their investment decision.

The result shows that the group of strategic motives had a minority support of 22 per cent. Within the group of strategic motives, fund companies’ investments decision was more influenced by social norms than regulatory forces. Hence, a majority of the fund companies believed that the implementation of MiFID II including new trading regulations have except for digitising the trading not had any negative effect on their bond trading. A few fund companies found the trading less convenient and they have had to move to electronic trading, but overall the participants believed it was only another way to trade bonds that everyone has adjusted to. A few fund companies cited that the implementation of MiFID II has made the market less transparent. Some participants mentioned that the price transparency has been negatively affected. Whereas, ‘Social norms advocate investing favouring sustainability and ‘green’’ were the fourth strongest reason with a response rate of 11 per cent. An issuer described that social norms and the strong green market trend are reflected in investors’ investment decisions. A few portfolio managers did, in fact, imply their clients’ demand for ‘green alternatives’ and green bonds, as the main investment reason. According to an issuer are the investment decisions influenced by competitiveness among fund companies, over the money placed in the fund market and thereby over the green bond market and available green bonds. In line with this statement was comments from two market actors who stated that green bonds are all about marketing. Meaning green bond investments are purely made for marketing purposes and making the company look good in their stakeholders’ eyes since ‘green’ is a current market trend.
### 4.3 General market perceptions

Table 5. General perceptions of the green bond market

<table>
<thead>
<tr>
<th>Statements</th>
<th>Median</th>
<th>Range</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial statements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When investing in green bonds, the primary focus is on the financial return</td>
<td>5</td>
<td>2-7</td>
<td>4.8</td>
</tr>
<tr>
<td>In comparison to conventional bonds, we expect the financial return on a green bond to be*:</td>
<td>4</td>
<td>3-5</td>
<td>3.9</td>
</tr>
<tr>
<td>Investments in green bonds entail a higher risk, compared to conventional bonds</td>
<td>4</td>
<td>1-6</td>
<td>3.1</td>
</tr>
<tr>
<td><strong>Altruistic statements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The environmental impact is a very important factor in a green bond investment decision</td>
<td>6</td>
<td>2-7</td>
<td>5.5</td>
</tr>
<tr>
<td>People within our fund company are concerned about the environment and want to contribute to a sustainable future</td>
<td>5</td>
<td>2-7</td>
<td>5.4</td>
</tr>
<tr>
<td>Green bonds have a positive effect on the environment</td>
<td>5</td>
<td>2-7</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Strategic statements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investments in green bonds are required for us to maintain our position in relation to competitors</td>
<td>4</td>
<td>1-7</td>
<td>3.3</td>
</tr>
<tr>
<td>To invest in green bonds improves the fund company’s image</td>
<td>5</td>
<td>2-7</td>
<td>5.2</td>
</tr>
<tr>
<td>If we do not invest in green bonds, the regulatory authorities can force us to do so in the future</td>
<td>1</td>
<td>1-7</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Note: Scale from 1.'disagree completely’ to 7.'agree completely’ * Measuring the relation, 1.'much lower’. to 7.'much higher’

The result from the questionnaire about green bonds' return in comparison to conventional bonds, showed fund companies believe they underperform, but interestingly, only a slightly underperformance and the median figure were neutral. Portfolio managers confirmed green bonds underperform in terms of the overall return, but at the same time, they mentioned that it is not a general practice. When asking the interviewed participants to address their opinion on the green bonds in terms of issuing price and the secondary market performance respectively, they all had similar opinions. Their experiences were that green bonds often sell to a premium price at issuance and frequently performed better than conventional bonds on the secondary market. Participants believed that the high demand allowed green bond issuers to issue bonds with a discount in terms of lower interest rates, which result in a premium price for the investor. The phenomenon was also described by a portfolio manager saying that investors at the time of issue pay to lend out money. Interviewed issuers also confirmed there is a green bond premium. The premium was 2 bps above conventional bonds according to one of the issuers. The interviewed issuers are property companies, hence an issuer referred to the higher
costs that are related to sustainable building materials in comparison to ‘regular’ building materials. The issuer, therefore, considered the bond premium a necessity. Further, some of the portfolio managers considered the benefits greater than the costs, and by that confirm they buy for a premium.

The result from the question: 'Investments in green bonds entails a higher risk, compared to conventional bonds', showed that a majority of the fund companies slightly disagree with an average of 3.1. This result is in line with the result from the interviews, but the range shows a rather split opinion, which supports the result that some fund companies find the excessive risk as the main market barrier.

The overall statement result shows a strong altruistic influence in the investment decision. All altruistic statements have average scores over neutral and particularly high scores on the importance of environmental impact in the investment decision and wanting to contribute to a sustainable future. The strong altruistic motives make the result on the statement that green bonds have a positive effect on the environment interesting since they show a rather low level of agreement with an average of 4.8 and with a median of 5.

