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Green ocean finance – the race to issue a world's first

A case study of Vasakronan's green bond issuance

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Abstract

Our thesis provides an in-depth overview of the events leading up to Vasakronan's issuance of the world's first corporate green bond in November 2013. The study's aim is to analyze the catalysts enabling the issue, the incentives and obstacles faced by the involved actors and the impact the first and subsequent issuances have had on Vasakronan. We find that several key characteristics of both Vasakronan and the issuance's underwriter SEB enabled them to bring the first green bond to market, including Vasakronan's previous sustainability work, ownership structure, credit market perception and nature of operations as a real estate company. A main incentive driving all involved parties was the potential of being a world first – in Vasakronan's case serving to amplify the effect of other perceived benefits including increased visibility and broadened investor base, signaling effects to other stakeholders and affirmation of the sustainability work already conducted. The primary obstacles faced consisted of process uncertainty and to a lesser extent incremental costs and workload associated with the issue, both of which were largely mitigated through SEB's involvement. The issuance sparked subsequent green financing activities for Vasakronan, in turn translating into improved operational and environmental performance for the company. through strengthened organizational identity and culture, incentive-alignment and improved inter-function collaboration, lowered overall cost of debt, significantly broadened investor base and improved publicity.

Key words: Green corporate bonds, debt issuance, corporate sustainability, green financing

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1 Introduction

1.1 Scope

In November 2013, Vasakronan issued the world's first green corporate bond on the initiative of the Swedish bank SEB. The issuance, amounting to a principal of SEK 1.3bn, effectively represents the first debt instrument within a new sub-market within fixed income, bringing the concept of sustainability-linked financial instruments from the public sphere into that of private, commercial issuers. Although Vasakronan had long conducted extensive sustainability work, the bond furthermore represented the first tangible bridge between these activities and the company's financial performance. Since the issuance, the green bond market has figuratively exploded in size, reaching a cumulative amount of USD 1.1tn issued by the end of 2020. While the issuance can be considered a reflection of broad-scale, global trends in both public opinion and regulatory attention, multiple determinant factors unique to Vasakronan and SEB led these two regionally large but globally minor market actors specifically to instrument it. The purpose of this thesis is to chronicle the events and circumstances leading up to the issuance, formalized in the following research question:

What catalysts enabled Vasakronan to issue the world's first corporate green bond?

The study concludes that several characteristics unique not only to Vasakronan but to SEB as well facilitated the company to issue the first corporate green bond. Empowered by their experience in public green bonds, SEB were enabled to expand their knowledge into the private domain. The pre-existing relationship and market-leading sustainability work in place at Vasakronan was key to the partnership's formation. Vasakronan's sustainability practices furthermore did not only render it eligible to issue the bond, but greatly served to mitigate potential disincentives such as incremental process cost and workload and facilitated internal adoption of the initiative. The company's government-linked ownership in the form of the AP funds, which had been driving pioneers in the public green bond market and represented a long-term owner concerned with generating positive externalities, constituted an additional enabling factor. Finally, SEB's process expertise and willingness to absorb some of the associated costs facilitated the speed that led to the placement of the bond before other concurrent green bond issuance processes and served to convince Vasakronan and potential investors of the instrument's potential.

In addition, a majority of the current body of literature surrounding green bonds has had the financial aspects of the bonds as a primary focus. In capturing the underlying incentives and potential obstacles faced by Vasakronan during the process, our thesis furthermore aims to add to the current body of literature by answering the following research question:

Compared to issuing traditional bonds, what incentives and obstacles did Vasakronan face in issuing their first green bond?

The study finds that the incentives driving Vasakronan throughout the process were multifaceted. The potential for greater visibility and signaling effects offered the company a potential for a broadened investor base, employer branding opportunities and a long-term lowered cost of debt. Immediate yield differences were of inconsequential importance due to the identical pricing of the bond compared to conventional alternatives. An important additional factor was the organization's internal drive for achieving a tangible form of recognition for its sustainability work. These incentives were furthermore all amplified by the prospective of being a world's first. The main obstacles faced by the company constituted incremental workload, costs and process uncertainty when compared to issuing a conventional bond.

Since Vasakronan's first issuance, the green bond market has significantly matured. During this time, Vasakronan has continued to issue green bonds. By contrasting the current environment and sustainability activities of the company to those at the time of the first issuance, we aim to answer our final research question:

From the perspective of an issuer such as Vasakronan, how have the process, incentives and market for issuing green bonds evolved?

The market's expansion, significant standardization efforts, market acceptance and increased process knowledge have all served to simplify the issuance process both for Vasakronan and in general. Increased ESG awareness among investors and the public have led to expanded investment manager mandates placing a greater emphasis on sustainability. This has resulted in both official sustainability quotas and a large degree of opportunistic green bond investment among financial managers. A shared consensus among the parties interviewed was the opinion that the strong demand has driven the market to the point where oversubscription is the norm, with the presence of a premium for green bonds being a commonly held perception. Consequently, the interviewees noted that a normative pressure has evolved among both issuers and investors to engage in

sustainable instruments such as green bonds. While the process of issuance has as such been greatly simplified, incremental costs and workload associated with green bonds does however remain a concern among first time issuers. Increased regulatory efforts and market complexity furthermore carry risks related to exclusion effects for first-time issuers. In accordance with findings in previous studies, our interview results furthermore suggest that a primary factor limiting issuing volume increases is the lack of eligible green projects - bringing moral hazard problems relating to the legitimacy of the “greenness” of bonds in the form of *greenwashing* to the forefront of current market challenges.

1.2 Contribution

Green bonds constitute a relatively new introduction to the fixed income instruments landscape compared to traditional debt financing methods such as conventional bonds. Initially used primarily by public institutions in debt issuance, green bonds subsequently spread to the corporate credit market and today represents one of the fastest growing categories of corporate debt issuances. Starting in the early 2010’s, academic interest in the area has increased in conjunction with the growth of the market and subsequent availability of data. A significant share of research conducted in the area to date has however focused on issuances within the public sector, owing to the greater historical availability of data. The research that has had corporate green bonds as its focal point has furthermore to a large extent revolved around the perspective of debtholders and equity investors, examining topics such as differences in comparative yields and the potential existence of a “green premium”. This research has been of a predominantly quantitative nature and has yielded conflicting results between studies. These conflicting research results indicate that a quantitative approach focusing on purely financial and cost of debt implications of green bonds might not constitute the most efficient method of examining the incentives, drivers and barriers to adoption dictating the development of green bond issuance volumes. Recently, research within the area has expanded to include other perspectives and research questions with the aim of providing a deeper examination of which factors attract investors and issuers to the market. The results imply that the incentives driving market participants do not primarily revolve around lowered cost of debt or advantageous yields but are rather a multi-facetious collection of both hard financial and softer business factors.

The aim of our thesis is to add to this body of literature by providing an in-depth and qualitative case study centered around the perspective of the world’s first corporate bond issuer, Vasakronan. By providing an in-depth examination of the incentives driving both the company and

other involved actors in this first issuance and subsequently exploring how these have changed in correlation with increased market adoption, our hope is to provide additional insights into the market developments' determinant factors both at the time of its inception and since.

1.3 Outline

The thesis is structured in the following way. In Section 2 we provide a theoretical framework and review relevant previous literature on the topic. In Section 3 we cover the methodology that was employed to conduct our research. In Section 4 we provide relevant background in relation to the case. Section 5 presents the actual case and in section 6 we discuss results and implications to the research questions that we pose. Lastly, in section 7 we present our main conclusions on the case and as well as put forward suggestions for future research.

2 Literature Review

2.1 Defining green bonds

Throughout the thesis, we apply the World Bank's definition of what constitutes a green bond, formulated as "a debt security that is issued to raise capital specifically to support climate-related or environmental projects." (2015, p. 23)

2.2 The first green bonds

The origin of green bonds can be traced back to the year 2007. Following the spring congregation of the European Council in Brussels, as part of the Green Paper movement, the Heads of State and Government adopted an Energy Action Plan for the period 2007-2009. The plan was a call to action for "effectively and urgently" tackling the challenges of climate change (European Council, 2007). In response, the European Investment Bank (EIB) issued what was to be considered the world's first green bond, under the label *Climate Awareness Bond* (CAB), and listed it on the Luxembourg Stock Exchange (EIB, 2017). The bond proceeds amounted to EUR 600m and were raised for projects within renewable energy and energy efficiency (Environmental Finance, 2016).

Although EIB's first CAB is broadly recognized as the first green bond, the pioneer and first issuer of the *labelled green bond* was the World Bank. On November 16, 2007, The Intergovernmental Panel on Climate, a Nobel Peace Prize winning body of the United Nations,

published its Fourth Assessment Report on Climate Change (IPCC, 2007). The report put forward several findings, among which was the important conclusion that “climate change is occurring, is caused largely by human activities, and poses significant risks for—and in many cases is already affecting—a broad range of human and natural systems.” (NAP, 2010). Following the publication of the report’s conclusions, a group of Swedish pension funds reached out to the Swedish bank SEB, seeking help with identifying safe investment solutions with a positive impact. SEB functioned as a liaison between these Scandinavian investors and the World Bank, which was in a good position to identify suitable projects to finance. The collaboration resulted in the issuance of the first labelled green bond, which amounted to SEK 2.7bln and was, similarly to EIB’s bond, listed on the Luxembourg Stock Exchange (The World Bank, 2008). The World Bank’s green bond gave investors access to an AAA/Aaa-rated investment vehicle and the possibility to direct funds toward projects that met rigorous environmental standards without facing project risk (The World Bank, 2017). Following the 2008 issuance, a period of formalization of the sustainable debt raising process and reporting began.

2.3 Overview of the current green bond market

A total of USD 1.1tn have been issued in green bonds (CBI, 2021). It should be noted that these issuances form part of a broader category of debt instruments – Sustainable Debt. In addition to green bonds, Sustainable Debt comprises social bonds and sustainable bonds, with pandemic labeled bonds as a recent sub-category addition to social bonds, altogether amounting to cumulative proceeds of USD 1.7tn. Our thesis’s primary focus is the green bond segment.

Exploring the data compiled by the Climate Bond Initiative (CBI, n.d.) over the period 2014-2020, as well as their global State of the Market report on 2020 (CBI, 2021) and 2019 (CBI, 2020), Market Summary on the first half of 2020 (CBI, 2020) and the Summary report on the third quarter of 2020 (CBI, 2020), we identify several trends in the green bond market that we present in this section. Illustrative graphs can be found in Figure 1.

The green bond market has experienced a spectacular expansion since its inception – the compounded annual growth rate of amount issued over the period 2014-2020 stands at 41%, even when accounting for the slower growth of the market during 2020. This growth has been driven by both increases in deal volume and deal size, with a faster increase in the former. Prior to the dip in 2020 and under normal conditions, the increase in the number of deals had also been highly driven

by new issuers coming to the green bond market – out of 506 issuers in 2019, 291 were debut issuers, accounting for 34% of the global volume issued at the time.

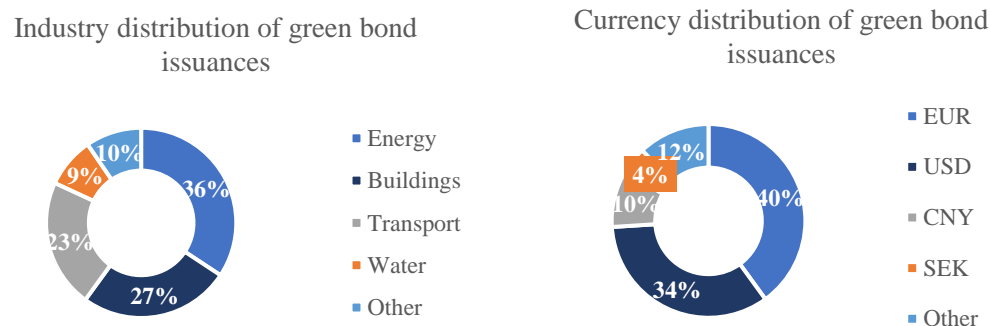
Geographically, Europe is the leader measured by cumulative amount issued – around 44% of total green bond volume over the last seven years has been issued in Europe. Moreover, for the first time ever, Europe was behind more than half of the issued green bond volume in the first half of 2020. By the end of the year, while issuance volume in other regions was steadily increasing, Europe was still behind 48% of issued proceeds for the year. North America and the Asian-Pacific Regions accounted for 23% and 22% of cumulative issued green bonds respectively over the same period while issuances in developed countries accounted for over two thirds. On a country level, USA alone accounts for a fifth of the green bond volume issued since 2014 and was behind 18% of the amount of debt issued under the green bond label in 2020. China and France constitute the second and third largest issuers of green bonds, each being responsible for around 12% of the cumulative green bond proceeds over the last seven years. When looking at 2020 in isolation, Germany was the second largest issuer, having issued two large governmental bonds with a combined size of around USD 14bn and altogether accounting for around 14% of the issuance during the year. France followed closely and was responsible for around 13% of the green proceeds in 2020.

The most popular green bond listing platform is the Luxembourg Stock Exchange. According to CBI, LuxSE listed 14% of the bond volume issued and listed by 2020 – the highest of any stock exchange. Together with its Green Exchange arm, the LCG Luxembourg hosted a quarter of the deals in the first nine months of 2020. According to the exchange's own data, it has issued a total of USD 320bn in green bonds (2020), equivalent to almost a third of the total green bond market on a cumulative basis. Moreover, the same data shows that LuxSE has a 50% market share of green, social and sustainable bonds listed worldwide. Other large stock exchanges within the green bond market include Euronext Paris and the German Stock Exchanges.

The green bond market use of proceed remains concentrated, with projects centered around energy (36%), buildings (27%) and transport (23%) together accounting for over 85% of the green bonds issued in 2020. Together with the water category (9%), these four represent 92% of the activities financed by green bonds in 2020. The picture looks similar when looking at cumulative use of proceeds - since the inception of the green bond market, 36% of proceeds have gone to energy-related projects, 27% to buildings, 19% to transport and 10% to water. The other 8% of

proceeds have been spread across a variety of categories: waste, land use, industry and information and communication technology.

