



United International University
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Project Paper
Empirical Evidences on Green Bond: A Literature Survey.

Submitted To

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Letter of Transmittal

February 07, 2022

To,

Dr. Md. Mohan Uddin

Professor

School of Business & Economics

United International University

Subject: Submission of Project Report Entitled on “Empirical Evidences on Green Bond: A Literature Survey”

Dear Sir,

I am very much grateful to you for presenting here with a report, as partial fulfillment of the Bachelor of Business administration (BBA) program requirement. This report was the best opportunity to know the implication of “Empirical Evidences on Green Bond: A Literature Survey”.

I am trying my best to fulfill the requirements of this report. In preparing the report, I have to sincere efforts to present the relevant information pertinent to this report and have analyzed them accordingly. I expect this report to be informative as well as comprehensive.

I am extremely obliged to you for your valuable guidance and constant attention as and when required in accomplishing this report and let me knows about any change and adjustment needed in the report.

Sincerely,

Yours obediently

Noman Hossain

111 151 178

Acknowledgement

I would like to thank the Almighty Allah without whom it would be impossible for me to get valuable information and complete the report.

I would like to acknowledge my sincere gratitude to my project supervisor Dr. Md. Mohan Uddin, a Professor, United International University, who authorized me to prepare the report on and help me in every possible way. He also assisted me in conducting extensive research and learning many new ideas. Without his kind advice, this would be impossible. I would thanks to all the members of school of business & economics, United International University, for their various levels of co-operation and support. I would also like to thank my parents for their support to complete my report.

Abstract

This report initially focuses on the general view of Green Bond. Green Bond was first issued in 2007 by the European Investment Bank under the label Climate Awareness Bond, as a structured bond with proceeds dedicated to renewable energy and energy efficiency projects.

The study introduces the study by discussing the concepts of Green Bond and its features. Most importantly this study contains the significance along with the objectives. The Green Bond is a fixed income tool which are used to finance environmental projects and project for climate change improvements. In 2017 green bond issuance increased at a record level around the world but in 2018 growths are decreased at a little. After that in 2019 climate aware market recovered the gap and it make a record around the world. Green Bond Creates Goodwill of the company, provide revenue and tax benefits, helped investors and also for environment. But the green bond have not high liquidity and not really sustainable in market.

The study contains the methods that used to collect information about green bond available in online. The complete filtering processes of the articles are discussed step by step in this study. There are 16 articles which are excluded for some reasons. After exclusion 45 appropriate articles are discussed in this study. The exclusion reasons are also given in the study.

The study contains literature review of the study where the found articles are being analyzed according to the objectives of the study. The study contains a broad discussion of the articles one by one, and shows the information about article, author, published year and the findings of those articles. Those information of the articles are summarized in a structured table on the study.

The study shows that green bond as a financial tool is quite conservative innovation. The green bond market has become a new infrastructure in the capital market.

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CHAPTER 1: INTRODUCTION

1.1 Green Bond

It is a kind of fixed-income tool which is particularly allocated to increase money for climate and environmental projects. "Green bonds are selected bonds proposed to inspire sustainability and to sustain climate-related or other types of special environmental projects. More precisely, green bonds finance projects are purposed for energy efficiency, pollution preclusion, sustainable agriculture, fishery and forestry, the safety of marine and global ecosystems, fresh transportation, hygienic water, and sustainable water management. They also finance the promotion of environmentally friendly technologies and the improvement of climate change" (invest opedia, 2020). "Making them a more good-looking investment compared to a similar taxable bond, green bonds come with tax incentives such as tax exception and tax credits. The tax advantages give a regulatory incentive to undertake important social issues like climate change and a faction toward renewable source of energy. Green bond are confirmed by a third party such as the Climate Bond Standard Board to qualify for green bond status, which confirms that the green bond will be finance projects that include benefits for the environment"(invest opedia, 2020)

1.2 Types of Green Bonds

Green bond is a bond which is used for financial environmental projects. There are four types of green bond, which are described under below:-

1. **Green 'Use of Proceeds' Revenue Bond:** The projects producing income are protect these kinds of bond.

2. **Green ‘Use of Proceeds’ Bond:** The assets are protect these kinds of bond.
3. **Green Securitized Bond:** The large pooled assets are protecting these kinds of bond.
4. **Green Project Bond:** The balance sheet and the assets of the project are protecting this kind of bond.

1.3 History of Green Bond

“The first green bond was issued in 2007 by the European Investment Bank, under the label Climate Awareness Bond, as a structured bond with proceeds dedicated to renewable energy and energy efficiency projects.