Strategic statements show a weak legislation pressure and fund companies did not believe the regulatory authorities can force them to invest ‘green’. Oppose to the formal rules, the result shows an influence on informal norms. In line with previously mentioned comments, market actors believe these investments favour the company image. Several participants implied that investment decisions are strongly influenced by strategic motives, and a couple of participants even claimed that green bond investments are purely made due to marketing because of the increasing market trend. An issuer argued this further, that investors by applying social norms, contribute to the low market liquidity. Thus, the issuer believed investors want to be seen as green investors by their beneficiaries and therefore hold their green bonds to maturity.

4.4 Market visualisation

To visualize the Swedish green bond market, bonds from nine Swedish green bond issuers have been assessed. Table 6 presents a green bond and a conventional bond from the same selected Swedish issuer and most of the issuers were considered IG issuers. The issuing price that is presented as a percentage does not indicate any difference between the bonds, but the yearly interest rate does. Six green bonds out of the nine examples have a higher yearly interest rate than their matching conventional bonds. Table 6 with the selected bond pairs reflect that seven out of nine green bonds outperformed their conventional alternative at issue and five continue to do so over time. Although, due to the limited scope of bonds is it not possible to draw any conclusions about Swedish green bonds in general.
Table 6. Quality matching of nine issuers’ green and conventional bonds

The table contains 9 quality matching of nine issuers’ green and conventional bonds, a total of 18 pairs. Type equals G: Green, C: Conventional. ‘Perf ai’ and ‘Perf aiΔ’ shows performance at issue and difference in performance at issue between G and C, ‘Perf si’ and ‘Perf siΔ’ represents performance since issue and difference in performance since issue between G and C. Performance was measured in bid price. ‘NV’ is Nominal value expressed in millions, ‘mn’. ‘Cpn’ and ‘Cpn ∆’ is the coupon rate and the difference in coupon rate between G and C. ‘Dur’ is the bonds’ duration. ‘Amt mn’ is the amount issued expressed in millions. ‘Rate’ Standard & Poor’s and Moody’s rating, expressed in Standard & Poor’s categories.