Figure 1: Green bond industry and currency distribution, 2008-2020



Source: CBI, 2020

The two largest currencies by amount of proceeds in the green bond market have been the Euro (40%) and the US dollar (34%). Together, these two currencies account for over 70% of all green bonds. Although EUR-denominated bonds have grown both in volume and share over 2014-2019, the trend has been one of slow diversification of the issuing currency, with currencies such as the Chinese Yuan Renminbi and the Swedish Crown gaining traction as green bonds appeal to a wider range of domestic issuers. The trend has been hindered by the COVID-19 pandemic and the resulting flight-to-safety characteristic to financial crises.

2.4 Market adoption, regulation and standardization efforts

As noted by Park (2018), the quick expansion of the still nascent green bond market has outpaced its regulatory development. As such, rather than being governed by governmental regulators, the market actors' behavior has been dictated by a collection of private governance initiatives such as certifications, quasi-regulatory standards and informational requirement regimes. The author argued that this form of decentralized regulation, shaped by market participants themselves implies a high degree of reliance on the legitimacy of individual market actors to ensure compliance. The heterogeneity of these regulations and norms combined with the lack of market standardization is furthermore argued to be vulnerable quasi-regulatory arbitrage, introducing a significant risk of *greenwashing*. This view was echoed by the results of a multi-case study of three Hong-Kong based enterprises performed by Ng (2018). Examining the circumstantial developments

driving adoption, the paper found that both historic and future market adoption is influenced by a combination of internal and external factors. The latter are found to be made up by a constellation of market-based finance mechanisms and emerging regulatory initiatives, complicated by market heterogeneity and institutional legitimacy.

The actor-specific internal factors driving corporate activity within both broader sustainability work and green bond issuance have continuously evolved. As a result, multiple studies have been conducted with the aim of identifying key determinant characteristics. Through a systematic literature review, Dienes, Sassen and Fischer (2016) established a positive correlation between firm size, capital requirements, media visibility, ownership concentration and sustainability while noting that no clear link between sustainability reporting could be linked to firm age or profitability. The study further argued that susceptibility to societal scrutiny and normative rules dictated by competitor behavior increasingly govern firm reporting behavior, while early sustainability reporting primarily was a matter of firms committing to sustainability as a consequence of operating in sustainability-linked sectors. The role of ownership as a key determinant of corporate sustainability was elaborated upon by Sirsly and Sur (2013), who found that differences in ownership agendas influence the sustainability activity of firms, with long-term focused ownership being associated with a greater extent of partaken sustainability initiatives. The implications of ownership structure specifically for green bond issuers, in turn, were examined by Bancel and Glavas (2017), where they through a study of issuers from 18 countries between 2013-2017 found state ownership to be a primary determinant for green bond issuance.

Organizational identity, culture and mission statement have further been found to be instrumental in facilitating corporate sustainability initiatives. In an early effort to formalize these aspects, Soppe (2009) proposed a framework for sustainable corporate finance based on a number of building blocks. Beyond ownership, the author proposed company mission statements, ethical frameworks and human nature actors as key components. The contrast between a sustainable company and a traditional equivalent, the author argued, can be defined as explicit differences in performance along one or more of these dimensions. Through an analysis based on two case studies, Stubbs and Cocklin (2008) developed a similarly focused sustainability business model, stressing that successful and long-term sustainability adoption is contingent on a firm both developing internal structural and cultural capabilities as well as engaging in collaborations with key external stakeholders.

In a more recent attempt to conceptualize the model required to enable a company to operate sustainably, Baumgartner (2014) performed a cross-discipline literature review of CSR and strategic management research, seeking to formulate an integrated framework for the relevance of different sustainability aspects for individual firms. Beyond reaffirming the importance of culturally entrenching a sustainability mindset, the author identified differing levels of inter-organizational relevance dependent on management levels: normative, strategic and operational. The paper found that the formulation of visions and mission statements related to sustainability are the domain of normative management while the matter of translating these into tangible corporate strategies is of relevance for strategic management. Implementation, meanwhile, is argued to be reliant on operational level management.

The question of *what green is* does not have a universally correct or acknowledged answer. The World Bank (2017) reported that opinions vary on a case-by-case and project level, and noted that it is a challenge to decide whether country-specific conditions should be taken into account when evaluating how green a project is. Moreover, the broad scope of projects with potential sustainability benefits is difficult to encompass with a single “golden standard”. Given the lack of a uniform set of standards, different guiding voluntary principles have developed over time. The most broadly employed programs remain the Green Bond Principles (GBP) and the Climate Bond Standard (CBS) (IFC, 2016). With the ultimate goal of increasing flow of funds towards sustainable projects and formalizing one common market, the EU has furthermore been working on drafting its own framework – the EU Green Bond Standard and Taxonomy.

2.4.1 GBP

In 2013 the World Bank Treasury hosted a Green Bond Symposium. The attending parties noted that a standard set of *what green is* would be unlikely to meet the differing investor needs while also risking to deter issuers from financing environmentally friendly projects that investors might be interested in supporting (The World Bank, 2013). Instead, the attending group of investors, issuers and intermediaries agreed on several features of the process of issuing green bonds as the most important to maintain high quality and integrity standards. Their efforts to ensure the further development of the market culminated in 2014 with the development of the GBP (The World Bank, 2017). The GBP are “voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market by clarifying the approach for issuance of a Green Bond.” (ICMA, 2018, p. 2) The International Capital Markets Association

(ICMA) is the body coordinating, updating, and advising on governance issues related to the guidelines. ICMA updates the GBP every couple of years, the latest update having taken place in June 2018 (ICMA, n.d.).

The GBP are comprised of four components. Firstly, *The Use of Proceeds* dictates that the utilization of proceeds should be appropriately described in legal documentation and recognizes ten categories of Green Projects along with five environmental objectives. A list of the eligible categories and environmental objectives can be found in Table 2. The second component outlines necessary disclosures related to *The Process for Project Evaluation and Selection*. This point stresses the need for transparency at this stage of the process and recommends that the issuer goes through an External Review to validate the eligibility of its projects. Table 2 elaborates on specific points needed to be communicated on by the issuer at this stage. Thirdly, the GBP note the need for appropriate *Management of Proceeds* after the issuance. The importance of updates to the balance of net proceeds and disclosure of intended temporary placement of unallocated proceeds to investors at this stage is stressed. Transparency is emphasized in this component as well, with a recommendation for the issuer to integrate an audit of its management of proceeds in the process. Lastly, the GBP dictate that in regards to *Reporting* on use of proceeds, projects and impact should be reported in annual reports of the issuer. The guidelines recommend the use of both qualitative and quantitative metrics to monitor environmental impact, as well as transparency in regard to underlying methodologies used and assumptions made.

Table 2. The GBP Components

Use of proceeds	Project Evaluation and Screening	Management of Proceeds	Reporting
<p>Requires clear description of the utilization of proceeds and their environmental benefits</p> <p><u>Eligible utilization categories:</u></p> <ul style="list-style-type: none"> • Renewable energy • Energy efficiency • Pollution prevention • Sustainable land and resource management • Terrestrial and aquatic biodiversity conservation • Clean transportation • Water and waste management • Climate change adaption • Circular economy products and processes • Green buildings 	<p><u>The issuer should clearly communicate to investors:</u></p> <ul style="list-style-type: none"> • The environmental sustainability objectives; • The process by which the issuer determines how the projects fit within the eligible Green Projects categories identified above; • The related eligibility criteria, including, if applicable, exclusion criteria or any other process applied to identify and manage potentially material environmental and social risks associated with the projects. 	<p>The net proceeds of the bond issue should be earmarked, tracked and attested to in a formal internal process by the issuer.</p> <p>For the duration of the bond, balance of tracked proceeds should be matched to eligible Green Initiative allocations during the period.</p> <p>The issuer should make known to investors the intended types of temporary placement for the balance of unallocated net proceeds.</p> <p>To promote transparency, issuers are encouraged to involve auditors or other third parties in the proceed management process</p>	<p>Issuers are subject to producing, maintaining and keeping available annual reports up until the point where full allocation of proceeds has been achieved.</p> <p><u>The reports should include:</u></p> <ul style="list-style-type: none"> • List of project allocation • Description of project nature • Allocation amount • Expected project impact • Project performance indicators

Source: ICMA, GBP, 2018

In addition to the four main components, the GBP provide guidelines on *External Reviews* and *Green Project Mapping*. The former is recommended in order to confirm an issuance's alignment with the GBP. The first type of service recommended is obtaining a *Second Party Opinion* on alignment of the type of projects intended for the use of proceeds (ICMA, 2018). The

first labelled green bond was awarded a Second Party Opinion by the Centre for International Climate and Environmental Research (CICERO), who later launched the Expert Network on Second Opinions (The World Bank, 2017) and to this day remains the largest second opinion provider in the green bond market (CICERO, 2020). Other large second opinion providers include Vigeo, Oekom, Sustainalytics and DNV GL (IFC, 2016). The guidelines on Green Project Mapping make two important contributions to this set of principles. Firstly, it maps the contribution of the various categories of Green Projects to the five environmental objectives, as identified in the first component of the GBP, on a three-point scale. Secondly, it provides a comparison between the classification of Green Projects according to the GBP and other broadly used systems (ICMA, 2019).

2.4.2 CBS

The Climate Bond Initiative is an international investor-focused not-for-profit organization, “working solely to mobilize the \$100tn bond market for climate change solutions” (CBI, n.d.). In 2010 the organization launched the Climate Bond Standard & Certification Scheme, a voluntary certification scheme. The Certification mark serves to assure investors that the debt instrument is:

1. Fully aligned with the GBP,
2. Using best practice for internal controls, tracking, reporting and verification
3. Financing assets consistent with achieving the goals of the Paris Climate Agreement (CBI, 2019)

The Scheme is comprised of three main components: The Climate Bonds Standard, the Climate Bonds Taxonomy and the Sector Eligibility Criteria.

The CBS includes requirements to be met both before the issuance of a debt instrument in order to be awarded Certification and after issuance in order to maintain the Certification. Certification can however also be awarded to debt that is already outstanding. The Pre-Issuance Certification is awarded to instruments following specific standards that are in line with the four components of the GBP. The same is true for Post-Issuance Certification - the reporting to maintain the Certification includes mandatory disclosure on allocation, project eligibility and recommended disclosure on expected and/or actual impact of the financed projects and assets. These can be included in an annual Update Report while the instrument is outstanding. Independent assurance must be provided by a third-party approved verifier for a Certification to be awarded. A breakdown

of the Certification Process is provided in Table 3. The CBS was updated with a third version in 2019, and includes the latest changes to the GBP and market developments (CBI, 2019)

Table 3. Summary of the Certification Process

Issuer begins by preparing the bond	<ul style="list-style-type: none"> • Identify assets that meet the relevant sector criteria and compile supporting information • Create Green Bond Framework setting out how proceeds of the bond will be used in the issuer's internal controls
Engage a verifier	<ul style="list-style-type: none"> • Engage an Approved Verifier for Pre- and Post-Issuance Certification • Provide relevant information • Receive a verifier's report giving assurance that climate bonds standard requirements are met
Get certified and issue a certified climate bond	<ul style="list-style-type: none"> • Submit the verifiers report and information form to the Climate Bond Initiative • Receive a decision on Pre-Issuance Certification • Issue the bond, using the Certified Climate Bond mark
Confirm the certification post-issuance	<ul style="list-style-type: none"> • Within 24 months of issuance, submit the Verifiers Post-Issuance report • Receive notification of Post-Issuance Certification
Report annually	<ul style="list-style-type: none"> • Prepare a simple yearly report for term of the bond • Provide report to bond holders and Climate Bonds Initiative

Source: CBI, Climate Bonds Initiative Version 3.0, 2019

First released in 2013, the Climate Bond taxonomy is a more granular version of the green project mapping of the GBP, aiming to outline “which assets and activities are consistent with a rapid transition to a low-carbon economy” (CBI, 2021, p. 1).

Finally, the Sector Eligibility Criteria provide detailed definitions for eligible assets and activities in line with the Paris Climate Agreement for the following sectors: wind energy, solar energy, geothermal energy, marine renewable energy, bioenergy, low carbon buildings, low carbon transport, water infrastructure, forests, land conservation and waste management (CBI, 2019).

2.4.3 Standardization efforts in the EU

The formal standardization efforts for the green bond market in the EU began in the year 2015, with the launch of the European Commission's first Capital Markets Union action plan – a plan to achieve “a true single market for capital in Europe” (EC, 2015). Among the key measures of the plan aiming to facilitate this goal, the Commission highlighted the need to drive market-wide

standardization in the green bond market “to promote transparency and integrity in the development of the green bond market, and clarify qualification of issuance” (EC, 2015, p. 17). A year later, the Commission had established an expert group on sustainable finance that was mandated to provide recommendations for a comprehensive European strategy on green finance (EC, 2016).

Incorporating the recommendations of the expert group, the EC adopted an Action Plan on Financing Sustainable Growth in the spring of 2018. The Action Plan defined the Commission’s “strategy to further connect finance with sustainability” (EC, 2020, p. 2). It includes 10 key actions, among which several relate to the creation of standards and labels for green financial products (EC, 2018). Particularly important to the discussion on standardization efforts in the EU are the first two actions – the first relates to the establishment of a clear and detailed classification system for sustainable activities, i.e. a EU Taxonomy; the second lists the creation of an EU Green Bond Standard.