In 2008, the year the World Bank issued the first so-labeled green bond for institutional investors”(World bank organization, 2020).“When the World Bank issued the green bond, the bond created the blueprint for today’s green bond market. It defined the criteria for projects which are appropriate for green bond support included CICERO as a second opinion provider and added impact reporting as an primary part of the process. It also creates a new model of relationship between investors, banks, development agencies and scientists. Eventually, it was the result of their assurance, insistence and drives to find a solution. The World Bank has raised US\$13 billion through more than 150 green bonds in 20 currencies for institutional and retail investors all over the globe” (worldbank, 2020).

In 2010, green bond increase the capability of retail investors to contribute in this initiatives.In 2012, green bond issued amount are only \$2.6 billion. “But in 2016, green bonds are begun to discharge. Most of the act was distinguishable to Chinese borrowers who accounted for \$32.9 billion of the total or more than a third of all the

issuances. But the interest is worldwide with the European Union and the United States between the leaders” (invest opedia, 2020).

“In 2017, green bond issuance are increased at a record level, \$161 billion worth are invested around the world”, according by the latest report from the rating agency Moody's. But in 2018, green bond issuance growths are decreased at a little, only \$167 billion are invested, but the following year climate-aware market recovered the gap. “Green issuances make a record \$266.5 billion in 2019 and almost \$270 billion in the following year. Allianz SE, Axa SA, State Street Corporation, TIAA-CREF, Black Rock, AXA World Funds, and HSBC are the investment companies and asset management firms that have funded green bond mutual funds or ETFs”(invest opedia, 2020).“There are 50 countries or more have issued green bonds and the United States being the largest source of green bond issuances. The organization Climate Bonds Initiative is a valuable resource for those who want to follow the green bonds market’s growth. In 2020 global green bond issuance are \$350 billion, according to the organization” (International Finance Corporation, 2016).

1.4 Examples of Some Recent Green Bonds

“The World Bank is a main issuer of green bonds and since 2008 they issued \$14.4 billion of green bonds. These funds have been used to support 111 projects around the world, generally in renewable energy and efficiency (33%), clean transportation (27%), and agriculture and land use (15%). One of the bank's first green issuances financed the Rampur Hydropower Project, which designed to provide low-carbon

hydroelectric power to northern India's electricity grid. It produces almost two megawatts per year, preventing 1.4 million tons of carbon emissions.”(investopedia, 2020)Countries that have made green bond issuances outside of Europe contain Hong Kong, Indonesia, Chile, Nigeria and Fiji.

USA: In May 2013, Tesla Motors Inc. issued \$600 million exchangeable bonds.

NIGERIA: The nation has issuing “\$ 64 million green bond which is targeted at local investors. The profits would be help to finance low emission projects like solar power, deforestation, transportation etc.” (wallstreetmojo, 2020)

INDIA: Export-Import Bank (EXIM) issued “\$500 million green bonds in 5 years. These funds are used for funding Green projects in countries between the Indian Subcontinent (other than India) like Bangladesh and Sri Lanka. This bond had received a rating of BBB- by Standard & Poor’s and Baa3 by Moody’s.

Yes Bank Issued green bond of \$54 million that was completely bought by the International Finance Corporation (IFC).”(wallstreetmojo, 2020)

London Stock Exchange (LSE): “LSE provide investors with stronger access to green projects via green bonds, has launched a range of green bonds segments.”(Thakur, 2021)

1.5 Benefits of Green Bond

The expansion of bond markets offers rising opportunities to funding the execution of the Sustainable Development Goals. Green bonds are becoming a major form of green finance day by day, mainly for fresh and sustainable infrastructure development and their large funding needs. They recommend vehicle to both ways in finance from the capital markets and carry green impacts which can be accepted

against standards. Green bonds are financing in critical projects like renewable energy, urban mass transit systems and water distribution systems, in developing countries.

“In 2016, Green bonds mobilized above \$93 billion in projects and assets with constructive environmental impacts. In 2017, they could mobilize over \$200 billion of total global bond issuance. However, this is still approximately just 1%” (Climate and Development Knowledge Network (CDKN))

Green Bonds have some benefits. Some of the benefits are described under below:

- **Creates Goodwill of the Company:** The green bonds are used to finance the environmental projects. “It is a positive way of investing and creates a positive impact on the customers of the company which creates goodwill of the company” (EDUCBA, 2020).
- **Support More Investors:** It is the best possible choice to invest in green bonds for those investors who are willing to invest in environmental projects only.
- **Green Bonds Revenue:** The revenue comes from the green bonds can be used to raise working capital by the investor to pay back the loan to the bank.
- **Helpful for the Environment:** The green bonds help the environment by financing environmental projects which eventually leads to the development of the environment.
- **Working Capital:** The bond proceeds to help issuers capital structure, like issuers are allowed to use a certain percentage of the proceeds to pay back bank loans and invest in working capital.