<table>
<thead>
<tr>
<th>Issuer</th>
<th>Type</th>
<th>ISIN</th>
<th>Issue date</th>
<th>Perf ai</th>
<th>Perf aiΔ</th>
<th>Perf si</th>
<th>Perf siΔ</th>
<th>NV</th>
<th>Price of NV</th>
<th>Cpn</th>
<th>Cpn ∆</th>
<th>Cpn type</th>
<th>Dur</th>
<th>Amt mn</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rikshem AB</td>
<td>G</td>
<td>SE0008294805</td>
<td>29-04-16</td>
<td>100,55</td>
<td>-0,06</td>
<td>0,67</td>
<td>-0,18</td>
<td>1.0</td>
<td>100%</td>
<td>0,90%</td>
<td>0,08%</td>
<td>Floating</td>
<td>3 Y</td>
<td>250</td>
<td>A-</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0008348791</td>
<td>20-05-16</td>
<td>100,49</td>
<td>0,85</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>0,82%</td>
<td></td>
<td>Floating</td>
<td>3 Y</td>
<td>300</td>
<td>A-</td>
</tr>
<tr>
<td>VolvoFinans Bank AB</td>
<td>G</td>
<td>SE0009921950</td>
<td>16-05-17</td>
<td>101,23</td>
<td>-0,02</td>
<td>1,08</td>
<td>-0,21</td>
<td>1.0</td>
<td>100%</td>
<td>0,92%</td>
<td>-0,06%</td>
<td>Floating</td>
<td>5 Y</td>
<td>700</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0010101915</td>
<td>27-06-17</td>
<td>101,25</td>
<td>1,29</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>0,98%</td>
<td></td>
<td>Floating</td>
<td>5 Y</td>
<td>700</td>
<td>NR</td>
</tr>
<tr>
<td>Castellum AB</td>
<td>G</td>
<td>SE0009161607</td>
<td>04-10-16</td>
<td>103,54</td>
<td>3,25</td>
<td>3,93</td>
<td>3,44</td>
<td>1.0</td>
<td>100%</td>
<td>1,95%</td>
<td>0,75%</td>
<td>Floating</td>
<td>5 Y</td>
<td>650</td>
<td>BBB-</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0009189566</td>
<td>10-10-16</td>
<td>100,29</td>
<td>0,49</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>1,20%</td>
<td></td>
<td>Floating</td>
<td>2 Y</td>
<td>700</td>
<td>BBB-</td>
</tr>
<tr>
<td>Vasakronan AB</td>
<td>G</td>
<td>SE0006261079</td>
<td>12-09-14</td>
<td>100,31</td>
<td>0,02</td>
<td>0,01</td>
<td>-0,44</td>
<td>1.0</td>
<td>100,73%</td>
<td>0,60%</td>
<td>0,07%</td>
<td>Floating</td>
<td>5 Y</td>
<td>510</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0006452553</td>
<td>18-11-14</td>
<td>100,29</td>
<td>0,45</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>0,53%</td>
<td></td>
<td>Floating</td>
<td>5 Y</td>
<td>500</td>
<td>NR</td>
</tr>
<tr>
<td>Atrium Ljungberg AB</td>
<td>G</td>
<td>SE0009773211</td>
<td>20-03-17</td>
<td>101,46</td>
<td>1,38</td>
<td>0,99</td>
<td>0,60</td>
<td>1.0</td>
<td>100%</td>
<td>1,62%</td>
<td>1,42%</td>
<td>Fixed</td>
<td>5 Y</td>
<td>200</td>
<td>BBB</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0010022871</td>
<td>12-06-17</td>
<td>100,08</td>
<td>0,39</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>99,95%</td>
<td>0,20%</td>
<td></td>
<td>Fixed</td>
<td>5 Y</td>
<td>200</td>
<td>BBB</td>
</tr>
<tr>
<td>Hemsö Fastigheter AB</td>
<td>G</td>
<td>SE0008406235</td>
<td>03-06-16</td>
<td>102,13</td>
<td>0,94</td>
<td>2,10</td>
<td>0,86</td>
<td>1.0</td>
<td>100%</td>
<td>1,15%</td>
<td>0,15%</td>
<td>Floating</td>
<td>5 Y</td>
<td>700</td>
<td>A-</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0008347876</td>
<td>16-05-16</td>
<td>101,19</td>
<td>1,24</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>1,00%</td>
<td></td>
<td>Floating</td>
<td>4 Y</td>
<td>550</td>
<td>A-</td>
</tr>
<tr>
<td>Specialfastigheter Sverige AB</td>
<td>G</td>
<td>SE0010600262</td>
<td>21-11-17</td>
<td>99,22</td>
<td>-0,65</td>
<td>0,58</td>
<td>-0,30</td>
<td>1.0</td>
<td>99,74%</td>
<td>0,63%</td>
<td>-0,09%</td>
<td>Fixed</td>
<td>5 Y</td>
<td>500</td>
<td>AA+</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0010297069</td>
<td>29-08-17</td>
<td>99,87</td>
<td>0,88</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>0,71%</td>
<td></td>
<td>Fixed</td>
<td>5 Y</td>
<td>350</td>
<td>AA+</td>
</tr>
<tr>
<td>AB Stångästaden</td>
<td>G</td>
<td>SE0007490750</td>
<td>09-09-15</td>
<td>101,01</td>
<td>0,37</td>
<td>2,20</td>
<td>1,46</td>
<td>1.0</td>
<td>N/A</td>
<td>0,70%</td>
<td>0,27%</td>
<td>Floating</td>
<td>5 Y</td>
<td>500</td>
<td>AA-</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>SE0006453114</td>
<td>16-11-16</td>
<td>100,64</td>
<td>0,74</td>
<td>1,0</td>
<td>1,0</td>
<td>1.0</td>
<td>100%</td>
<td>0,43%</td>
<td></td>
<td>Floating</td>
<td>5 Y</td>
<td>500</td>
<td>AA-</td>
</tr>
<tr>
<td>Svensk Fastigheter-</td>
<td>G</td>
<td>SE0010547828</td>
<td>20-11-17</td>
<td>99,95</td>
<td>0,88</td>
<td>0,22</td>
<td>0,32</td>
<td>1.0</td>
<td>100%</td>
<td>0,37%</td>
<td>-0,12%</td>
<td>Fixed</td>
<td>2 Y</td>
<td>950</td>
<td>BBB+</td>
</tr>
<tr>
<td>Finansiering AB</td>
<td>C</td>
<td>SE0010832667</td>
<td>09-03-18</td>
<td>99,07</td>
<td>-0,10</td>
<td>1,0</td>
<td>99,98%</td>
<td>1.0</td>
<td>1.0</td>
<td>0,49%</td>
<td></td>
<td>Fixed</td>
<td>2 Y</td>
<td>891</td>
<td>BBB+</td>
</tr>
</tbody>
</table>

All bonds are listed in SEK on NASDAQ OMX Stockholm
In Figures 3, 4 and 5, indices have been compared to visualize the performance of green bonds in relation to both the greater IG bond market and the risk-free debt securities. Figure 3 shows the performance from December 2013 to April 2018 of three global green bond indices in relation to S&P International IG Corporate Bond Index, which is representative for the conventional alternative, and S&P/Citigroup International Treasury Bond Index. The green bond indices have over time improved their performance in relation to both the conventional bond index and Treasury bond index. They do also show less volatile performance curves. The green bond indices have, besides the S&P Green Bond Index and with a few exceptions as the year 2014 and end of 2017, performed better than both the conventional bond index and Treasury bond index. The chosen X-intercept for the international graphs in Figure 3 and Figure 4 were the earliest date when performance data were available for all three green bond indices and the single green bond index respectively.