At the end of 2019 the European Commission presented the European Green Deal initiative, “a growth strategy aiming to make Europe the first climate-neutral continent by 2050” (EC, n.d.). To support development according to the points in the Action Plan on Financing Sustainable Growth, as well as the broader goals of the Capital Markets Union, the Paris Climate Agreement and the UN 2030 agenda, and the forthcoming Green Deal initiative the Commission set up a Technical Expert Group on sustainable finance (TEG). TEG was a 35-member group, with members from academia, business, finance and other sectors. Part of the work of the TEG was defining recommendation that would make up the basis for an EU Taxonomy and an EU Green Bond Standard (EC, 2018).

It is important to mention that the EU is creating a cross-market legal prerogative – while the use of the EU Taxonomy and the EU Green Bond Standard will likely remain voluntary, what issuers choose will determine whether they will be able to label their bonds *EU Green Bonds* (EC, 2020). The system “will have wide-ranging implications for investors and issuers working in the EU, and beyond (EC, 2020, p. 3)

The EU Taxonomy will be a classification system that is meant to facilitate the understanding of which economic activities substantially contribute to environmental objectives, do no significant harm to environmental objectives, and comply with minimum safeguards, as stated in the Final Report of the TEG (EC, 2020). There are six environmental objectives defined in the report: climate change mitigation, climate change adaptation, sustainable and protection of water and marine resources, transition to a circular economy, pollution prevention and control, protection

and restoration of biodiversity and ecosystems. The TEG recommendations will serve in the drafting of the EU Taxonomy which is expected to enter into force in December 2021 (EC, 2020).

The EU Green Bond Standard (EU GBS) will be a framework of principles for “issuers that wish to align with leading best practices in the market” (EC, 2019, p. 57). If issuers choose to follow EU GBS, they will be able to issue a debt instrument with the label *EU Green Bond*. The EU GBS build on best-market practices such as the GBP. The final report of the TEG on the EU GBS came out during the summer of 2019, and proposes that the standard consist of four main components: alignment with the EU Taxonomy of Green Projects, disclosure of proposed use of proceeds, use of proceeds and environmental impact reporting, and verification of conformity to the standards by accredited verifiers. Following the recommendation of the TEG, the EU conducted a stakeholder consultation, the results of which were published at the beginning of 2021 (EC, 2021). The ultimate decision on the EU GBS will be made based on the outcomes of the consultation (EC, n.d.).

2.5 Corporate benefits associated with issuing green bonds

In this section we present key findings in previous research of benefits to the issuers of corporate green bonds, some of which serve as incentives driving issuance activity.

2.5.1 Cost of capital of green bonds

Larcker and Watts (2020, p. 2) define *greenium* as “the premium that green assets trade to otherwise identical non-green securities.” In the context of bonds, whose prices are a function of their yields, the green bond premium refers to the spread between the yields of otherwise identical green and traditional bonds. Evidence on whether a green bond premium exists or whether issuing green bonds is cheaper than traditional bonds has been mixed. The literature on this subject can be split in two categories: studies that show that the market rewards green bonds issuers and papers that conclude that there is no significant spread between brown (non-green) and green bonds.

Among scholars who have been of the opinion that green bonds imply a lower cost of debt than their brown counterfactuals, Zerbib (2018, p. 40) showed that a “small, albeit significant, negative bond premium of -2 bps (basis points)” exists, implying a lower cost of capital for issuers of green debt. Baker, Bergstresser, Serafeim and Wurgler (2018) examined municipal bonds and found that “holding characteristics and the state of the yield and credit curves equal, green bonds are issued at after-tax yields around five to seven basis points lower than those of ordinary bonds”.

Another study supporting the idea of a green bond premium was put forward by Gianfrate and Peri (2019) who estimated savings of 15-21 basis points to green bonds issuers. After taking into account a flat fee of 0.1 bp charged by the Climate Bond Initiative for their certification scheme, Gianfrate and Peri concluded that green bonds are more convenient to entities that want to invest in green project than conventional bonds because of the lower cost of debt they entail.

The other camp to which scholars subscribe is that of no green premium. Larcker and Watts criticized previous studies' mixed evidence on the ground of "methodological design misspecifications that produce biased estimates" (2020, p. 4). After using a sample of pairs of green and brown bonds with identical maturity and ratings, issued the same day by the same municipality, the authors concluded that the green bond premium is precisely equal to zero. In fact, after examining how much investment banks charge for issuing green securities, and other costs associated with green bond issuance, Larcker and Watts suggested that municipalities increase their borrowing costs by issuing green debt. Flammer applied the two author's methodology to a sample of corporate bonds and found an answer consistent with theirs – "for a given issuer, there is no noticeable difference between the yields of green versus brown bonds" (2021, p. 16). All three authors supplemented their analysis with industry interviews, which unanimously supported their findings – investors would not invest in green bonds if returns were not competitive.

The existence of a *greenium* is important in the context of corporate incentives for issuing green bonds – according to Flammer "if green bonds investors are willing to trade off financial returns for societal benefits, companies may issue green bonds to obtain cheaper financing." (2021, p. 2)

2.5.2 Signaling to investors

Originally introduced in 1970 by Akerlof (1970), information asymmetry refers to a general situation where an uninformed buyer is skeptical of the intentions of an informed buyer, which in turn leads to the buyer only being willing to pay low prices, which forces the seller to only sell bad quality products – due to adverse selection only "lemons" will end up being sold. To overcome the information asymmetry, the seller can try to signal the true value of the product he is trying to sell. When applied to the context of green bonds the information asymmetry problem between companies and investors arises when investors have to assess a company's commitment to the environment. In the context of companies' commitment to sustainable investing, investors constitute the less

informed party, be it if they want to invest in the company's equity or debt. The issuer can signal to investors how committed they are by issuing green bonds. Given that the company is restricted in its use of proceeds and certification is a costly and timely process involving third-party verification, it is hard for a company with no intentions to be committed to investing in green projects to copy these actions, lending credibility to the signal.

On another hand, in 1986 activist Jay Westerveld coined the term *greenwashing*. He used the word to describe the hypocrisy of hotels when asking their customers to re-use towels and framing it as environmental stewardship when the hotels were using it as a cost-saving measure and could do significantly more in other parts of its business, such as in waste management (Pearson, 2010). Since then the term has gained popularity and has been widely used in scholarly articles. Webster dictionary defines *greenwashing* as “expressions of environmentalist concerns especially as a cover for products, policies, or activities” (n.d.). According to the *greenwashing* argument, firms might seek to issue green bonds simply in order to portray themselves as environmentally responsible without taking any tangible actions. Given the private character of the governance regimes such as certification providers and third-party verifiers, the corporate green bond market might lack the enforcement mechanism of public markets (Park S. K., 2018).

In her paper, Flammer (2021) discussed signaling as a potential argument for the growing popularity of issuing green bonds among corporates. The author evaluated the possibility of the signal being plain *greenwashing* versus actual commitment. Flammer observed improvements in the environmental performance of green bond issuers – both the company's environmental rating and CO2 emissions improve. Her findings were inconsistent with the argument of *greenwashing* and the author concluded that signaling is the most likely argument for the popularity of issuing green bonds among companies despite the restrictions and costs it imposes – “by issuing green bonds, companies credibly signal their commitment towards the environment” (p. 16).

2.5.3 Effect on stock price and investor base

Empirical analyses of the stock market's reaction to an issuer's announcement of a green bond issuance are to a large extent in agreement. Tang and Zhang (2020) concluded that there is a positive and significant relationship between announcement of issuance and stock price changes in the form of about 1% in cumulative abnormal returns. Similar conclusions were reached by Baulkaran (2019), with a significant CAR of about 1,5% and Flammer (2021), with a significant

CAR of around 0.5%. An important note to make on these findings is that the effects observed tended to be stronger for first-time issuers than for repeated issuers. This is in line with the signaling argument discussed above – a green bond issuance is a credible commitment to green projects which the market recognizes and incorporates into the issuers stock price.

Examining the channels for the price increase, Tang and Zhang (2020) concluded that green bond issuances tend to draw public and media attention and attract more investors, and, in close relation to this point, found an 8% increase in the institutional ownership of green bond issuers. In contrast, Flammer (2021) found no significant increase in institutional ownership per say; however, the author did find a significant rise in the share of green bond issuers' stock owned by both long-term investors, measured using median holding duration and churn rate below median, as well as green investors, categorized so according to their participation in the Ceres Investor Network on Climate Risk and Sustainability.

Maltas and Nykvist's (2020) analysis highlighted how similar the green bond market is structured compared to an active form of ownership. The respondents to the interviews they performed in the Swedish green bond market stressed that “engaging with the green bond market leads to dialogue on sustainability expectations between investors and issuers that would not have occurred without green bonds.” (p. 14) The authors furthermore identified green bonds as a way for institutional investors to engage with companies when it comes to ESG investing, a trend that was previously documented in the literature by Bender, Bertocci, Hanson, Lamy and Lyons (2017).

Overall, scholars seem to agree that by issuing green bonds, companies become more attractive to a pool of investors with a longer investment horizon as they tend to put greater emphasis on long-term environmental commitments. Such investors are desirable both for the diversification benefits they bring and the lenience they show the ESG-firms in their portfolios in response to events such as negative earnings surprises (Starks, Venkat, & Zhu, 2017).

2.5.4 Branding to other stakeholders

Through communicating its commitment to the environment, a company can improve how it is perceived by stakeholders other than investors. The possibility to brand itself as environmentally friendly and raise awareness of its sustainability commitments to these stakeholders can as such serve as incentives to raise green debt to the company.

Communication of CSR actions has been part of the strategic agenda and marketing of corporates to their customers for the last couple of decades (Menon & Menon, 1997). Consumer awareness of environmental issues has continuously been increasing over time and Maltais and Nykvist (2020) found through interviewing green bond market players that being able to issue a green bond is perceived as a stamp of quality for the issuing company and demonstrates that the organization is incorporating economic considerations in its practices. The authors clarify that the link between issuing a green bond and increased customer demand and loyalty is indirect, is derived from the impact of the projects the green bond finances. As such, the argument is made that *greenwashing* through green bonds should be of less concern to consumers than it is to investors.

In addition to its customers, an issuing company can consider the implications of communicating its commitment to the environment on its employees. The various channels through which employee commitment increases in correlation to their organization's corporate social responsibility and the subsequent positive impact on organizational performance have been thoroughly explored in the literature. Be it through attracting motivated potential employees who share their enthusiasm with existing employees, thus improving their commitment, or through positive externalities to the employees from CSR interventions, scholars have documented that employees attitudes react positively to a company's involvement in CSR issues (Ali, Rehman, Ali, Yousaf, & Zia, 2010).

2.5.5 Other organizational impacts of green bond issuance

Beyond the potential to have a positive impact on financial performance, research has shown that green bond issuance may also yield beneficial effects on issuer operating performance and its organizational qualities. Using a variety of proxies including ROA, ROIC, gross profit margins and the ratio of R&D expense to operating income, Zhou & Cui (2019) matched 43 Chinese issuers of green and traditional bonds between 2016-2018, finding that green bond issuance served to improve company profitability, operational performance and innovation capacity.¹ These results were replicated by Flammer (2018), who expanded on the topic to note that green bond issuance does not only increase purely operational performance, but also the sustainability profile of the issuer. Summarizing her findings, the author concluded that green bond issuance is associated with an average of 2.4% higher ROA, 2.1% more filed green patents and a 6.1% better sustainability score

¹ ROA = Return on Assets; ROIC = Return on Invested Capital

when measured on the Thomson Reuters' ASSET4 scale. Issuing green bonds has furthermore been shown to impact organizational dynamics, connecting unaffiliated company functions through aligning incentives in pursuing common sustainability-linked goals. Through serving as a tangible reaffirmation of the sustainability work conducted by the organization, issuing a green bond may furthermore serve to incentivize employees already engaged in sustainability by validating their efforts. (Maltais & Nykvist, 2020)

3 Methodology

3.1 Research Design and Data Collection

To study Vasakronan's decision to issue a green bond we employ the case study method, which offers a special opportunity to formulate a comprehensive narrative of a single decision-making process and observe the interplay between the issuer and its context, as made up by various stakeholders. While this research method has been criticized by some in the past for lacking scientific generalization power (Yin, 2014), it has also been met with great support from others. One of the best-known articles in this regard belongs to Miller (1977), where the Nobel prize-winning economist stated the following:

"Given the complexities of the real-world setting, actual decision procedures are inevitably heuristic, judgmental, imitative and groping even where, [...] they wear the superficial trappings of hard-nosed maximization. On this score, has there ever been any doubt that the Harvard cases [...] give a far more accurate picture of the way things really look and get done out on the firing line than any maximizing "model of the firm" that any economist ever drew?" (p. 272)

In addition, we identify our paper with the three use cases Siggelkow (2007) brings forward in support of the case method. Firstly, we want to study a real-life example to *motivate* our research question in the hopes of providing a deeper context than a purely theoretical methodology would enable. Secondly, to the best of our knowledge we are studying a topic with limited previous academic research and want to provide a *starting point* for research on the perspective of a corporate green bond issuer. Lastly, we provide an *illustration* to the growing body of literature on the topic of green bonds. Moreover, Dyer and Wilkins (1991) argue for the power of a single case study to generate rich insights supported by an understanding of the context and background of an event

rather than measurable constructs-only, which may get lost when attention has to be split across multiple cases.

The first step in the research process consisted of reviewing publicly available information related to the green bond issuance and market as well as the involved market participants. A literature review of previous research on green bond issuance and tangent academic topics was subsequently conducted. Information collected included statistics of both the green bond and the Nordic general fixed income market in the specific timeframe of the case, its subsequent development, relevant academic theories and regulatory overviews.

This information served to provide the context and background necessary to design our primary data collection which consisted of multiple interviews conducted with parties involved in the case. Beyond relevant individuals at Vasakronan, our interview subjects consisted of a variety of other stakeholders involved in the case as well as subject matter experts, in order to achieve a multi-perspective context to the case. These included underwriters, investors and stock-exchange employees. A full list of interviewed parties and their relations to the case is provided in Table 4.