- **Financial Market:** A bond also acts like a catalyst in the development of the local Financial Markets which can be help to financial support projects beyond environmental focused projects.
- **Tax Benefits:** The green bond also tend to have attractive tax benefits.

1.6 Criticism and Controversies about Green Bond

The green bond market has concerned international criticism with some curious the green identifications of certain bonds. This criticism relates both to the projects which are financed for the sustainability authorizations of the issuers. “In May 2017, the Climate Bonds project rejected to list a green bond issued by Repsol. The bonds proceeds would be due to creativities meant to develop the competence of the company’s oil and gas production operations. The NGO claimed that the projects would reduce CO2 emissions. The company’s sustainability policy did not good enough for an environmental perception to categorize it as green. This criticism was elaborated to VigeoEiris, the company that revised the Repsol bond’s green credentials. In 2016, VigeoEiris was involved in another green bond controversy. They were targeted by Western Sahara Resource Watch, an NGO backed by a Norwegian trade union. After that it revised a green bond that would finance the production of solar projects by a Moroccan government agency in the illegally occupied territory of Western Sahara” (wikipedia, 2020). There is also some limitations in green bond. Some limitations are given under below:

- **Lack of liquidity:** While investing in green bond the investors usually look for liquidity but the green bonds do not give this level of liquidity so the investors confused to invest in it.
- **Not sustainable:** When the company is sustainable as a whole, the investor usually prefers to invest in the company.

1.7 Objectives of the Study

➤ **Broad Objective:**

The prime objective of this study is to analyze the Green Bond Literature and summarize the findings about the green bond.

➤ **Specific Objectives:**

In order to accomplish the broad objective following specific objectives are emerged.

However, the objectives of this study are mentioned below specifically:

1. Identify impactful literature on green bond.
2. Summarize the criteria of green bond.
3. Synthesize the findings of green bond literature.

CHAPTER 2: RESEARCH METHODS

2.1 Literature Search Methodology

The literature survey has been conducted in the following step by step process:

Step 01: In 2021, September 20 and 21 I browse in google by

Scholar.google.com, On this sites serching bar I searched by “Green Bond”.

Step 02: Then I browse page 1 to page 7 and every page consists of 10 different

types of sites. In every single sites I found the Title Name,Journal Name,Author

Name,Keyword,Abstract and link of that page.

Table 2.1 Excluded Articles: The Table Shows that the reasons for exclusion articles and the title of excluded articles.

Reasons For Exclusion	Excluded Articles	Number of Excluded Articles
➤ Not Enough Information	1. Financing the transition to a green economy: their word is their (green) bond.	07
	2. A brief note on the global green bond market.	
	3. The surge of impact borrowing: the magnitude and determinants of green bond supply and its heterogeneity across markets.	
	4. Green bond experience in the Nordic countries.	
	5. Growing the US green bond market.	
	6. The State and Effectiveness of the Green Bond Market in China.	
	7. Financing green: reforming green bond regulation in the United states.	

Reasons For Exclusion	Excluded Articles	Number of Excluded Articles
➤ Privacy Error	1. "Survey of Green Bond Pricing and Investment Performance"(Global Evidence, 2019).	02
	2. impact of green bond policies on insurers: evidence from the European equity market.	
➤ Conceptual	1. Green Bond Finance and Certification.	07
	2. Which Bonds Trade at a Green Bond Premium?	
	3. "Time-varying relation between black and green bond price benchmarks: Macroeconomic determinants for the first decade"(Global Evidence, 2019).	
	4. Private governance schemes for green bond standard: influence on public authorities' policy making.	
	5. Green Bond, the Financial Instrument that Supports Sustainable Development. Opportunities and Barriers Author & abstract.	
	6. FINANCING GREEN: REFORMING GREEN BOND REGULATION IN THE UNITED STATES.	
	7. A Multidisciplinary Literature Review of Academic Research on the Green Bond Market.	

Step 03: Then I copy this informations on an Excel File and I also Excluded some sites for some reasons, in some of the sites I can't find those information which I

need, some sites are written by different languages and some other sites are conceptual for that I excluded those sites.

After Excluding 16 articles I found 45 Appropriate article and I took those article on an Excel file.

2.2 Exclusion Criteria

There are 3 reasons for exclusion articles and under this 3 reasons, 16 articles are excluded. Those reasons are given under below:

Not Enough Information: There are 7 articles which are not provide Keyword and abstract of the articles, for that I excluded those articles.

Privacy Error: There are 2 articles which have security issue for access their website, and for that reason i can't access on those sites.