Figure 3. Performance - green bond indices in relation to corporate bond index and Treasury bond index

Figure 4 shows the performance from November 2008 to April 2018 of S&P’s global green bond index in relation to their international corporate bond index, which is representative for the conventional alternative, and Treasury bond index. Over time green bonds show a less volatile performance curve than conventional bonds. Further, they outperform Treasury bonds, but not conventional bonds.
Figure 4. Long-term performance - green bond index in relation to corporate bond index and Treasury bond index

Figure 5. Performance of all the selected Swedish green bonds compared to Swedish corporate bond index and the Swedish 10-year Treasury bond
Figure 5 shows the selected Swedish green bonds performance from 30 June 2016 to 30 April 2018 in relation to Swedish 10-year Treasury bond and S&P Sweden IG Corporate Bond Index, which is representative for the conventional alternative. The chosen starting point in Figure 5 is to reflect a comparative market picture. An earlier X-intercept of the carts would have caused a less comparative picture due to an increased time span between the bonds with different issuing dates. The Swedish market shows a similar performance to that of the global market in terms of volatility, green bond curves have lower volatility than both the conventional bond index and Treasury bond. The green bonds show a slightly sharper inclining curve than the conventional bond index.

4.5 Sensitivity analysis

At the end of August 2017, Sweden represented about 3.5 per cent (see Table 2) of the total global market of outstanding green bonds. The responding fund companies had an average of 2.16 per cent of their total assets under management (AUM) invested in green bonds. If 2.16 per cent would represent all Swedish fund companies and thereby be applied on the total Swedish fund wealth of SEK 3763bn (USD 443bn) at the end of 2017 (Statistics Sweden, 2018), the green bond market owned by Swedish fund companies would be worth SEK 81bn (USD 9.9bn). If the estimated green bond market owned by Swedish fund companies is put in relation to the current figure of total green bonds outstanding on the Swedish market (see Table 2), fund companies cover almost 80 per cent of the market.

Results from a sensitivity analysis are presented in Table 7. An increase of 2.84 per cent makes green bonds represent 5 per cent of the fund companies AUM, which would increase the green bond market capital with SEK 106bn (USD 13bn). The total Swedish bond wealth was SEK 3558bn (USD 434bn) in March 2018 (Statistics Sweden, 2018). Table 7 also shows the current share of the bond market that is represented by green bonds, which based on green bond figures from Table 2, is 2.97 per cent. A 2 per cent movement of current invested bond capital into the green bond market, would generate an additional SEK 72bn (USD 9bn) green bond capital.

Table 1. Sensitivity analysis, showing current capital invested in the green bonds market and a potential market increase

<table>
<thead>
<tr>
<th></th>
<th>SEKbn</th>
<th>USDbn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tot. Swedish fund wealth (AUM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>that is invested in green bonds</td>
<td>2.16%</td>
<td>81</td>
</tr>
<tr>
<td>with an increase of green bond to</td>
<td>5%</td>
<td>188</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>376</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>752</td>
</tr>
<tr>
<td>Tot. Swedish bond wealth (issued)</td>
<td>2.97%</td>
<td>106</td>
</tr>
<tr>
<td>that is invested in green bonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with an increase of green bond to</td>
<td>5%</td>
<td>178</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>356</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>890</td>
</tr>
</tbody>
</table>

Note. Exchange rate used: *SEK 1 is USD 0.12254 for 12/29/2017 **SEK 1 is USD 0.12209 for 3/26/2018
5. Analysis

5.1 Main barriers

Fund companies were primarily concerned over the financial related barriers in the green bond market. Thus, the main group of barriers were financial and the main single barrier addressed was the concern for green bonds not meeting the financial requirements of their funds. Interestingly, only a weak result indicated that fund companies believed green bonds underperformed conventional bonds. Considering that the financial concern was addressed as the main market barrier, would a strong level of agreement be expected. An explanation to this rather neutral result was that participants are potentially referring to different return aspects. Hence, there could be more than one way to interpret the question result, which is a limitation of the closed questions that were used in the questionnaire since they do not provide exhaustive answers from the participants. Portfolio managers confirmed there is a high cost related to green bond investments, which is in line with Geczy et al. (2005) and Riedl and Smeets (2017) findings. Further, the portfolio managers believed green bonds underperform conventional bonds in terms of the overall return, but at the same time, they mentioned that it is not a general practice.

The Swedish market (Figure 5) shows a similar performance to that of the global market (see Figure 3 and 4) in terms of volatility, the green bonds show a lower volatile performance in comparison to both Treasury bonds and conventional bonds. Green bonds are issued by both private corporations as well as governments and municipalities and thereby entail a slightly higher risk than Treasury bonds alone, which gives green bonds a higher performance curve, in line with the overall result of the visualization. At the same time, the performance curves reflected that green bonds entail a lower risk and underperform conventional bonds as shown in the chart with a longer time horizon (see Figure 4), interesting as both indices are based on IG bonds. Further, the individual green bonds show over time a slightly inclining curve than the conventional bond index and outperform the Treasury bond over time. These results are in line with the interviewed participants overall market experience.