Table 4. List of interviewees and their backgrounds

Interview Subject	Professional Capacity	Role in the case
Thomas Nystedt	Head of Treasury, Vasakronan	Issuer
Anna Denell	Head of Sustainability, Vasakronan	Issuer
Johan Fredriksson	Debt Portfolio Manager, Vasakronan (current) Debt Portfolio Manager, Nordea (at the time of the case)	Investor/Issuer
Christopher Flensburg	Head of Climate and Sustainable Finance, SEB	Underwriter/advisor
Christa Clapp	Senior Advisor, CICERO	Second opinion giver

Paul Chahine	Sustainability Research Manager, Luxembourg Green Exchange	N/A – independent subject matter expert
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3.2 Research quality

While the primary strength of the case study method can be considered its potential for providing an in-depth narrative of chains of events, we do recognize its potential failure to provide generalizable results and the argument that it insufficiently meets the definition of proper scientific methods. To mitigate these concerns and enforce research quality in our study, we employed the four areas as presented by Yin (2014), namely *reliability, internal and external validity and construct validity*.

Our main concern relates to the area of reliability, which refers to the ability to demonstrate a repeatability of results. In our study, two main concerns of reliability should be addressed. Firstly, the semi-structured interview format employed throughout this study compromises its potential for repeatability with identical results. Secondly, eight years have passed between the study and the events of the case, introducing a significant risk of recall bias of interviewees. To counteract these issues, all interviews have been transcribed, dated and stored where consent was given by the interview subjects. To mitigate faulty recollection, we made a conscious effort to collect multiple concurrent perspectives on the same issues and to revert back the study to interviewees subjects before publication.

The construction of validity, meaning to which extent the study measures what it claims to be measuring is another main concern in case studies owing to the subjective nature of data collection (Flyvbjerg, 2006). To circumvent this issue, we aimed to employ the approach of data and investigator triangulation by utilizing multiple sources in the data collection process and establishing a clear chain of evidence as prescribed by Yin (2014).

Internal validity, or the ability to draw conclusion from a study is furthermore an important consideration in the case study method, especially in those of an explanatory nature. We adhere to the argument by Yin (2014) that validity is enhanced if similar empirical patterns are identified between previous research and in the case study by having conducted a thorough literature review and revisiting the topic in the discussion section as further outlined below. In regards to the

statistical generalizability or external validity of the study, we identify with the argument of Siggelkow (2007) in that the utility of our study is not derived from statistical generalizability but rather from its potential to provide an analytical generalization.

In conclusion, we recognize the critique that has been put forward of the case study method and have employed the necessary steps in order to mitigate these concerns and ensure the research quality of the study to the furthest possible extent.

4 Case Background

4.1 ESG investing – a brief historical overview

ESG (Environmental, Social and Governance) considerations have long been a part of the investment screening criteria applied by investors around the globe, be that formally or informally. The modern concept of corporate social responsibility can be traced to the 1800's, having evolved from the qualitative screenings conducted by predominantly religious groups to become an area of broader interest both from market participants and from academics by the 18th and 19th centurial shift. In a 1895 landmark study, Albion W. Small (1895) argued for the inseparability of private financial and public social interests and the fundamental responsibility of private businesses to take public good into consideration.

Meanwhile, the establishment of corporate social responsibility as a philosophy in the private sector was exemplified by the philanthropical efforts of individuals such as Henry Ford, J.D Rockefeller and Andrew Carnegie (1889). The area reached new milestones in the decades following the Second World War, as profound social and cultural change intensified public and political interest in the topic, resulting in investors and business leaders expanding their views of social responsibility from a peripheral concern to become a primary focus (Schueth, 2003). This increased ESG focus was concertized in the creation of, amongst others, the Domini 400 Social Index in 1990, by State Street Corp introducing mutual funds specializing in Socially Responsible Investments, and by the creation of the Seven Pillars of Corporate Social Performance and Responsibility by Michael Jantzi in 1992. These developments served to lay the groundwork for the ESG investment rating system still in use today, effectively ushering in the modern era of ESG investing. (Sherwood, 2019)

Following the 2008 financial crisis, societal calls for responsible market systems and investment practices sharpened, putting corporations and investors alike under increased public and regulatory scrutiny (Puaschunder, 2016). Concurrently, environmental concerns have become of increasing importance in both policy-making and in the public consciousness, giving rise to a new wave of impact investing in the form of thematic investors focusing on investing in assets either minimizing negative or providing a positive environmental impact. (Sherwood, 2019) Several catalytic events in the form of corporate scandals have served to further fuel this trend, with notable examples being the BP oil spill in 2010 and the emission scandal of Volkswagen in 2015. (Sherwood, 2019)

While the impact investing market remains relatively regionally focused and has yet to be reliably quantified in terms of global size, the increasingly high focus on impact investing among both policy-makers and investors has served to drive a dramatically increased demand for sustainable investment products throughout the 2010's. (EC, 2016) An estimation of global sustainable assets under management can be found in Exhibit 1 in the Appendix.

4.2 The process of issuing traditional and green bonds

In this section we present an overview of the corporate bond issuance process and highlight the differences in issuing a green bond versus issuing a traditional bond. The overview was formed with the help of an online material authored by the European Commission (2017) and information gathered through interviews with LuxSE, SEB and Vasakronan.

When a company decides it wants to issue a bond, it commonly approaches an intermediary in the form of a bank, also known as an underwriter or arranger, which assists the company with structuring the bond and raising the capital. A due diligence process follows where the intermediary assesses the financial stability of the company, which can be accompanied by a credit rating from a ratings agency. In the Nordics, bond ratings are more common among larger companies due to the costs associated with this process. Provided that it is not the first time the company raises debt with the help of the respective bank, the due diligence process can be conducted relatively swiftly. Concomitantly, the bank, with the help of legal advisors and the issuer, prepares the documentation needed to register and issue the bond. The document that governs the terms of a bond, called the Prospectus, specifies the volume, maturity, coupon, price and other important terms of the respective issuance. Once due diligence has been completed and the terms of the issuance have been

documented, the bank customarily organizes a “roadshow”, where the issuer can meet with investors in financial hubs all over the world to present its business and the terms of the issuance. During roadshows, the bank and the issuer can gauge investor interest in the issuance which also helps determine whether the terms of the bond have been set appropriately. Depending on the company’s size, investor interest in the issue and other circumstantial factors, the issuer can opt to offer its bond to a large pool of investors through a public process or to a select number of investors through a private placement. The latter is usually associated with a shorter time to placement and fewer public disclosure requirements. Irrespective of the how many investors the bond is offered to, most corporate bonds are listed to be able to meet investor mandates requiring the holding of listed securities.

In essence, the issuance process of a green bond mirrors that of its conventional counterparts, with the addition of a number of steps related to the sustainability aspect of the instrument. As previously discussed in section 2.4 *Market adoption, regulation and standardization efforts*, the issuance of green bonds oftentimes takes place according to a set of standards, as chosen by the issuer, that permit the bond to be labelled as “green”. Depending on the standards followed, the green bond issuance process diverges from that of traditional bonds particularly in the due diligence and documentation stages. Companies interested in issuing green bonds will generally have to prepare a Green Bond Framework, get a Second Opinion Certificate and publish annual Impact. The Green Bond Framework refers to the use of proceeds and reporting post-issuance, the Second Opinion provider certifies that the framework is in line with the requirements according to the relevant standards and the Impact Reports document the developments in the areas the proceeds went to across a number of metrics.

As noted by Paul Chahine, in the early period of the green bond market these extra steps required to issue a green bond could in some cases present significant incremental work required by a first-time issuer, and in some cases served as discouraging factors for certain segments of potential issuers. As standardization efforts have progressed and facilitating market mechanisms have become more sophisticated, these issues have become less and less observed in the market. While the process might furthermore stretch over several months for a first-time issuer, it tends to be significantly shorter for an issuer already having their green bond framework and relevant processes in place. Today, there exist several exchanges offering to list green bonds, as outlined in Exhibit 3 in the Appendix. While each one present their own eligibility criteria, these tend to be highly similar in both nature and stringency.

4.3 Market climate ahead of the issue

4.3.1 A market preference for corporate bonds

Broadly speaking, when a company wants to raise debt to finance itself it can do so by tapping into private or public debt. While private debt is raised mainly through bank loans, public debt is tapped into by issuing bonds. Before regulations were rolled out to mitigate the risk of a financial recession such as the one in 2007-2009 being repeated, bank loans were the most popular form of debt financing for Swedish corporates. According to a survey performed by Riksbanken in 2011, bank loans accounted for 43% of the financing of the average Swedish corporate, compared to the 10% made up by bonds (2011). With Basel III and additional local measures related to the capital requirements of banks being rolled out in 2011 (Sveriges Riksbank, 2011), coupled with refinancing needs for loans issued in the years leading up to the crisis, the public debt market was however becoming an increasingly attractive alternative to bank loans. The broader international markets were exhibiting a similar trend, with bond issuance for non-financial-services corporates tripling in size to USD 1.8tn from 2007 to 2012, while bank lending declined by a third over the same period (ICMA, 2013). In addition, corporate bonds represent an attractive debt financing alternative given the diversification benefits they offer both through a broader investor base as well as through the range of instruments that the financing can take place through.

The financial recession of 2007-2009 had direct implications on investor preferences in favor of corporate bonds as well. In order to stimulate the economies of their respective countries, Central Banks all over the world were lowering interest rates and employing unconventional measures such as quantitative easing in the hopes of generating a low-rate environment to stimulate borrowing and thus consumption. ECB purchased EUR 60bln worth of government bonds in a matter of 12 months in 2009-2010 (ECB, n.d.) and the Federal Open Market Committee authorized three rounds of large-scale asset purchases between 2008 and 2012, each ranging between USD 600bln and USD 1.5tn (Federal Reserve Bank of New York, n.d.). The increased demand in government bonds and other relatively safe fixed income instruments put downward pressure on yields. The relationship can be observed in Exhibit 2 in the Appendix, exemplified by data from the US. In turn, investors looking to maintain their required rate of returns found it increasingly difficult to do so without taking on more risk in their investments – a phenomenon known as the “search for yield”. As reported in an

Economic Commentary from the Financial Stability Department of the Riksbank back in 2013 – “investors who have traditionally invested in low risk bonds may have found corporate bonds to be an attractive alternative that can provide higher return in exchange for larger credit and liquidity risk.” (Johansson, 2013)

In aggregation, these effects served to provide a highly beneficial environment for fixed income issuers. As noted by Vanguard (2016), periods of increased fixed income investment demand such as these furthermore serve to facilitate product innovation within the market.

4.3.2 Favorable developments in the green bond market

Two major catalysts served to introduce a new class of issuers in the form of corporates to green bonds (Boulle, 2014). Firstly, the International Finance Corporation (IFC), a member of the World Bank Group, issued the largest green bond to date with a notional of USD 1bln in 2013 (IFC, 2013). Coupled with another large issuance by EIB (Reuters, 2013), IFC’s bond served to show investors that the green bond market could meet size and liquidity requirements. As noted by Paul Chahine at LuxSE, another primary catalyst was the Green Bond Symposium and other standardization efforts taking place in the same year. Culminating in the publication of the GBP by ICMA in 2014, these efforts served to provide the market with a degree of principles alignment regarding green bond definitions and to address investors’ concerns related to transparency in the use of issuance proceeds.

The fact that the green bond market was still in its infancy at the time was emphasized during our interview with Johan Fredriksson, Portfolio Manager at Vasakronan. At the time, Johan was working on the buy-side within fixed income at Nordea and admits that green instruments were not at the top of fund managers’ agenda. ESG-related rules were incorporated at most in the form of negative screening criteria, and few investments were looked at twice from an ethical standpoint – yields held a firm precedence of importance.

The increased importance of ESG-related practices for both issuers and investors was however becoming increasingly apparent. As noted by Paul, regulatory initiatives combined with increased awareness among investors was starting to translate into mounting pressure on capital managers and private corporations alike to put greater efforts towards sustainable investment and conduct principles. To cope with this, new investment strategies were being developed and demand for new types of ESG-focused products increased. On the issuer side, increased public awareness

served to increase the perceived utility of not only developing formal sustainability practices but also thoroughly communicating them in the purpose of increasing visibility and building brand equity towards customers, employers and investors.

4.4 Vasakronan introduction

Vasakronan was originally founded in 1993, when the Swedish government reformed its real estate holdings. While originally maintaining a real estate portfolio containing assets spread over Sweden, Vasakronan successively restructured its holdings to concentrate on commercial properties in Stockholm, Gothenburg and Malmö.

In 2008, Vasakronan was acquired by AP Fastigheter, the Swedish pension funds' real estate company, with the resulting entity adopting and operating under the Vasakronan brand (Regeringskansliet, 2008). The combined entity constituted one of Sweden's largest commercial real estate owners, maintaining a portfolio of 2,3 million square meters spread over 171 properties and an estimated value of 162 billion SEK. The company's holdings remain centered in Stockholm, Gothenburg, Malmö and Uppsala, with the largest share of properties being located in Stockholm (Vasakronan, n.d.).

Vasakronan possesses a distinct ownership structure, being wholly owned by the Swedish pension system through co-ownership distributed between four of Sweden's seven AP funds. Operated by the Swedish state, the AP funds serve to manage the capital generated by the country's public pension system while ensuring stability in the income pension system by acting as buffer funds through accommodating surplus capital generated by the system while counterbalancing deficits. As public managers of pension funds, the AP funds adhere to strict regulation and practices in terms of capital allocation policy, risk management and investment perspective, legally formalized in the AP-funds law (AP-fonderna, n.d.).