Conceptual: There are 7 articles I found that those articles are theoretical paper. Those 7 articles are not research paper for that reason I excluded those articles also.

CHAPTER 3: REVIEW OF THE LITERATURE

3.1 Literature Review

The reasons of a literature review is to find that what has been done and how to utilize those information to design new research on the 'Green Bond'- the things that might be missing or the things we don't see. I find some articles about green bond and I also mark the findings of the green bond which are discussed on those articles.

The Articles Title, Author and their findings are given below specifically:

Table 3.1: Information's of The Articles: In this table, we can see that the title of the articles, author name of those articles, published year of the articles and also the findings of the articles.

SI	Author	Year	Article Title	Findings
01	Olivier David Zerbib	2017	The Green Bond Premium	We find that the regulatory and financial measures could help to create stimulus to continue feeding the pipeline and increase the amount of green bonds issued.
02	Linh Pham	2016	Is it risky to go green? A volatility analysis of the green bond market	"A shock in the overall conventional bond market spread into the green bond market, where the effect of this spillover is variable over time."(Research gate)
03	Josué Banga	2018	The green bond market: a potential source of climate finance for developing countries	"The outcomes recommend that the increase of green bonds is a fact in developed and rising countries, backed by arising climate-awareness from investors."(Research gate)
04	Juan C.Reboredo	2018	Green bond and financial markets: Co-movement, diversification and price spillover effects	The green bonds have small diversification profits for investors in corporate and treasury markets. Where the profits of diversity are huge for investors in stock and energy markets.
05	Pauline Deschryver, Frederic de Mariz	2020	What Future for the Green Bond Market? How Can Policymakers, Companies, and Investors Unlock the Potential of the Green Bond Market?	The current barriers by explaining the lack of scalability in the green bond market; a shortage of synchronized global standards; risks of green washing; Realization of higher costs for issuers; the lack of supply of green bonds for investors.

SI	Author	Year	Article Title	Findings
06	Juan C.Reboredo,Andrea Ugolini	2020	Price connectedness between green bond and financial markets	The green bond market is directly linked to the fixed-income and currency markets, receiving sizeable price spreads from those markets and transmitting little reverse effects. We also show that, in difference, the green bond market is weakly attached to the stock, energy and high-yield corporate bond markets.
07	S.Mac Askill,E.Roca,B.Liu, R.A.Stewart,O.Sahin	2021	Is there a green premium in the green bond market? Systematic literature review revealing premium determinants	“Future bond pricing should consider noneconomic motives of investors, such as environmental preferences and for future growth implications as a means towards the financing of climate change improvement efforts globally.”(Research gate)
08	Linh Pham,Toan Luu Duc Huynh	2020	How does investor attention influence the green bond market?	We find that investor attention can influence green bond returns and volatility, however, this relationship is time varying.
09	Vishaal Baulkaran	2020	Stock market reaction to green bond issuance	Regression analysis shows that green bonds with higher coupon rates extract a negative investor feedback.
10	Martin Lebelle, SouadLajili Jarjir, Syrine Sassi	2020	Corporate Green Bond Issuances: An International Evidence	We see that the market reacts negatively to the announcement of issue green bonds. In particular, the day after the date of the green bond announcement and the day after the stock market react.
11	Clarence Tolliver ,Alexander Ryota Keeley, Shunsuke Managi	2020	“Drivers of green bond market growth: The importance of Nationally Determined Contributions to the Paris Agreement and implications for sustainability”(Paris Agreement, 2020)	Nationally Determined Contributions and other macroeconomic and institutional factors are driving the rising green bond issue that will finance future climate and sustainable investments.

SI	Author	Year	Article Title	Findings
12	Madurika Nanayakkara, Sisira Colombage	2019	“Do investors in Green Bond market pay a premium? Global evidence”(Global Evidence, 2019)	“We find that the green labels provide an incentive for issuers to raise funds by issuing GBs while giving investors an opportunity to diversify their returns on investments.”(Research gate)
13	Juan Piñeiro-Chousa, M.Ángeles López-Cabarcos, Jérôme Caby, Aleksandar Šević	2021	The influence of investor sentiment on the green bond market	The results of this document will lead investors and the markets to consider social networks as a appropriate sources of information not only for the equity market but also for the bond market, especially for the green bond market.
14	Chuc AnhTu,Ehsan Rasoulinezhad, Tapan Sarker	2020	“Investigating solutions for the development of a green bond market: Evidence from analytic hierarchy process”(Global Evidence, 2019)	“The presence of an efficient legal framework for green bond operations, monetary policies of the State Bank of Vietnam and the official interest rate of green bonds are important accelerators the country can develop to reinforce its green bond market.”(Research gate)
15	Suk Hyun, Donghyun Park, Shu Tian	2019	The price of going green: the role of greenness in green bond markets	“The findings suggest that a universally accepted greenness measure can benefit the development of the green bond market.”(Research gate)
16	Caroline Harrison, Candace Partridge, Aneil Tripathy	2020	What's in a Greenium: An Analysis of Pricing Methodologies and Discourse in the Green Bond Market	These discussions have yet to provide conclusive evidence for or against the presence of a substantial greenium.
17	M. Chiesa, S. Barua	2018	The surge of impact borrowing: the magnitude and determinants of green bond supply and its heterogeneity across markets	“In general, issue sizes are positively related coupon rate, credit rating, parallel availability, and issuer sector and financial health. These features make bonds more reliable, secured, and generate returns for investors, which facilitates higher issue sizes through the needs of larger investors.”(tandfonline, 2020)