Interestingly, the shorter time chart of five years (see Figure 3) and the green bonds in the quality matching (see Table 6) showed a rather reverse relationship in terms of performance. Hence, the green bond performance curves are quite above the conventional bonds for the majority of the charts’ period. This result is in line with portfolio managers experience of the price development on the secondary market, which is in line with Preclaw and Bakshi (2015) report. The average time to maturity of issued green bonds in Sweden is five years (Andersson, 2017) and all of the selected bonds had up to five years to maturity. The shorter maturities indicate that the shorter time horizon potentially describes the Swedish market better. Suggesting that green bonds outperformed conventional bonds, as cited by interviewed participants and Harrison and Boulle (2017) report. Overall, the market visualisation showed different results of green bond performance, which is in line with the literature of SRI performance (Kempf and Osthoff, 2007; Cortez et al., 2008; Bello, 2005; Junkus and Berry, 2015).
When asking the interviewed participants to address their opinion on green bonds in terms of issuing price and the secondary market performance respectively, they all had similar opinions. Their experience was that green bonds often were sold at a premium at issuance, as Ehlers and Packer (2017) and Zerbib (2017) found. This premium was 2 bps above conventional bonds according to one of the issuers, a figure in line with the average premium according to literature (Ehlers and Packer, 2017; Zerbib, 2017). Additionally, portfolio managers believed green bonds frequently performed better than conventional bonds on the secondary market, as Harrison and Boulle (2017) suggested. The result is supported by the performance comparison of the nine issuers bonds, who showed that the majority of green bonds outperformed their conventional alternatives at issue and continued to do so over time. Further, the result supports Preclaw and Bakshi (2015) suggestion that green bonds are tradable for a premium price on the secondary market. This discussion could explain the rather neutral response to questions about the bonds return compared to a conventional option, as it depends on which performance or returns aspect you refer to.

The investors’ different investment intentions shall also be discussed from a return context; whether they plan to sell the bond before maturity or not. Because the price on these bonds is believed to rise further on the secondary market, there is a financial opportunity for the initial investors who choose to sell before maturity. Interestingly, interviewed participants confirmed Flynn’s (2014) and Riedl and Smeets (2017) findings that investors usually hold their green bonds and sustainable investments respectively to maturity. Meaning that not all investors take advantage of this financial opportunity. This was confirmed by some portfolio managers who considered the investment benefits greater than the costs, which confirm there are investors who are willing to pay a social discount as addressed by Everett (2003) and Riedl and Smeets (2017). The result also supports Lewis and Mackenzie’s (2000) finding that SR investors are more tolerant of additional investment costs if it allows them to fulfill their ethical duty. A market where some investors are more price tolerant than others creates high entry barriers. Thus, only the largest investors can afford to invest and thereby prevent smaller investors to engage, which in the long-term restrains market growth. This argument has not been addressed by participants as a considering barrier on the green bond market, but as shown by CBI (2018e) one of the largest investors are large institutional investors.

The reason behind why green bonds were more expensive than conventional bonds at issue was addressed. Portfolio managers, as well as issuers, agreed that there were higher overall costs for green bond issuers. These costs are, according to market actors, related to the green label certification and the administration of the additional reporting requirements that come with the green label, as previously suggested in the literature (Jun et al., 2016). Further, an issuer described how sustainable building materials entailed higher costs than ‘regular’ building materials. The issuer, therefore, considered the bond premium a necessity. It could be argued that the slightly lower return green bond investors receive, reflects the slightly lower compensation they require for the taken liquidity risk. This situation is based on a market where the demand is higher than the supply, allowing green bond issuers to issue
bonds at a premium as described by market actors and mentioned by Andersson (2017). A situation that could change quickly if the supply of green bonds increases, or if investors’ preferences change. Thus, such a situation could result in reduced issuer discount and a drop in bond price.

The strategic influence on the investments decision was considered the second largest barrier group and closely after came the distortion and conception group of barriers of which the greenwashing had the second highest single score. Greenwashing was addressed as a considerable market issue by both Lane (2012) and Laufer (2003). This risk of issuers not fulfilling their 'green' obligation was supported by most of the portfolio managers, who had also had experience of opportunistic issuers. In addition, a few fund companies did not believe green bonds contributed to a reduction of carbon emission, nor did they consider them meaningful investments. These two statements could be addressed in the contexts of greenwashing. Although, as green bonds also include funding of sustainable projects like water management and biodiversity, among others (ICMA, 2017), these participants might interpret the first of the two questions in relation to another sustainable activity and it could be faulty to entirely attribute it to greenwashing. Further, a majority of fund companies agreed on that green bonds have a positive effect on the environment, but with a level of agreement just over neutral. This result is however interesting since green bonds, with respect to that all projects claim to fund environmental actions. The issue shall thereby potentially be addressed as lack of trust for the issuer, which supports the low market trust as proposed by Tripathy (2017).

Opposingly, a portfolio manager meant greenwashing were no longer a market issue, because it is all about making a good risk analysis of the issuer prior to investing. An issuer agreed with this statement, but also underlined the importance of transparency in this context. Nevertheless, even if investors are prudent and if they researched the bonds environmental impact more comprehensively than their financial analysis as Nilsson et al. (2010) claimed SR-investors generally do, deceiving bonds may be hard to identify. Especially if issuers use the green bond material as greenwashing tools as described by Laufer (2003). Thus, this issue results in an increased exposure to reputational risk for the investor (Lane, 2012; Cochu et al., 2016). Even if a fund company would divest a deceiving bond, a worst-case scenario could lead to loss of their beneficiaries' trust. These greenwashing related issues address how important it is to consider the risk of greenwashing in the green bond market.