The mandate of these funds and their ownership of Vasakronan has several implications for the company's operations. The long-term investment view adopted by the funds is concretized in a covenant offered to lenders stating, amongst other things, that creditors are entitled full repayment of their principal in the event of the fund's losing majority ownership of the company. It has also translated into a strong focus on externality generation and CSR compliance, with the company's formal mission establishing that the company's operations shall be conducted without any negative repercussions to external stakeholders. Operationally, the company's strategy furthermore

emphasizes both financial performance and the generation of positive societal and environmental impact (Vasakronan, n.d.).

4.5 SEB Introduction

Stockholms Enskilda Bank (SEB) was originally founded in 1856 by Andre Oscar Wallenberg as one of the first commercial banks in Sweden. In 1972, the bank merged with Skandinaviska Banken and became Skandinaviska Enskilda Banken (S-E banken). Since then, the bank has expanded to become one of Sweden's four biggest banks with 15,000 employees and international operations. The bank operates a full-service model, covering both retail and investment banking services in addition to an insurance business. It remains under the control of the Wallenberg family, who through their investment company Investor constitute the single biggest shareholder. (SEB, 2021)

In the green bond context, SEB has been a pioneer, having developed the green bond concept in collaboration with the World Bank in 2007. (World Bank, 2019) Since then, the bank has remained a prominent actor in the green bond market in the capacity of underwriter, investor and issuer. (SEB, n.d.)

4.6 CICERO Introduction

CICERO – the Center for International Climate Research is an internationally recognized non-profit institute for climate research founded in 1990 by Norway's government and operating as an independent foundation affiliated to the University of Oslo. Through high-quality research, the institute has been able to contribute to the fight against climate change and strengthen international cooperation on the topic. In the recent years, CICERO has gained attention for the research it has put forward regarding the man-made effects on climate change and for its involvement in the formulation of international agreements. (CICERO, n.d.)

The institute has been a pioneer in the green bond market, having been involved in and advised on the issuance of the world's first green bond in 2008 and continues to be active in the area of climate finance as one of the most credible providers of independent opinions on corporate green frameworks and bonds through its commercial subsidiary CICERO Shades of Green. In the year 2019 CICERO issued second opinions for 40% of the volume issued under corporate green bonds (CBI, 2020).

5 Vasakronan: The case

5.1 Corporate green bonds – the natural next step for SEB

As discussed in the literature review, SEB had an instrumental role in the formation of the green bond market – it played an important role in bridging the interest from investors in placing funds towards environmentally responsible investments and the World Bank who had the necessary access to a pipeline of relevant projects. As explained by Christopher Flensburg, head of Climate and Sustainable Finance at SEB, the bank's work with corporate green bonds began in 2006, when he was given a mandate to work on a new type of zero-risk instrument. The banker attributes a large extent of the success of green bonds as an instrument to the support of the World Bank. The legitimacy of the institution proved vital in generating initial traction for green bonds:

“If the World Bank starts speaking to you, you will listen. So did I and so did my investors.”
(Christopher Flensburg, SEB)

Following the first public green bond issuance, SEB continued to be a pioneer in the market, managing subsequent issuances of the World Bank including the expansion of green issuances to the US in the spring of 2009 (SEB, 2009). In 2013, only weeks before collaborating with Vasakronan on the world's first corporate green bond, SEB facilitated the first green bond issuance in the Nordics and the first for a city worldwide, with a SEK 500mln bond issued for the municipality of Gothenburg (SEB, 2013).

As noted by Christopher, at the time of inception of the green bond market one didn't talk about green and finance in conjunction – the two existed in different conceptual spheres. It was generally held that in the early days of the market, if there occurred defaults, too high volatility or abuse in the way proceeds were used, the risk to investors would be too high for the instrument to gain traction. As such, going for corporate green bond issuances was something that took investors some time to get comfortable with.

Given the developments in the overall bond market and the stage of progress of the public green bond market, in addition to the increased demand from investors for sustainability-linked investment products, the prospect of issuing a green corporate bond as a next milestone did however start to materialize. In 2013, investor sentiment had progressed to the point of generating appetite

for higher yield green bonds, as noted by Christa Clapp, who observed these developments from her position at CICERO:

“In the beginning it was just the multilateral banks that were issuing, such as the World Bank and IFC. Then came the municipalities and then the municipality banks. Most of those were Swedish and happened around the same time so there was just a general push to see how far the market could go. The corporate stretch was kind of an obvious move at that point.” (Christa Clapp, CICERO)

Consequently, SEB started to actively investigate the possibility of introducing a corporate green bond to the market. In their search for potential projects, SEB focused on two areas. Inspired by the bus transit projects conducted by actors such as Volvo and Scania, one of the areas considered was the transport sector. The bus transit concept consisted of projects creating separate lanes for high-speed busses in large cities lacking the underlying infrastructure planning necessary to accommodate financially feasible construction of other modern transit systems such as subways. In doing so, the projects combined environmental benefits through traffic reduction with social and economic benefits through increased commuter productivity. This pareto efficient potential of implementing sustainability projects was found especially interesting by the bank, serving as proof of the compatibility between furthering economic and social targets.

The other sector considered was real estate. The industry at the time was in the forefront of corporate sustainability work, owing to the inherent environmental aspects of both developing and maintaining properties. Deduced from observing previous public housing sustainability projects, a potential link furthermore had been identified between financial and sustainability aspects, given the relevance of factors such as energy consumption and new-development construction methods for both.

A separate consideration for SEB at the time was the ability of potential corporate issuers to act upon sustainability mandates. The short-termism associated with companies that must report on their financial performance on a quarterly basis was considered, as investing in green projects oftentimes implied an investment that might not realize tangible benefits for several years and as such was oftentimes considered of subordinate importance to delivering on quarterly financial targets.

Of the potential partners identified within real estate, Vasakronan soon emerged as a particularly suitable candidate. Not only did the bank have a pre-existing relationship with the company, but it was also considered a market-leader in sustainability work within the Nordic real estate sector. The semi-private character of the firm, being owned by pension funds with a long horizon and a mandate to contribute to society meant that the company could afford green investments with delayed payoffs. Moreover, having the AP funds as owners facilitated a trustworthy perception of Vasakronan in the credit market. The company did however still represent a riskier alternative to companies held directly on governmental balance sheets, and so it constituted an ideal transitional pilot for moving from public to private corporate green bond issuance.

While Vasakronan was not rated by any of the major rating agencies at the time, it was a well-known presence in the Nordic credit market, owing the high volume of bonds issued through its domestic MTN program. As noted by Johan Fredriksson, who at the time worked on the buy-side at Nordea, Vasakronan was widely regarded as a high-quality issuer, being one of the largest regional real-estate actors while being government linked. This fact was further reflected by the low yields commanded by the company's debt at the time. (Kidney, 2014)

“Vasakronan is like the skim milk of the Nordic fixed income market. Everybody buys it.”
(Johan Fredriksson, Vasakronan)

On the other side of the coin, the prominence of Vasakronan in the Swedish debt market raised concerns among the DCM team at SEB. As Christopher recollects, he faced some hesitation internally as the prospects of further diversifying the investor base seemed unlikely. With Vasakronan being one of the largest issuers of corporate debt in Sweden, it was argued that minimal additional headroom was likely to exist in the company's current investor universe. Despite the fact that Christopher believed there existed further potential, he took the team's concerns into account and identified the ability to efficiently communicate sustainability work to the markets and to investors as a primary focus point of facilitating the issuance.

These factors in aggregation made Vasakronan an ideal candidate for quickly bringing a green bond to the market. The company's already well developed and formalized sustainability practices combined with its high regard in the fixed income market furthermore implied that the incremental work associated with issuing a green bond would be limited and that the process of placing the bond would be comparatively swift. Process speed proved to be an important consideration, as around the same time as SEB decided to go for the world's first corporate green

bond issue, Électricité de France (EDF) made public its intent to start a roadshow for issuing a corporate green bond of its own.

5.2 SEB approaches Vasakronan

As an initial step, SEB reached out to the finance department of Vasakronan, contacting the company's then head of treasury Björn Lindström to introduce the idea of issuing a green bond. Beyond SEB representatives and Björn, the meeting was attended by other members of Vasakronan's finance team, among them Thomas Nystedt who at the time was a portfolio manager at the company. This first meeting was not attended by the company's head of sustainability Anna Denell or other members of Vasakronan's sustainability team. As noted by Thomas:

“Back then, we had limited contact with the sustainability department and with Anna and her team. We were basically minding our own business at the finance department and did not talk that much with the rest of the company.” (Thomas Nystedt, Vasakronan)

The focal point of the meeting and the main argument of SEB's pitch was the publicity and visibility benefits for Vasakronan that issuing a green bond might give rise to. As Thomas recalls, while Vasakronan at the time was a large issuer in the Swedish context, it was still an unrated company and thus highly reliant on domestic capital markets, as such, the possibility of a broadened investor base was considered a constant point of interest by Thomas and his colleagues. The perceived extent of these benefits was further amplified by the potential of being a world's first:

“We were always looking for new investors and we believed that this was a good way to find new ones. So that's the main reason why we issued it in the first place. And it's also fun to be the first with something. And if we can be the first with something and at the same time find new investors, why not?” (Thomas Nystedt, Vasakronan)

Following the positive outcome of this initial session, a second meeting with the purpose of exploring Vasakronan's eligibility for green bond issuance was set. Beyond representatives from SEB, Björn and other employees from Vasakronan's finance function, the meeting was attended by Anna Denell. In contrast to discussions related to conventional bond issues and the first meeting held between the companies, the primary topic of the second meeting was not the financial aspects of the transaction but rather the sustainability work conducted by Vasakronan and whether this qualified the company as eligible for issuing a green bond.

“They more or less gave us a checklist of sustainability criteria, and as I recall our answer to every question was basically yes.” (Anna Denell, Vasakronan)

As Anna left the meeting, she felt a certain level of satisfaction. Vasakronan had long maintained ambitious sustainability guidelines, setting high targets for energy reductions in new developments and for energy improvements in their existing portfolio. While this work was recognized internally and a culture of sustainability orientation had to an extent been cultivated within the organization, the meeting still represented a new level of formal recognition for years of efforts by promoting sustainability from a peripheral topic to the center of the agenda. Christopher himself remembers having left that meeting with the conclusion that Vasakronan was a leader both in the sustainability work they did, the way they collected data and in their willingness to share their knowledge.

The interaction between the two companies furthermore extended beyond a simple eligibility check to reach a dynamic of mutual learning. As Christopher notes, owing to the extensive sustainability work conducted by Anna and her team, SEB was able to establish a more direct link between financial and sustainability benefits. Green buildings tended to be more popular among tenants, resulting in lower comparative vacancy rates and higher rents. As such, not only did more resource efficient properties minimize environmental impact but also the properties’ cost base, leading to an overall higher cash flow and subsequently higher valuation of the property.

“And we realized that by going through the nitty-gritty aspects of the properties we could identify how the environmental quality of a building could also lead to a much bigger positive economic factor. In other words, a direct link between the quality of a building from a sustainable point of view and economic benefits was identified.” (Christopher Flensburg, SEB)

The outcome of the meeting served to confirm that Vasakronan’s focus on sustainability was indeed well progressed and made the company eligible for a green bond issuance. Doing so was furthermore deemed to entail limited incremental work for Vasakronan, implying the potential for a swift process with limited additional costs incurred by Vasakronan.

5.3 Vasakronan’s decision

In making the decision of whether to pursue the issuance, Vasakronan faced multiple considerations. Internally, the initiative had gained broad support and the only one displaying

hesitation was the company's head of treasury, Björn Lindström who initially proved sceptic to the merits of the idea. Owing to the enthusiasm of the rest of the Vasakronan team, he did however change his position quickly:

“Björn wasn't that keen on it in the beginning, but I think we convinced him that it was a good idea and that we could reach out to new investors, so why not?” (Thomas Nystedt, Vasakronan)

This enthusiasm stemmed from the perception of several potential benefits able to be achieved at limited risk. As mentioned, the potential for signaling and increased visibility of the company's sustainability work constituted a significant potential upside. Consequently, while the full extent of investor broadening enabled by issuing the green bond had yet to be established, the general effect was foreseen and thus offered strong argument in favor of the issuance. Beyond the investor base impact, Vasakronan furthermore saw potential benefits in employer branding, with the bond serving as a tangible proof of their sustainability-oriented corporate identity. Nevertheless, the fact that the issuance would potentially entail additional workload and potential costs originating from both the issuance process itself and the subsequent reporting requirements did remain a concern. In assessing the significance of this concern, the company in the end estimated them to be minor owing to the extensive sustainability practices already in place.

“It was not that complicated I would say, since all the work was already done, and the relevant data was available.” (Johan Fredriksson, Vasakronan)

The associated incremental costs of issuance compared to a conventional bond were furthermore highly limited owing to SEB's willingness to charge no additional fees specific to the green bond and to the bank's absorption of the cost associated with acquiring a Second Opinion from CICERO.

“While there were not a lot of costs, there were some. When you issue a green bond, you put in a filter. Whether that filter is called Anna Denell and her team or our team here at SEB, that filter is going to cost money. We definitely helped solve some of those costs.” (Christopher Flensburg, SEB)

The pricing of the bond itself did not constitute a point of consideration given that it would be priced identically to a conventional equivalent. One of the concerns related to Vasakronan issuing a green bond, an instrument new to investors given the issuer type, was however setting the right

price. As noted during our interviews, Vasakronan priced its first green bond similarly to a comparable traditional bond. Thomas shared the concern of the DCM team at SEB and in order to ensure a large enough interest from investors in the first issuance, the firm decided to not issue the green bond at a premium. The uncertainty of what level of investor appetite the issuance would generate furthermore meant that the company did not foresee any direct impact on its cost of debt.

In the end however, the final component shifting Vasakronan's decision to issue the bond was the argument put forward by SEB about being the world's first corporate green bond issuer.