SI	Author	Year	Article Title	Findings
18	Candace Partridge, Francesca Romana Medda	2020	Green Bond Pricing: The Search for Greenium	These findings offer an explanation as to why there is a difference in greenium behavior in the primary and secondary markets.
19	Aneil Tripathy	2017	Translating to risk: The legibility of climate change and nature in the green bond market	These translations into risk require further risk management, promoting the production of green bond market devices such as standards and market indices.
20	Hao Zhang	2020	Regulating green bond in China: definition divergence and implications for policy making	There is still a slight difference between income and discretionary use of information. These Potential differences could affect the lenders investment valuation and their decision on whether to finance the issuer.
21	Daehyeon Park, Jiyeon Park ,Doojin Ryu	2020	“Volatility Spillovers between Equity and Green Bond Markets”(Global Evidence, 2019)	The green bond and equity markets confirms that although the two markets have some volatility spillover effects, neither responds significantly to negative shocks in the other market
22	Chi-Chuan Lee, Chien-Chiang Lee, Yong-Yi Li	2021	Oil price shocks, geopolitical risks, and green bond market dynamics	Our experimental results reveal a one-sided granger-cause of extreme oil prices from geopolitical risks.
23	Chuc Anh Tu, Ehsan Rasoulinezhad, Tapan Sarker	2020	Factors Influencing the Green Bond Market Expansion: Evidence from a Multi-Dimensional Analysis	“The major research has revealed that legal infrastructure; official interest rates on green bonds and economic stability are the most important factors directly affecting the green bond market extension. Therefore, economic and legal requirements should be addressed by policy makers.”(Global Evidence, 2019)
24	Joao Paulo Bragaa, Willi Semmler, Dieter Grass	2021	De-risking of green investments through a green bond market – Empirics and a dynamic model	Our model reveals that de-risked interest rates from the cost side and mark-ups and profit flows from the market side improve new entrants’ performance.

SI	Author	Year	Article Title	Findings
25	Anamaria Dan, Adriana Tiron-Tudor	2021	The Determinants of Green Bond Issuance in the European Union	“The results reveal that rating, ESG index; fiscal balance, inflation rate, and population have a significant impact and lead to a higher volume of green bond issuances. Our findings provide valuable insights into the development of the green bond market.”(Global Evidence, 2019).
26	Baris Kocaarslan	2021	How does the reserve currency (US dollar) affect the diversification capacity of green bond investments?	The main findings reveal that the important role of the increasing US dollar in enhancing the DCCs between green and conventional bond markets. Contrary to this finding, we observe that the increasing US dollar reduces the level of the DCCs of the green bonds with energy commodity and stock markets.
27	Pradiptarathi Panda	2017	Green Bond: A Socially Responsible Investment (SRI) Instrument	The present study aims to state that the genesis of Green Bond and its inception and the road ahead so far with current statistics.
28	Olivier David Zerbib	2019	The effect of pro-environmental preferences on bond prices: Evidence from green bonds	The results suggest a small negative premium: the yield of a green bond is lower than that of a conventional bond.
29	Siti Nurhidayah Mohd Roslen, Lee Sin Yee , Salizatul Aizah Binti Ibrahim	2017	Green Bond and shareholders' wealth: a multi-country event study	We find that shareholders generally respond positively one day after the issuance of green bonds by the issuers.
30	Petr Jakubik, Sibel Uguz	2019	“Impact of green bond policies on insurers: evidence from the European equity market”(mdpi, 2020)	Our results suggest that market investors positively price the issuance of green bonds and launching green funds.