Another of the third largest single barrier addressed by the fund companies was a low market liquidity. The market liquidity issue is rather complex, which can explain the relatively high concern among the fund companies. A high market demand does theoretically make green bonds liquid assets for the holders, whereas the green bond market is illiquid for those wanting to invest, due to few bonds outstanding. All interviewed participants shared the view that there was a high market demand for green bonds. This result supports the literature (Roselle, 2016; Zerbib, 2017; Tripathy, 2017; Harrison and Boulle, 2017; Andersson, 2017) and is shown in the markets increasing figures of both issuers and green bonds issued (CBI,
Participants implied in line with reports (Harrison and Boulle, 2017; CBI, 2018a) that newly issued bonds tend to be oversubscribed. This supports the issue of low market liquidity. Higher requirements on liquidity coverage caused an increased demand for some covered and governmental green bonds (Avesani et al., 2007; Finansinspektionen, 2015; Zerbib, 2017), which can have boosted the market demand for green bonds and contributed to the low supply. Additionally, a few of the portfolio managers defined, in line with Jun et al. (2016), that the main barrier that prevents market growth was the shortage of green bonds. The low liquidity also increases the transaction costs (Jiang and McCauley, 2004), which affect the total return of the bond. Portfolio managers believed that the market has room for more issuers and green bonds, which was their suggested key for market growth. When the estimated green bond market owned by Swedish fund companies were put in relation to the figure of total green bonds outstanding on the Swedish market, fund companies accounted for around 80 per cent of the market. These figures show how significant fund companies are in the Swedish green bond market and thereby how important their presence is. As shown in the sensitivity analysis, if fund companies increase their total proportion of green bonds by a few percentages, their demand would by far be exceeded the amount of outstanding Swedish bonds. Hence, fund companies would currently need to invest outside the Swedish market for this increase to be possible.

Policy limitations were also addressed as the third strongest single barrier preventing green bond investments. It can either be related to restrictions in the funds’ investment policy as Kaminker et al. (2013) suggested, or to their risk profile. This was further defined by a portfolio manager, as differences in the fund companies’ investment strategies. A portfolio manager of pure green bond funds has indirectly been given permission from their beneficiaries to invest in green bonds with the highest risk-adjusted return without considering the rest of the bond market. Whereas portfolio managers of mixed funds or bond funds are obligated to choose the instruments with the highest risk-adjusted return out of the entire market. Depending on fund company can these investment policies be obligated, which also was cited by another participant and in line with literature (Kaminker et al., 2013). Hence, a pension fund is obligated to; first, provide the highest risk-adjusted future return for their pension beneficiaries and second, incorporate environmental, social, and governance factors into their investment decision-making process.

The most of the selected Swedish issuers in the quality matching were considered IG issuers, suggests that the majority of green bond issuers are corporations with risk profiles close to zero that barely entail any risk of default (EU Regulation 61, 2015). This result is in with Ehlers and Packer (2017) report and CBI, (2018a) and CBI (2018c) who find that the largest issuers and holders are governments, government-owned corporations. This low risk was addressed as a limitation, according to a portfolio manager, because, it restrains fund companies with higher risk profiles from investing. Further, a low financial risk is associated with a low return (Pouzo and Presno, 2016). This is an issue according to literature because the financial return needs to be the main focus for an investment (Nicholls, 2010; Jansson and Biel, 2014) and for the sustainable financial markets to grow (King and Gish, 2015).
addition, the currently negative official bank rate affects the reference rates (Finansinspektionsen, 2015) and thereby reduces the interest rates.

In line with Nilsson and Stockenstand (2015) who wrote that the regulators examine trust and reliability through uniformity, regulated green bond standards could be a solution as, without jurisdictions, there are no guarantees for the investors. Laufer (2003) stated in line with a portfolio manager, in spite of a bond being labelled as green, there is no full security that the bond is, in fact, green. In the case of standardising green bond criteria, a portfolio manager implied the complexity of defining what is ‘green’ which could lead to difficulties in implementing regulated standards. A current outcome of the lack of green bond standards can be seen in the green bond indices. As no standardisations of green bonds currently exist, slightly different green bond criteria have been applied for the bonds included in the different bond indices, which could be the reason to why the performance of the green bond indices slightly differs. Although, only a minority of the fund companies defined lack of standards as their main barrier, oppose to Baker (2018) who defined it as the prime green bond market limitation. Interviewed participants agreed with both Jun et al. (2016) and Flynn (2014) that the GBP is generally adopted beside various rating schemes. As existing green standards are applied they could contribute to a reduction of greenwashing. Alternatively, it was argued that implementing standards could lead to previously green labelled bond no longer fulfilling the ‘green’ requirements. This suggests that green bonds standards could lead to a decrease in the supply of green bonds. Investors who potentially are satisfied with a lower level of ‘green’ in their investments would not be able to purchase such green bonds. As Beal et al. (2005) stated, there are investors that find low levels of ‘green values’ to be ethical enough for green investment purposes. A portfolio manager implied, because a bond is not labelled does not mean it is not ‘green’.