“While I wouldn't say that we would not have done it without being the world's first, it definitely helped us to bridge any gaps and be brave enough to do it.” (Anna Denell, Vasakronan)

5.4 Preparing for the issuance

After having come to a decision, Vasakronan and SEB got to work in preparing the issue, fueled on by a sense of urgency owing to EDF's concurrent issuance initiative. While the underlying sustainability practices were already in place, the matters of consolidating the necessary information and developing a green bond framework remained. Especially for Anna Denell and her team, attending to these aspects given the relatively short timeframe entailed an intensive workload:

“We worked quite a bit because we knew that EDF had the same idea of issuing the first corporate green bond. So I think we sped up the process to get to be the first one. Anna worked overtime for long hours to get it done.” (Thomas Nystedt, Vasakronan)

5.4.1 The Green Bond Framework in collaboration with CICERO

Vasakronan's first Green Bond Framework, was a document of a little over a page, comprising of four parts (Vasakronan, 2013). Firstly, the Framework defined a Special Account to manage the green proceeds. Secondly, a list of Eligible Projects is presented and defined. Third, the Framework dictated that eligible projects were chosen by the Treasury and Sustainability departments at Vasakronan together. Lastly, a list of communication tools through which Vasakronan would ensure transparency in its use of proceeds and updates is outlined.

After having produced a first version of a green bond framework and before approaching potential investors, it was vital to secure a second opinion from a legitimate third-party, as noted by Christopher:

“So you want to have a second opinion be ready to show to the investor. A bond transaction process is very fast. That means that investors might only have a few days to make an assessment. They have a responsibility for doing that. That means that the second opinion enables a faster assessment. If you have a credible partner, which is basically going in and doing all the due diligence before you go out and meet investors, it's much faster for the investor to assess.”
(Christopher Flensburg, SEB)

To this end, SEB approached CICERO. While CICERO had never previously offered a second opinion for a corporate version of a green bond, the institution had foreseen the forthcoming demand for corporate green bonds and were thus not surprised by the request. It furthermore had experience in working with public green bonds and as such had the systems and processes for providing second opinions in place. Nonetheless, developing a sufficiently elaborate green framework deemed as eligible can be complicated and getting a second opinion approval can constitute a sometimes lengthy, reiterative process. As noted by Christa Clapp, this is especially the case if an issuer comes insufficiently prepared:

“It is much harder when an issuer hasn't done all of that internal homework and doesn't have a good basis for it. That's very obvious when we start working with an issuer and it makes our job harder and it makes their job harder too, because then they have to backtrack and fix it.”
(Christa Clapp, CICERO)

Owing to the time-sensitive nature of Vasakronan's issuance process as well as the lack of precedents, this fact became of even greater relevance. As such, SEB's previous experience from issuing public green bonds and their previous collaboration with CICERO combined with Vasakronan's extensive sustainability foundation proved highly valuable in securing the second opinion.

The Second Opinion document was comprised of four sections (CICERO, 2013). The first section provided a background to Vasakronan and its business and the second component briefly described the firm's Green Bond Framework. The third and fourth sections are made up of the actual assessment and recommendations by CICERO. The Second Opinion Provider concluded that “overall, Vasakronan's Green Bond Framework and supporting environmental policies provide a transparent and robust approach to considering the climate impacts of investments, and sets a high standard for corporate environmental policies.” (p. 10)

5.4.2 Placing the bond

With the second opinion from CICERO secured, Vasakronan's next consideration in issuing a new type of bond was related to the placement method. Since Vasakronan was an ongoing bond issuer with an extensive bond program in place – MTN at the time, they were able to issue the new green bond under the same program. When discussing the placement of the bond, Christopher noted that focusing on a limited investor base helped mitigate some of the uncertainties associated with taking a new instrument to the market.

“You have more time to explain what the instrument is to investors, what are its benefits and why you are doing it. Investors get time to ask their questions.” (Christopher Flensburg, SEB)

Moreover, given the involvement of SEB with previous issuances of green bonds, Christopher confirmed that the bank had access to a pool of investors which had shown interest in investing in a corporate green bond, to which Vasakronan was able to pitch its new bond directly. By targeting an audience that was already interested in green bonds, the firm was able to gather enough committed investor interest to be able to go for a private process, as well as to keep its roadshow quick and further speed up the issuance process.

“It wasn't a very large roadshow. We approached a few investors in Stockholm with the idea and we didn't get much pushback; what we did get was quite some interest, which helped build confidence internally.” (Anna Denell, Vasakronan)

In pitching the bond to the investors, a key selling point was once again the opportunity to partake in a world first without incurring additional expenses. As recalled by Johan who at the time worked at Nordea, one of the prospects who ultimately invested in the bond:

“The bank that issued it just called and said that they were issuing a bond that was green and that it will gather a lot of attention. And we got the same yield as a regular bond with no pricing difference, so I mean, why not?” (Johan Fredriksson, Vasakronan)

Amongst other investors, the bond was also pitched to the AP funds, who beyond being owners of Vasakronan also possessed experience in green bond investing. As an example, AP2 had been among one of the initiating investors who together with SEB reached out to the World Bank, an initiative which eventually led to the issuance of the world's first green bond in 2008. Heike Reichelt, Head of IR and Sustainable Finance at the World Bank, commented that the first green

bonds were developed in response to specific requests and in close collaboration with Scandinavian pension funds, like the Second AP Fund and SEB. (AP2, 2015)

As the Vasakronan team were waiting in the hotel lobby prior to the meeting with the AP funds they experienced a sobering reminder that they were not alone in the pursuit of issuing the world's first green bond. In the lobby they encountered a team from EDF, waiting to market their own green bond issue to the AP funds - the simultaneity of the two processes had effectively put the two companies head-to-head in a race of becoming the world's first issuer of a corporate green bond. During the meeting with these investors, Vasakronan was able to gain the necessary confidence regarding investor interest in a green bond issued by the real estate company.

Among the investors approached were also several that were new to investing in Vasakronan's credit issuances. As noted by Thomas, the process of approaching these new investors benefited from Vasakronan's existing position in the Swedish credit market:

"We had no rating at the time and a lot of investors have investment policies dictating that they need to invest in rated companies. They had investment policies for rated bonds but then they had different pockets, I would say, for Vasakronan, as we were run by the AP funds." (Thomas Nystedt, Vasakronan)

The interest generated specifically by the bond being green was evident from the response of investor groups that had previously been acquainted with Vasakronan but had for various reasons abstained from investing in the company's conventional bond issues:

"There was a lot of capital from regions and the Swedish church that had not bought us before. And there was one investor that we had pitched our normal bonds for, SPP. And they have never bought our normal bonds, but they put themselves on the list for our green ones." (Thomas Nystedt, Vasakronan)

In the end, the parties succeeded in conducting a swift process, with the bond being placed on November 18th, roughly a month after the issuance proposal had been initiated, while being listed in Stockholm. Beyond providing the initial initiative, Thomas noted that SEB's process expertise had proved instrumental in facilitating this success:

"I don't think we would have managed it at that time without them, because it was a new concept to set up this green bond framework and everything. So I don't think we would have managed it ourselves." (Thomas Nystedt, Vasakronan)

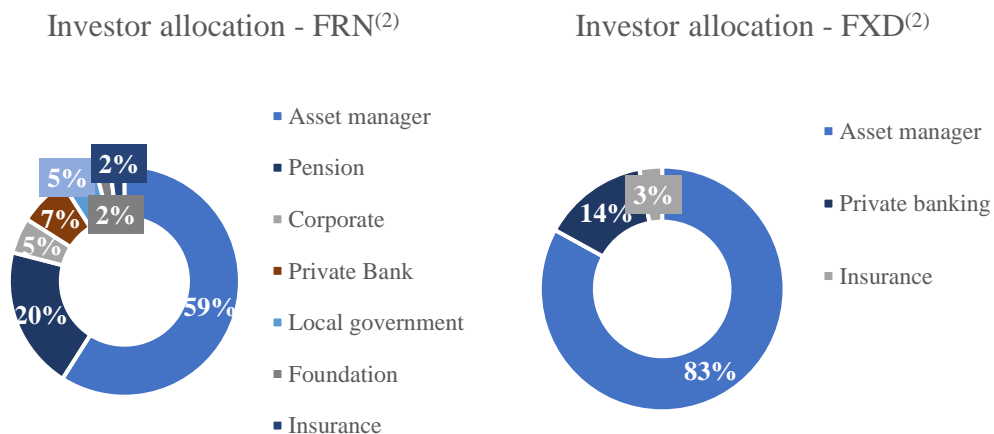
5.5 Epilogue

5.5.1 The issuance

The issuance of the bond proved to be an even greater success than anticipated. Initially seeking an amount of 1.0 billion SEK, the issuance was oversubscribed and closed at 1.3 billion SEK. More detailed terms of the issuance can be found in Figure 5 and Table 6. The ambition of broadening Vasakronan's investor base was also realized, with the issuance attracting 16 investors of which 11 were new to Vasakronan. The amount of publicity following the event was furthermore considerable, serving to validate the sustainability work conducted by the company by making it a focal point of international media attention. The success also generated celebrations internally at Vasakronan, with both Thomas and Anna recalling how it brought the previously somewhat organizationally detached sustainability and treasury functions into the limelight:

“Before we were working on our own in our small room at the office and had nothing to do with the rest of the firm. We were suddenly being noticed. It created a lot of talk within the company.”
(Thomas Nystedt, Vasakronan)

Figure 5: Investor allocations in Vasakronan's first green bond



Source: Vasakronan, 2013

Table 6: Key terms of Vasakronan's first green bond issuance

Key Terms		
Issuer	Vasakronan	
Rating	NR/NR	
Launch date	18 November 2013	
Settlement date	25 November 2013	
Maturity date	25 May 2016	
Tenor	2.5 years	
	FRN	FXD
Amount	SEK 1,000M	SEK 300m
Spread	39bp	MS+396bp
Coupon	3mS+39bp	1.774%
Issue price	100%	100%
Listing	Stockholm	
Docs	MTN	

Source: Vasakronan, 2013²

5.5.2 What happened since

On November 20, two days after Vasakronan issued the world's first corporate green bond, EDF issued a green bond of its own (EDF, 2013). The bond was denominated in EUR, at a total amount of 1.4bn and was oversubscribed twice, proving yet again the strength of the demand of investors who wanted to incorporate ESG criteria in their capital allocation.

Vasakronan itself issued its second green bond four months later. CBI reports that 50% of the investors in this second issuance were new to Vasakronan, the firm further diversifying its investor base (Kidney, 2014). As reported by Anna, Vasakronan was soon to use up all its headroom of eligible green funds as stated in their first Green Bond Framework. To increase the pipeline of eligible green projects and better meet the investor demand, the team started discussing the possibility of including projects related to existing buildings in addition to new projects in their Green Bond Framework. They were met with hesitation from some investors who believed that

² FRN = Floating-Rate Note, FXD = Fixed Rate Note

proceeds of sustainable debt instruments should be additive to the market – they shouldn't fund already existing assets.

“I could understand where these investors were coming from. Additionality is of course very important when you're talking about renewable energy – you want your investments to increase the renewable energy in the grids. But for buildings, additionality works in the opposite direction. Since new developments require so much new natural resources in the first place, no matter how energy efficient the new building is, that building will still only increase the energy demand in society.”

(Anna Denell, Vasakronan)

Vasakronan eventually decided to expand its list of eligible assets and drafted a new Green Bond Framework in 2017, which was in line with an updated version of the GBP from 2016 and was again externally validated by a Second Opinion from CICERO (Vasakronan, 2017). To offer investors better insights in the environmental quality of the green bonds it provided second opinions on, in 2015 CICERO introduced a shading system: dark green, medium green and light green. (CICERO, 2018) Therefore, starting this second iteration of its green framework, Vasakronan also received a rating according to CICERO's shading system. From the first assessment of this kind Vasakronan's framework was awarded *dark green* (CICERO, 2017), the highest possible recognition that CICERO awards and a rating that Vasakronan has maintained to this day. As specified by CICERO, this shade is awarded “for projects and solutions that are present-day realizations of the long-term vision of a low carbon and climate resilient future” and typically entails “net-zero or net-negative emissions investments and governance structures that transparently integrate environmental concerns into project design and implementation.” (p. 5)

The second opinion document is comprised of three parts (CICERO, 2018). Firstly, it introduces how CICERO awards its second opinions and the shading system. Secondly, it provides an overview of Vasakronan's business and Green Finance Framework and lists the documents that formed the basis for the second opinion. The third and last part constitutes the actual assessment by CICERO, in general and broken down by Eligible Assets categories as listed in Vasakronan's Green Finance Framework, lists strengths, weaknesses (no significant weaknesses are identified in the case of Vasakronan), potential risks and pitfalls.

The Green Bond Framework was updated once more in 2018, when it became a Green Finance Framework and was aligned with another update to the GBP dating from June 2018 (Vasakronan, 2018). The 2018 version of the Green Finance Framework presents updates related to

energy performance and certification achievements of Vasakronan's property portfolio, the firm's new commitment to reporting on science-based targets, a new separate component defining Green Finance Instruments which previously had included only bonds, the addition of solar projects as a separate asset category in the list of Eligible Assets categories and Green Loans as a separate item the firm will report on, in a manner similar to the reporting on bonds. Finally, the framework now explicitly states that Impact Reports are audited annually by Vasakronan's external auditor.

Today, the *Green Finance Framework* (Vasakronan, 2018) defines Vasakronan's commitment to sustainability and represents the foundation of its green instrument issuances. The structure can be broadly divided into two parts – the company overview and the actual framework, according to the GBP. The former provides a brief description of Vasakronan's business, portfolio and how it integrates sustainability in its operations as well as its ambitions on the subject, all signed by Fredrik Wirdenius, CEO at the time, and Anna Denell, Head of Sustainability. The second part is a more structured presentation of how Vasakronan's Green Finance aims to be compliant to the GBP, following the 4 components as described in section 2.4.1 *GBP* and including one additional component defining what instruments the framework applies to – green bonds, green commercial papers and other types of debt instruments. A summarized version of the four components can be observed in Table 7.