SI	Author	Year	Article Title	Findings
31	Tom Bour	2019	The green bond premium and non-financial disclosure: Financing the future, or merely green washing?	“The results show that the green bond premium varies significantly across bond ratings, currencies, and issuer sectors. The results contradict the argument that green bonds are merely a tool to wash the green, as investors seem to value the credibility of the green bond signal.”(Bour, 2019)
32	Anna Laskowska	2018	THE GREEN BOND AS A PROSPECTIVE INSTRUMENT OF THE GLOBAL DEBT MARKET	The research process has confirmed that green bonds constitute a potential dimension to the global debt market.
33	Yingwei Han, PingLi, Sanmang Wu	2020	Does Green Bond Improve Portfolio Diversification?	Portfolio with green bond has better risk-return profile than portfolio with conventional bond.
34	Zhiyao Deng, Dragon Yongjun Tang and Yupu Zhang	2020	“Is “Greenness” “Priced in the Market? Evidence from Green Bond Issuance in China”(Global Evidence, 2019)	“The authors find that greener bonds (more proceeds are used for green projects) are sold at a premium. The authors further show that the yield of green bonds verified by a third party is lower and its effect is stronger for a more reputable third party.”(Global Evidence, 2019)
35	Nagihan Simeth	2021	“The value of external reviews in the secondary green bond market”(Simeth, 2021)	“The results of our analysis show that external reviews are effective signaling tools for issuers in the financial industry and an SPO most effectively signals the credibility and quality of greenness information.”(Simeth, 2021)

SI	Author	Year	Article Title	Findings
36	Qinghua Wang, Yaning Zhou, LiLuo, Junping Ji	2019	“Research on the Factors Affecting the Risk Premium of China’s Green Bond Issuance”(Global Evidence, 2019)	“The study found that the green attribute factor affecting the risk premium of green bonds is third-party green assessment certification. The issuing factors that affect the green bond risk premium include the origin of the loan, the nature of property rights and the return on net assets. The macro factor affecting green bond risk premium is the current market interest rate.”(mdpi, 2020)
37	Eric Gwandega Magale	2021	Developing a green bond market in Kenya: perspectives from practitioners and lessons from developing markets	“Findings from the interviews point to lack of awareness, weak drive for responsible investment, low institutional capacity and limited expertise of practitioners, inadequate risk management tools and significant issuance and monitoring costs as the main barriers to growth of the market.”(tandfonline, 2020)
38	Rakesh Kumar Verma, Rohit Bansal	2021	Stock Market Reaction on Green-Bond Issue: Evidence from Indian Green-Bond Issuers	It shows the reaction of the stock price after the issue of green bonds.
39	Christian Elliott, Le-Yin Zhang	2019	Diffusion and innovation for transition: transnational governance in China’s green bond market development	This study proposes an agenda for examining governance as an entry point for analyzing and developing strategies for sustainable change meaning.
40	De-Graft Owusu-Manu; Lawrence Mankata; David Edwards; Hatem El-Gohary; Javed Hussain	2021	A Cognizance of Green Bond Features Preferential to Renewable Energy Project Financing in Ghana	The results indicate that for REF as in other global fields, GBs represent a degree of flexibility, which results from uniformity in their respective characteristics.

SI	Author	Year	Article Title	Findings
41	Gabor Gyura	2020	Green Bonds and Green Bond Funds: The Quest for the Real Impact	There is little additionally in green bonds; the sheer growth of such instruments, therefore, does not mean that the same amount of capital flows to environmental sustainability efforts.
42	Karolina Daszyńska-Żygadło, Jakub Marszałek, Krzysztof Piontek	2018	Sustainable Finance Instruments' Risk	We have also learned that the push of the conventional bond market as a whole does not resonate with the green bond market.
43	D Siswantoro	2018	Performance of Indonesian green sukuk (islamic bond): a sovereign bond comparison analysis, climate change concerns?	“The result showed that since the condition during the offering period was oversubscribed, it does not necessarily correlate to the performance after issuance period of green sukuk. The decrease of Indonesian green sukuk prices are caused by macroeconomic factors hence the good image of green activities does not always attract investors directly.”(Siswantoro, 2018)
44	Farhad Taghizadeh-Hesary, Aline Mortha, Naoyuki Yoshino, Han Phoumin	2021	“Utilizing Green Finance for Sustainability: Empirical Analysis of the Characteristics of Green Bond Markets”(Research gate)	Our research shows that green bonds in Asia show higher returns but higher risks and higher variability.
45	Huanhuan Zheng	2021	Climate Policy and Corporate Green Bond Issuances	We find that green bonds reveal higher capacity to borrow foreign capital in local currency than regular bonds issued by the same firm, which reduces currency mismatch risk in corporate balance sheets while increasing that in investors.