A portfolio manager described that green bonds offer lower risk due to the often close relationship and additional information sharing between the issuer and the investor in green bond trades. Jun et al. (2016) suggest further that that extra due diligence on the bonds funding projects contributed to lower the overall investment risk. Additionally, the fund companies’ low support for profit maximization and greater support for long-term financial gain reflect that a majority of the fund companies considered green bonds as low-risk investments. This was in line with Ehlers and Packer (2017) proposal and the performance indices of five years where all the bond indices performed closely to the Treasury bond index. Further, supporting literature suggested that sustainable investments could reduce the risk of the asset falling in value (Hoepner et al., 2011) and contribute to a decreased portfolio risk (Jansson and Biel; 2014). Hence, restriction in the fund companies risk profile might prevent investments in the green bond market. Concluding, the policy barriers might simply reflect the fact that fund companies have risk and return requirements that green bond investments do not fulfil.
5.2 Main motives

According to the Swedish fund companies, their engagement in green bond investments is primarily motivated by the possibility to achieve an environmental and societal impact as well as a financial return. Their motives are then a combination of two of the suggested groups of investment motives, the financial and the altruistic. The result is in line with Nilsson (2008) who found that investors investing in SRI profiled mutual funds are influenced by a combination of financial and altruistic motives, altruistic as in both societal and environmental. The same combination of investment motives was shown in King and Gish (2015) study of social shareholder and other SRI. Oppose to Nilsson (2008), King and Gish (2015) found that the financial influence slightly dominated the altruistic, which also is shown in the result of this study. Beal et al., (2005) study is also worth mentioning in this context since they also defined the SR investment motive as a combination of financial and altruistic, but the altruistic motives were rather based on feeling as of psychology' and happiness than societal and environmental. Brønn and Vidaver-Cohen (2009) and Tripathy (2017) suggested managers are assessed not only on the investments financial return but also on the return of the SR-factors. This could explain why Swedish fund companies' investment decisions are strongly altruistic beside financial.

As shown, the green bond investment decisions are strongly driven by the potential to achieve a dual return. Hence, the single first and second motive stated with only one per cent difference was the environmental impact and the possibility to gain a dual return respectively. The third and the fifth motive are the opportunity to gain a long-term financial return, in line with Jansson and Biel (2011) finding, and the meaningfulness of these investments respectively, which advocates a strong combined financial and altruistic motive. Interviewed participants argued for the long-term sustainable impact these bonds have and underlined their contribution to the welfare of the society. This shows that the investment decision to some extent is influenced by their willingness to fulfil an ethical duty. In line with Noppers et al. (2014) findings, investors base their SR investment decisions on the perceived environmental impact as humans find it important to protect the environment. Since the investment decision had such a strong altruistic influence it is interesting that fund companies did not score higher on the statement 'Green bonds have a positive effect on the environment'. Thus, the majority of fund companies found the bonds environmental contribution as an important factor in their investment decision, but not all of them believed to the same extent that green bonds had a positive effect on the environment. The fund companies giving lower scores on this statement were both none- and current green bondholders implying the result is representative for a general market opinion.

Some of the portfolio managers did address the financial motives as the prime investment motive, which is in line with Jansson and Biel’s (2014; 2011) studies. Financial return is an essential element in a green bond investment decision, as addressed by literature and portfolio managers, the investors’ task is to give its beneficiaries the highest risk-adjusted return (Jansson and Biel, 2014; Hoepner et al., 2011). A portfolio manager stated that they would
only choose a green bond over a conventional when everything else is equal. Interestingly, as addressed the main group of motives to invest in green bonds are financial, but fund companies believed green bonds slightly underperformed conventional bonds. It could be argued that there is a level of irrationality in the investments decisions. Thus, the participants invest in assets which they believe have a lower financial return than a conventional alternative, but still, claim that their investment decisions are financially motivated. This could explain the relatively equal score distribution between the first and the second group of motives. These combined returns could create an additional synergy return similar to Kempf and Osthoff (2007) statistical founding, that SR attributes had a significant positive influence on the financial return. However, this study's results do not support such an argument. This study's results shall rather be discussed in the context of the blended value proposition proposed by Emerson (2003), who stated the importance of valuing the investments social, environmental and financial return combined. It could be argued that the altruistic reasons create a utility function as Beal et al. (2005) suggested, that shall be valued besides the investments' financial return. However, this study suggests that the utility created is valued at the size of the addressed social discount (Everett, 2003). Meaning that no additional synergy value is created, only enough to cover for the lower financial return fund companies the results show they are willing to accept. Further, it could be argued that the bonds dual-return has contributed to the high demand for green bonds.