Another notable development reflecting Vasakronan's broadened investor base since the first green bond issuance was the firm's choice to change the place of listing its debt. In 2018, Vasakronan ceased to update its domestic MTN program and instead launched a new, international EMTN - Euro Medium Term Note Program (Vasakronan, 2020). Debt instruments issued under the new program, including green instruments, are listed on Euronext Dublin and Oslo Stock Exchange. The choice of Dublin was motivated by the process speed and cost-efficiency of listing bonds on the exchange. As noted by Johan Fredriksson during one of our interviews, these characteristics are highly attractive for an ongoing bond issuer like Vasakronan, who conducts a new issuance on an almost weekly basis.

Christopher, who has continued to play a part in the development of climate finance and the green bond market, noted that Vasakronan was not only the world's first in issuing a corporate green bond but have contributed to the market development on a larger scale. By the sharing of data and knowledge by Anna Denell and her team, they have helped people and companies around the world

to better understand the work that can be done from a sustainability point of view and how it is connected to economic benefits.

“Today you basically can’t go to the market without talking about your values and how you govern them. That’s what Vasakronan started for the private sector back then.” (Christopher Flensburg, SEB)

Another “world first” was established by Vasakronan in 2018. Under the updated Green Finance Framework, which allows Vasakronan to issue debt instruments other than bonds under the green label, the real estate firm was able to issue the world’s first green commercial paper. The paper was issued in partnership with SEB and was listed on Nasdaq Stockholm’s new green commercial paper dedicated section (Vasakronan, 2018). The first three tranches amounted to SEK 610mln out of a potential pool of SEK 25bn that can be issued according to the listing terms (Vasakronan, 2018). Thomas Nystedt commented on the issuance: “Our ongoing launch of new green debt instruments means we are offering the capital markets further possibilities to actively pursue a lower environmental impact.” (Vasakronan, 2018)

As of the end of 2020, 61% of Vasakronan’s financing is green. Furthermore, 96% of the bonds issued by Vasakronan in 2020 were green bonds, making the firm the Nordics’ largest issuer of corporate green bonds (Vasakronan, 2021). Johan reported that he and his team have not issued a “brown” bond since April 2020. The outstanding volume of debt instruments issued under Vasakronan’s Green Finance Framework was SEK 35bn, with a headroom of Green Asset Pool of almost SEK 19bn. (Vasakronan, 2021)

As noted by Anna, in addition to a broadened investor base per say, having the recognition of being a pioneer in the green bond market has been one of the enablers for Vasakronan to borrow green loans from institutions such as the European Investment Bank as well as the Nordic Investment Bank, essentially giving the company access to high-quality debt at good terms. For example, as of the end of 2020, Vasakronan has SEK 5.5bn in outstanding green loans with the two institutions. (Vasakronan, 2021)

Table 7. Summary of Vasakronan Green Finance Framework

Use of proceeds – Eligible Assets	<p>The eligible pool of assets comprises</p> <ul style="list-style-type: none">• New constructions that have an energy performance of at least 25% the level permitted by Swedish regulation and that have LEED Platinum or BREEAM Outstanding certifications• Existing buildings with an energy performance lower than 100kWh/sqm, LEED Platinum or Gold, or BREEAM Outstanding• Solar energy projects
Process of Asset Evaluation and Selection of Eligible Assets	<p>Selection is handled by the Green Finance Committee, with veto right awarded to Head of Sustainability. A list of Eligible Assets is maintained by the Treasury department.</p>
Management of Proceeds	<p>Traceability ensured by the Treasury department. A separate “Special Account” to manage the difference between the nominal amount of Green Finance instruments and the Green Asset Pool. In case of failed certification or sale of asset, the asset is replaced in the Green Asset Pool. Net proceeds not yet allocated are disclosed and an annual external audit is in place.</p>
Reporting	<p>The Green Asset Pool and outstanding Green Finance Instruments values are available on Vasakronan’s website and in quarterly reports. Vasakronan publishes an Impact Report annually, including the following information:</p> <ul style="list-style-type: none">• Eligible Assets and KPIs across 7 dimensions• Project Examples• Summary of Green Finance Instrument development• Green Finance Instrument amount broken down by category• Green Loans• Special Account balance• Key sustainability figure on company level

Source: Vasakronan, 2018

6 Discussion

6.1 Determinants of the involved actors

In hindsight, when examining the circumstances and chain of events leading up to the issuance of the world’s first green corporate bond, several explanatory factors emerge that make the roles of both Vasakronan and SEB in the event appear less coincidental.

SEB’s initiative to introduce and underwrite a corporate green bond can be considered a logical next step following the bank’s work with the public equivalents. The bank’s experience from public green bonds and its collaboration with the World Bank induced it with both the knowledge and legitimacy vital to credibly bring a corporate version of green bonds to the market. This

legitimacy combined with SEB's highly established position in the Nordic financial system served as significant enabling factors in the bank's efforts to sell the concept both to Vasakronan and prospective investors. The technical process expertise it had gained in the public green bond market furthermore allowed the bank to conduct the issuance process swiftly enough to bring the instrument to market before concurrent similar initiatives by other actors could. Inspired by some of the projects they had been exposed to, the bank's work in the public domain had furthermore served to create champions of sustainability within the organization. The ultimately commercial nature of the bank's operations combined with the business acumen of these individuals allowed the bank to mend the gap between the concepts of financial profitability and sustainability in a manner unlikely to have been achieved through a public or regulatory initiative, generating significant initial traction for the instrument in the private sector.

When examining the circumstances related to Vasakronan, several explanatory factors for their role as the world's first issuer emerge. The company had long been a market leader within sustainability in the real estate sector, one of the industries where the concept had progressed the furthest at the time and where use cases and eligible green projects were numerous. Beyond rendering the company formally eligible as a green bond issuer, this had two important implications in the context of the green bond issuance. Firstly, the work performed by Anna and her team had served to cultivate a strong culture emphasizing sustainable practices in parts of the organization. As put forward by amongst others Stubbs and Cocklin (2008) and Soppe (2009), such a culture is key in driving organizational sustainability adoption and in Vasakronan's case enabled a quick acceptance and broad-based internal support of the green bond issuance. It also played a significant role in empowering the financial managers of the company to extend beyond their formal mandates, primarily revolving around the minimization of financial risk, to include sustainability considerations even in the face of the greater uncertainty implicit in introducing a new instrument to the company's investors. This holds especially true for an actor like Vasakronan, which at the time already enjoyed a highly attractive reputation as a trustworthy and high-quality credit issuer and who's operations as a real estate company were dependent on a consistent availability of cheap debt financing. The capital intensity of Vasakronan's operations combined with its comparably large size and significant reputation furthermore resonates with the findings of Dienes et al. (2016) on key determinant factors of corporate sustainability activity. An actor such as Vasakronan would likely be among those enjoying the strongest beneficial effects from the increased visibility, legitimacy and investor reach offered by green bond issuance.

Secondly, the groundwork laid by the company's previous work within sustainability enabled a significant reduction of incremental costs and workload associated with pursuing the issuance of the green bond. As such, the main concern faced by the company was not the prospect of additional work or required implementation of new processes per se, but rather packaging and communicating information about the work already being conducted, concerns that were alleviated through SEB's process expertise. While some additional costs did arise as a result of the issuance, these were considered of subordinate importance by Vasakronan, and some were furthermore absorbed by SEB.

Finally, Vasakronan constituted an ideal candidate for transitioning the green bond concept between the public and private domains due to the nature of its ownership structure. Being governmentally linked through its ownership in the form of the AP-funds but not officially state-owned, Vasakronan offered the best of both worlds in terms of constituting a profit-driven, commercial organization but with a highly safe credit profile. The AP-funds' previous experience within public green bonds and the autonomy afforded to Vasakronan in bond issuance removed a potential key hurdle in terms of ownership resistance. The fact that the AP-funds operate under an explicitly long-term investment horizon emphasizing the generation of positive externalities further made one of their wholly owned companies a prime candidate for introducing an instrument such as green bonds. The presence of a state-controlled majority stakeholder in the company was likely a vital component in facilitating the issuance, as a publicly owned entity would likely have placed secondary importance to such an initiative compared to delivering on quarterly financial targets. (Bancel & Glavas, 2017)

6.2 Drivers and obstacles shaping Vasakronan's issuance

Our study finds that the incentives driving Vasakronan were multifaceted, with some reflecting those found in the literature and some being specific to Vasakronan or the situational context of being the world's first issuer. While all interviewed parties agreed on the existence of a *greenium*, the company's first issuance was not motivated by any expected beneficial impact on the company's cost of debt. While reflecting a divergence from the findings of amongst others Flammer (2021), this fact seems natural given the context of being the world's first issuer and the associated uncertainty regarding investor demand for the product. Similarly, any potential considerations related to stock price reactions were mute as a function of the company's ownership structure. While previous literature has found these effects to generally be positive, we would however also argue

that their irrelevance in Vasakronan's case also served as an enabler for the issuance. A public ownership structure would likely both have complicated the issuance process and the perceived risk of pursuing the issuance, especially as there existed no precedent at the time suggesting that a positive stock market reaction to the issuance could be expected. (Tang & Zhang, 2020)

What did drive Vasakronan's actions, however, was the potential for increased company publicity and visibility, expected to translate into an expanded investor base and to constitute a potent positive signal towards other stakeholders such as employees and the media. An interesting reflection of the progress of public sustainability awareness over time - consumer opinions were not a main consideration for Vasakronan at the time, contrasting the findings of Maltais and Nykvist (2020). Importantly, the beneficial employer branding impact was furthermore not perceived to lie primarily in improved attraction of new talent, but rather in reinforcing the company's existing sustainability practices, serving to both validate the work of the employees already engaged in these while further inspiring those who were not. Interestingly, this fact can be considered from a perspective of reflexivity. While the already established sustainability culture of the company constituted a key factor in enabling the issuance to take place at all, it also served as an incentive to do so and to further entrench this culture. We would as such argue that the status of a sustainability-focused culture as a self-reinforcing enabler, incentive and result of green bond issuance carries interesting implications for dictating green bond issuer behavior. While establishing such a culture is likely a long-term project and a hurdle for first-time issuers, once it is in place it encourages long-term green financing practices within an organization to continuously reenforce themselves with limited need for additional strategic intervention. (Ali, Rehman, Ali, Yousaf, & Zia, 2010) The high perceived utility of an increased investor base was furthermore derived from the company's relative size in a regional context combined with the inherent capital intensity of its activities and the limitations its unrated status carried, resonating with the arguments of Dienes et.al. (2016)

Lastly, a main consideration for both Vasakronan and other involved stakeholders was the potential to achieve a "world first". Interestingly, the potential of doing was not only seen as an amplifying factor to the other incentives mentioned, but in isolation also served to motivate and shape the incentives of several of the interview subjects. The incentives driving these individuals as such extended beyond a rational function of organizational utility maximization to include individual, more emotionally guided aspects such as personal fulfillment.

The main inhibiting factors and obstacles faced by Vasakronan lied primarily in the ambiguity associated with valuing potential upside from the process, in potential incremental costs of the issuance as well as in the associated process uncertainty. Importantly, these considerations were to a large extent mitigated by the efforts of SEB, effectively enabling the issuance to take place at all. This instrumental role of the underwriter in not only initiating the project but in the issuance process itself, we would argue, constitutes a key gap in the research literature. While the importance of this role was of course amplified in the scenario of the very first issuance, the fact remains that lacking market standardization and process requirement ambiguity have remained key concerns shaping the market since. (Ng, 2018) (Park S. K., 2018).

It as such appears plausible that there exists a subsegment of would-be green bond issuers that might fulfill eligibility requirements or would do so with highly limited additional adjustments to their sustainability practices, but who lack the necessary knowledge or agency to translate these facts into a green bond issuance. As investor appetite and issuer incentives have been proven to be both strong and relatively region-ambivalent, a key limitation to green bond issuance for these companies might as such be the lack of access to sufficiently sophisticated financial infrastructure and intermediaries. Consequently, we would argue for the importance of including this as a dimension of consideration when examining the adoption drivers of green financing.

6.3 Developments since the first issuance

Our study has found that beyond the immediate effect of the company's first issuance, both this first issuance and the company's continued green financing have had profound longer-term impacts on the company along several dimensions.

While improvements to financing costs was not a consideration affecting the company's first issuance process, this has changed over the course of the subsequent issuances, with the company forming the opinion that green financing has led to an overall lower cost of debt. An important distinction should however be made between cause and effect in the implications of this, as none of our findings identify this knowledge as a primary determinant in the company's issuance of green financial instruments. It can, however, feasibly be assumed that once this opinion had been formed, it served to further reinforce the company's green financing commitment.

Many, if not all, of the hurdles associated with the first issuance have furthermore dissipated. Process uncertainty has been reduced owing to increases in both market maturity and company

issuance experience, and the incremental costs of green bond financing are to a large extent associated with one-time process implementation costs.

While increased market standardization and governmental regulation benefits an already issuing entity, it should however be noted that these same developments might dissuade first-time issuance activity. As noted by several of our interview subjects, the green financing market landscape is becoming increasingly complex, and the need for nuanced, qualitative judgement of what constitutes a green instrument is becoming ever more relevant. While serving to mitigate legitimacy-related problems and *greenwashing*, the binary nature of regulatory criteria implies that increasingly stringent regulation in combination with these developments poses a significant risk of causing market exclusion effects. In the case of Vasakronan, the fact that the company has been able to expand from green bonds to issuing other green instruments is likely strongly enabled by the experience and first-mover advantage of the firm, as a green financing framework as elaborate as Vasakronan's current one would be unlikely to successfully be formulated in today's market by a first-time issuer.