CHAPTER 4: RESEARCH FINDINGS

4.1 Synthesis of Findings

In this report we see that the some authors are agree with other authors research findings and there are also some authors which are not agree with another authors research findings.

Olivier David Zerbib said that the regulatory and financial measures could help to create stimulus to continue feeding the pipeline and increase the amount of green bonds issued. Anamaria Dan, Adriana Tiron-Tudor said that there is a significant impact on the balance of revenue, inflation rate and population and this leads to higher volume of green bond issuance. Clarence Tolliver, Alexander Ryota Keeley, Shunsuke Managi also said that macroeconomic and institutional factors are driving the rising green bond issue that will finance future climate and sustainable investments. D Siswanto said that the decline in the price of Indonesian green Sukuk is due to macroeconomic factors, so a good picture of green activity does not always directly attract investors. Josué Banga told that the increase of green bonds is a fact in developed and rising countries, backed by an rising climate-awareness from investors.

Linh Pham said that a shock in the overall conventional bond market spread into the green bond market, where the effect of this spillover is variable over time. Karolina Daszyńska-Żygadło, Jakub Marszałek, Krzysztof Piontek said that all green bond indices, experience large volatility clustering. We have also learned that the push of the conventional bond market as a whole does not resonate with the green bond market. Olivier David Zerbib also said that “the yield of a green bond is lower than that of a conventional bond. We show that this negative premium is more pronounced for financial and low-rated bonds” (Research gate). Yingwei Han, Ping Li, Sanmang Wu

also said about the conventional bond that portfolio with green bond has better risk-return profile than portfolio with conventional bond.

Juan C. Reboredo said that the green bonds have small diversification profits for investors in corporate and treasury markets. The profits of the diversity are huge for investors both in stock and energy markets.

Pauline Deschryver, Frederic de Mariz discuss about the lack of scalability in the green bond market; a shortage of synchronized global standards; risks of green washing; Realization of higher costs for issuers; the lack of supply of green bonds for investors; and the overall childhood of the market.

Juan C.Reboredo, Andrea Ugolini said “that the green bond market is directly linked to the fixed-income and currency markets, receiving sizeable price spreads from those markets and transmitting little reverse effects. We also show that, in difference, the green bond market is weakly attached to the stock, energy and high-yield corporate bond markets”(Research gate).

S.MacAskill, E.Roca, B.Liu, R.A.Stewart, O.Sahin discuss about that “future bond pricing should consider noneconomic motives of investors, such as environmental preferences and for future growth implications as a means towards the financing of climate change improvement efforts globally”(Research gate).

Linh Pham, Toan Luu Duc Huynh said that investor attention can influence green bond returns and volatility, however, this relationship is time varying. Daehyeon Park, Jiyeon Park ,Doojin Ryu are also said that the green bond and equity markets confirm that although some volatility in both markets has a spillover effect, both do not respond significantly to negative shocks in the other markets.

Vishaal Baulkaran said that value-enhancing and funds from green bonds issuance are used to assume profitable green projects or as a means of risk improvement. Green bonds with higher coupon rates extract a negative investor feedback.

Martin Lebel, Souad Lajili Jarjir, Syrine Sassi find that the market reacts negatively to the announcement of issue green bonds. In particular, the day after the date of the green bond announcement and the day after the stock market react. But Siti Nurhidayah Mohd Roslen, Lee Sin Yee, Salizatul Aizah Binti Ibrahim are said that shareholders generally respond positively one day after the issuance of green bonds by the issuers. Rakesh Kumar Verma, Rohit Bansal said that the reaction of the stock price after the issue of green bonds.

Madurika Nanayakkara, Sisira Colombage find that the green labels provide an incentive for issuers to raise funds by issuing GBs while giving investors an opportunity to diversify their returns on investments.

Juan Piñeiro-Chousa, M. Ángeles López-Cabarcos, Jérôme Caby, Aleksandar Šević said that social networks as an appropriate sources of information not only for the equity market but also for the bond market, especially for the green bond market.

Chuc Anh Tu, Ehsan Rasoulinezhad, Tapan Sarker said that the official interest rate of green bonds are important accelerators the country can develop to reinforce its green bond market. They also said that the green bond market extension are directly affected by legal infrastructure; official interest rates on green bonds and economic stability factors.

Caroline Harrison, Candace Partridge, Aneil Tripathy said that conclusive evidence for or against the presence of a substantial greenium.

M. Chiesa, S. Barua said that, issue sizes are positively related coupon rate, credit rating, parallel availability, and issuer sector and financial health. These features make bonds more reliable, secured, and generate returns for investors, which facilitates higher issue sizes through the needs of larger investors.

Candace Partridge, Francesca Romana Medda discuss about the reasons of differences in greenium behavior in the primary and secondary markets.