There is a high market demand for green bonds and the market is currently receiving a great interest from investors. As institutional pressure to an extent shapes the investor decisions (Eriksson-Zetterquist, 2009; Bauwens 2016; Doh et al., 2010; Davis, 1973; Davies, 2003; DiMaggio and Powell, 1983; Hahn and Scheermesser, 2006; Riedl and Smeets, 2017) you would expect the strategic influences to be stronger, the group received the lowest score but that the social norms advocate ‘green’ investments was the fourth-ranked single motive. A portfolio manager stated that there is a high demand for green bonds among their clients, which they prioritise to please. In line with Zerbib’s (2017) suggestion, that investors compete over the green debt available, which contributes to lower the market liquidity. Further suggested in comments from market actors, which also is supported in the literature (Goffman, 1959; Noppers et al., 2014), fund companies can make themselves appear good in the eyes of their beneficiaries by investing in green bonds. These arguments are in line with the suggestion from Beal and Goyen (1998) that fund managers create their portfolios after market research to succeed in attracting funds. It also supports Gardberg and Fombrun (2006) claim that social investments increase company reputation. As some fund companies were sceptical of green bonds contribution to the environment, it could be argued, in line with the literature, that sustainability does not necessarily mean a greater responsibility among all market actors, but that it rather reflected the expectations of their stakeholders (Laufer, 2003). The strategic motives received an overall low score on the questionnaire result, the influence of social norms shall still be considered.
6. Conclusion

This study aimed to examine the main barriers that restrict green bond investments and the main motives to invest in green bonds, perceived by the Swedish fund companies. The overall result shows the importance of financial incentives in investment decisions. In terms of the three barrier groups identified, barriers in the financial group were of prime concern. The group contained the single prime reason preventing green bond investments which were the low financial return related to green bond investments. The other two groups, strategic and distortion and conception, were of a substantially lower concern among the fund companies.

In comparison to conventional bonds, green bonds are believed to entail an overall lower risk due to a majority of issuers have high credit ratings, but the risk for issuers and funded projects not fulfilling their obligations are higher. Hence, the second defined market barrier was the risk of greenwashing. It was followed by policy limitations and a low market liquidity. There is a current market trend of wanting to contribute to a more sustainable environment and investors can engage by investing in green bonds. The demand for green bonds is described as high in combination with a market shortage of them, which has led to oversubscriptions in newly issuances of green bonds. The sensitivity analysis showed Swedish fund companies’ considerable buying power in the green bond market. Further, there will be a prominent shortage of green bonds on the Swedish market if green bond investments increase. Increased investments would require fund companies to invest outside the Swedish market if the number of bonds outstanding does not increase. Further, the green certifications contain reporting obligations that include additional administrative costs for the issuers, which result in them taking out a premium price for the bonds at issue. This premium has been confirmed to be 2 bps. Green bond investors are thereby willing to accept a lower yield and pay a premium for the ‘green’ at issuance.

The strongest group of motives behind green bond investments were financial motives closely followed by altruistic motives. The main single motive was to contribute to a more sustainable environment, followed by the possibility to achieve dual-return. This study argues that in addition to the financial attributes, fund companies find a utility function in the green bond that accounts for the premium price that these fund companies seem to accept. This statement justifies how the defined main barrier could be compensated for and explain the apparent contradiction in the investment decisions. Despite that most of the fund companies did not state that their investment decisions were driven by strategic motives, the analysis showed that social norms influence them more than declared. There are expectations and demands from stakeholders to invest ‘green’ and by investing in green bonds fund companies please their fund investors and boost the company image.

This study argues that an increase in green bond supply is needed for the market to grow as well as reducing administrative costs for the issuers to raise the interest rates for the investors. The main motive behind green bond investments was to invest for a sustainable environment.
followed by the possibility to gain a combined financial and environmental return. In addition to the financial attributes, investors find a utility function in the green bonds that accounts for the premium price that these investors seem to accept.

6.1 Further research and Research limitations

This study has defined both motives to engage in green bonds and market barriers preventing engagement. A limitation of this research is that it is performed using participants from only a single Scandinavian country and one group of investors, fund companies. This reduces the possibility to generalise the result. Additionally, in a smaller group of participants, the influence of a single extreme answer is more pronounced than in a larger group (Saunders, 2009). As this can create a slightly false picture of the situation, range and median scores have been presented. In addition, providers of Swedish funds are operating in a market with considerable high SR awareness, as much as this may be of benefit, it may limit the research. With respect to this, future research could benefit from confirming, or refuting, the results with regard to different countries and cultures. Another limitation of this study was that the participants were asked to answer in their professional role and they are thereby limited by the fund provider’s investments strategies, this could merit attention in future research. Hence, an interesting area for future research with regard to both reasonings above would be whether or not different types of investors define barriers and motives for green bonds as the Swedish fund companies did. Another issue to focus on is if it is possible to change investors preferences so that they increase the share of green bonds in their portfolio?

Suggestions for further research from a statistical angle would be to examine if there is a difference in the performance of green bonds in comparison to conventional bonds in the Swedish market, and if green bonds are issued at a discount as indicated by the results. This would provide a clarity of potential opinion differences in the subject among the market players. Another issue for future research is to identify market barriers from the green bond issuers' perspective to understand what is needed to increase the market supply of green bonds from another angle of the market.
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