The effect on the company's visibility and investor base has continued to grow and has reached the point of constituting an incentivizing factor at an individual level. Key employees involved in Vasakronan's green financing activities have come to earn great levels of recognition as subject matter experts, being consulted on the topic by actors from all over the globe. We would thus argue that in the case of Vasakronan, the cultural effects described by amongst others Stubbs and Cockling (2008) and Baumgartner (2014) were reinforced by the fact that its issuance constituted a world first. While a culture of sustainability was already in place at the company, the attention generated from the issuance served to greatly entrench it among functions that were previously not particularly concerned with the matter. The individual recognition received by key employees both internally and externally furthermore served to create a strong incentive for these individuals to not only reaffirm their sustainability commitments but also influence other employees to do the same.

Beyond a lowered overall cost of debt and increased investor base, Vasakronan's pursuit of sustainable financing has had significant organizational and operational implications for the company. The first issuance served to unite several previously completely separated functions under a common goal of sustainability, effectively breaking down organizational siloes and fostering cross-functional cooperation in the pursuit of a shared goal. Mirroring the findings of Maltais and

Nykvist (2020) and Flammer (2021), our interviews with the company's employees indicate that issuing green finance instruments has served to not only reaffirm the company's commitment to sustainability but actually to make its operations greener. The issuances have generated a greater degree of collaboration across the company, linking previously unconnected functions while aligning their goals related sustainability. While the peripheral benefits in terms of effect on operating metrics have not been quantified by the company, this has however produced tangible improvements to the company's sustainability profile – once again reflecting the self-reinforcing relationship between green-bond issuance and corporate sustainability.

6.3.1 Examining the relevance of the cost of debt impact

The existence of a *greenium* remains an interesting point of discussion in today's green bond market. The consensus in our interviews seemed to be that a premium can indeed be observed in some instances, and our interviews with Vasakronan revealed a perceived overall lower cost of debt for the company owing to their green bond issuances:

“I think there is a greenium. It is hard to calculate but I usually say that on average maybe it's around 4-5 bps. It is hard to say because you never issue green and non-green bonds at the same exact time. But we can see that if we have a bad market with a lot of turbulence, it is much easier to issue a green bond with a tight level than a normal one, because you have investors willing to buy the green bond over a normal one.” (Thomas Nystedt, Vasakronan)

“It's not across the board, but in some pockets of the market you can find a premium for green.” (Christa Clapp, CICERO)

Similarly, Paul at LuxSE noted that bonds issued by the same issuer should behave in the same way, but that may not always happen due to short supply and excess demand. Christopher, at SEB, pointed out that a *greenium* started to appear over time – investors seem to have to pay more for positive externalities and the “green” label itself.

“Personally, I am not a fan of it. I don't think it's needed. Both issuer and investors benefit from this, so the price should basically be the same.” (Christopher Flensburg, SEB)

To complement our qualitative study and investigate the relevance of the cost of debt impact of Vasakronan's green financing activities on a quantitative basis, we proceed to perform a simple analysis in order to gauge whether we can observe a significant difference in yields between

Vasakronan's green and traditional bonds. We employ the methodology of Baker et al. (2018), who performed OLS regressions on the yields at issue of a sample of both green and traditional municipal bonds on a dummy variable that determines whether the bond is green or brown, while simultaneously controlling for various factors. Similarly, we gather the yields at issue of all the bonds issued by Vasakronan since 2013, as well as several other characteristics: issuance date, maturity and currency. The final terms of the bonds part of the EMTN program are publicly available on Vasakronan's website and represent the source for the data we employ. Information on bonds issued under Vasakronan's previous domestic program, MTN, was kindly shared with us by Johan Fredriksson. Similarly to Baker et al.'s method, we only include fixed rate bonds in our analysis. This choice is motivated by the context of comparability of the bonds in our sample since Vasakronan has issued only fixed coupon traditional bonds under its EMTN program. We make several changes to the authors' regression specifications, given the character of the issuer we are focusing on, that we note here. Firstly, we consider gross returns, rather than after-tax returns, as we are focusing on one issuer's perspective. Secondly, given a more limited sample size we control for market conditions at issuance at different points in time on a half year basis, rather than monthly. Thirdly, we aim to capture differences between issuing markets by using issuing currency as a proxy, subsampling our data accordingly, as well as through only including currencies under which Vasakronan have issued both green and brown bonds. Consequently, we end up with a sample size of 52 green bonds and 61 brown bonds, issued in 3 currencies – SEK, NOK and EUR. We report our results in Table 9.

We find that there is no evidence of a statistically significant *greenium* when it comes to Vasakronan's bonds. These results indicate limited statistically verifiable relevance of beneficial cost of debt impact as an argument or incentive for Vasakronan's green bond issuances. As discussed above however, the direct impact on cost of debt is but one of several potential effects, both economic and intangible in nature, that Vasakronan has been benefiting from. Moreover, it is important to point out that given a small sample size and imperfect comparability due to additionally changes the firm has made to its bonds since 2013 such as focusing on financing itself mostly in green debt, and considerably increasing its debt in foreign currency compared to domestic debt, the no *greenium* result should be considered highly illustrative in its nature.

Table 9. Yield differential between Vasakronan's green and brown bonds

This table presents regression estimates in which the dependent variable is the yield at issue of the bonds issued by Vasakronan starting November 25th, 2013, when the firm started issuing green bonds. Data was collected from the final terms of the respective bonds and kindly shared with us by Vasakronan. The regressions follow Baker et al.'s (2018) methodology. The key independent variable we are tracking is *Green Dummy*, a dummy variable equal to 1 if the bond is green, and 0 otherwise. We control for several characteristics of the bond: *Program Dummy* refers to whether the bond was issued under Vasakronan's MTN domestic bond program, or EMTN European bond program; *Maturity* refers to the time to maturity of the bond at issuance; *Half Year* controls for the date of issuance on a 6-month basis. We perform the analysis controlling for the *Currency* of the issuance by segmenting our sample accordingly. Given high correlation between the program under which the bonds were issued for bonds issued in SEK and EUR, the *Program Dummy* is dropped in Models 6 and 7, but still controlled for in the specification.

Variable	Dependent Variable: Bond Yields								
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Green Dummy	0.032	-0.127	-0.099	0.051	0.206	0.033	-0.008	0.226	-0.001
Program Dummy		-0.392*		0.433*	-0.487				-0.100
Maturity			0.09***	0.108***	0.125***	0.066***	0.326***	0.144	0.121**
Half Year					N/A	N/A	N/A	N/A	N/A
Sample									
Currency	All	All	All	All	All	EUR	SEK	NOK	NOK
Notes									
R ²	0.3%	3.5%	33.6%	36.5%	57.7%	90.0%	97.6%	96.0%	95.9%
Observations	113	113	113	113	113	19	56	10	21

7 Conclusion

In our concluding remarks, we will briefly focus on two primary implications of the study's results and subsequently proceed to these implications' relevance in the context of potential future research.

Firstly, the main hurdles emerging from our results in preventing corporate green bond issuance are largely associated with first time issuance and are associated with either availability of eligible green projects or process uncertainty. The definition of what constitutes green remains a matter of debate and a point of regulatory attention, and while it has historically been determined by a constellation of quasi-regulatory, private actors, it is now facing greater standardization in the wake of increasing regulation. While these efforts are likely to increase market efficiency and reduce *greenwashing*, they also risk causing an exclusion effect in their attempt to apply binary requirements to an increasingly complex concept and by convoluting the issuance process. This might in turn serve to dissuade potential first-time issuers who either might have eligible green projects available but are deterred by regulatory or process complexity or who might only need limited adjustments to their operations to qualify. This finding brings further relevance to our argument that the presence of sufficiently experienced financial intermediaries and underwriters constitutes a strong enabling factor for issuance activity. Individual companies, even today, might lack the expertise and agency necessary to pursue a green bond issuance without the support of such an actor- a consideration that will progressively increase in relevance in conjunction with heightened regulatory requirements and market complexity.

Secondly, these factors inhibiting first time issuance, in turn, might aggregate to a significant barrier compromising companies from achieving their full potential in terms of sustainability, owing to the self-reinforcing relationship our study shows exists between the effects of green bond issuance and corporate sustainability.

As such, we believe that an important point of interest for both regulators and academics going forward would be how to balance increased regulatory measures with the implementation of either public or private support systems for facilitating green bond issuance.

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9 Appendix

Exhibit 1. Sustainable funds' assets under management

Source: Morningstar

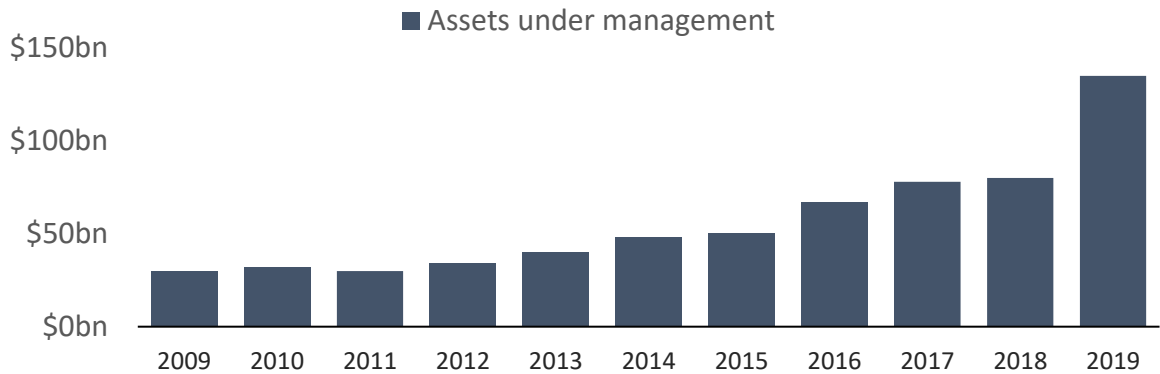


Exhibit 2. Fed holdings of US Treasuries and the Fed rate. Created by the authors

Source: Board of Governors of the Federal Reserve System, *Factors Affecting Reserve Balances, 2004-2014*

This figure illustrates the relationship between the holdings of Treasury debt by the Fed and the Effective Federal fund's rate (i.e. overnight interbank borrowing rate). After the financial recession of 2007-2009 the Fed followed an expansionary monetary policy, launching a series of asset purchase programs in order to keep interest rate low and stimulate the economy.

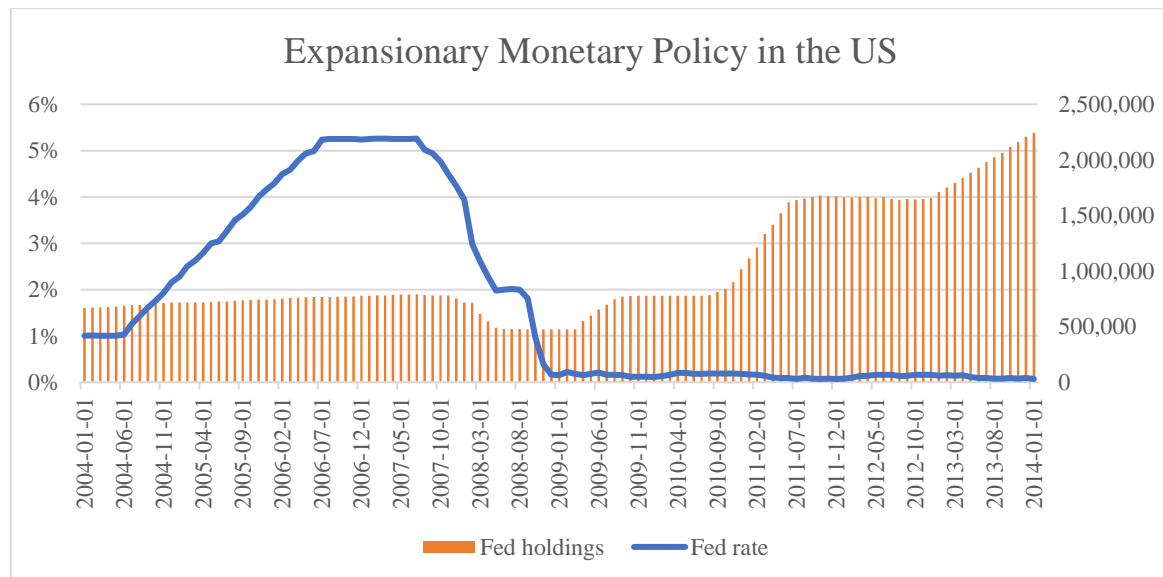


Exhibit 3. Public exchanges with dedicated sustainable finance sections*Source: CBI, Green Bond Segments on Stock Exchanges, n.d.*

Exchange	Type of dedicated section	Launch date
Oslo Stock Exchange	Green bonds	Jan-15
Stockholm Stock Exchange	Sustainable bonds	June-15
London Stock Exchange	Green bonds	Jul-15
Shanghai Stock Exchange	Green bonds	Mar-16
Mexico Stock Exchange	Green bonds	Aug-16
Luxembourg Stock Exchange	Luxembourg Green Exchange	Sep-16
Borsa Italiana	Green and social bonds	Mar-17
Taipei Exchange	Green bonds	May-17
Johannesburg Stock Exchange	Green bonds	Oct-17
Japan Exchange Group	Green and social bonds	Jan-18
Vienna Exchange	Green and social bonds	Mar-18
Nasdaq Helsinki	Sustainable bonds	May-18
Nasdaq Copenhagen	Sustainable bonds	May-18
Nasdaq Baltic	Sustainable bonds	May-18
Swiss Stock Exchange	Green and sustainability bonds	
The International Stock Exchange	Green bonds	Jul-18
Frankfurt Stock Exchange	Green bonds	Nov-18
Santiago Stock Exchange	Green and social bonds	Nov-18
Moscow Exchange	Sustainable bonds	Jul-19
Euronext	Green bonds	Aug-19
Hong Kong Exchange	Sustainable and green bond exchange	Nov-19
Singapore Stock Exchange	Green, social and sustainability bonds	Jun-20