Aneil Tripathy translate that promoting the production of green bond market devices such as standards and market indices.

Hao Zhang said that the difference between income and discretionary use of information. These Potential differences could affect the lenders investment valuation and their decision on whether to finance the issuer.

Chi-Chuan Lee, Chien-Chiang Lee, Yong-Yi Li reveal that the reveal a one-sided granger-cause of extreme oil prices from geopolitical risks.

Joao Paulo Bragaa, Willi Semmler, Dieter Grass said that de-risked interest rates, from the cost side, and mark-ups and profit flows, from the market side, improve new entrants' performance.

Pradiptarathi Panda said that the genesis of Green Bond and its inception and the road ahead so far with current statistics.

Petr Jakubik, SibelUguz are said that the market investors positively price the issuance of green bonds and launching green funds.

Tom Bour said that the green bond premium varies significantly across bond ratings, currencies, and issuer sectors. The results contradict the argument that green bonds are merely a tool to wash the green.

Anna Laskowska confirmed that green bonds constitute a potential dimension to the global debt market.

Zhiyao Deng, Dragon Yongjun Tang and Yupu Zhang, they showed that the yield of green bonds verified by a third party is lower and its effect is stronger for a more reputable third party. Qinghua Wang, Yaning Zhou, LiLuo, Junping Ji said that the green attribute factor affecting the risk premium of green bonds is third-party green assessment certification. The issuing factors that affect the green bond risk premium include the origin of the loan, the nature of property rights and the return on net assets.

Eric Gwandega Magale find that the main barriers to growth of the market are lack of awareness, irresponsible investment, institutional inability and limited expertise of practitioners, inadequate risk management tools and significant issuance and monitoring costs.

Christian Elliott, Le-Yin Zhang are said about an agenda for examining governance as an entry point for analyzing and developing strategies for sustainable change meaning.

De-Graft Owusu-Manu; Lawrence Mankata; David Edwards; Hatem El-Gohary; Javed Hussain is discussing about the GBs represent a degree of flexibility, which results from uniformity in their respective characteristics.

Farhad Taghizadeh-Hesary, Aline Mortha, Naoyuki Yoshino, Han Phoumin prove that green bonds in Asia show higher returns but higher risks and higher variability.

4.2 Summary of Findings

After Researching about green bond I found some findings about green bond. Some of the important findings are given under below:

1. The green bonds constitute a prospective dimension of the global debt market.
2. The rise of green bonds is a fact in developed and emerging countries, backed by an increasing climate-awareness from investors.
3. The green bond market is closely linked to the fixed-income and currency markets, the green bond market is weakly tied to the stock, energy and high-yield corporate bond markets.
4. The market reacts negatively to the announcement of green bond issuances. And the stock market reacts on the day of the green bond announcement date and the day after. And the other authors added that shareholders generally react positively a day after the Green Bond announcements were made by issuers.
5. Green bond issue size is positively related coupon rate, credit rating, collateral availability, and issuer's sector and financial health which facilitates higher issue size through greater investor demand.
6. The rising US dollar reduces the level of the DCCs of the green bonds with energy commodity and stock markets.
7. The green bonds verified by a third party have lower yield spreads and the effect is stronger for more reputable third parties. Some others added that the green attribute factor affecting the risk premium of green bonds is third-party green assessment certification.

8. The green bonds in Asia tend to show higher returns but higher risks and higher heterogeneity.

CHAPTER 5: CONCLUSION

Green bonds are a natural source of financing for issuers who have a financing or refinancing requirement for a green project. Green bonds do not currently appear to be premium compared to non-green bonds issued by the same issuer. Green bonds can be attractive to issuers and investors alike with the right balance on the green and commercial aspects. "There are some direct financial incentives, especially for issuers who highlight small reductions in the cost of capital and better access to capital. Overall, I see that the bottom up growth of the green bond market is due to the strong match between the issuers and the investors. Green bonds are designed to be a well-known and low risk financial instrument that allows both investors and issuers to contribute to sustainable orders at relatively low cost."(tandfonline, 2020) I have found that the green bonds give people outside the market and the idea that they are actually more influential in capital conversions. The analysis shows that green bonds as a financial tool is a quite conservative innovation. They do not seem to unlock new sources of capital for green investments or if they are not otherwise, new investments do not seem financially effective.

The analysis shows that there are many similarities between active ownership and the structure of the green bond market which is easily missed if one only focuses on the method of marketing green bonds. The green bond market has become a new infrastructure in the capital market in the original guidelines, use of proceeds commitments, external validation, and reporting. This new infrastructure is changing the way actors interact on capital markets, raising expectations about ESG performance.

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