Chapter 12
Relationship Between AI and Green Finance:
Exploring the Changing Dynamics

Jatin Jangid
Central University of Himachal Pradesh, India

Bhawana Bhardwaj
https://orcid.org/0000-0002-0564-2964
Central University of Himachal Pradesh, India

ABSTRACT

Green finance shows the pathway to address climate change related issues and helps in achieving the sustainable development goals (SDGs). Investor confidence is imperative for the growth of any financial instrument. Introduction of blockchain and fintech in green finance instruments helps to earn investor confidence. The purpose of the current study is to analyze the association and hedging effects between the artificial intelligence (AI) and green finance (GF). Data was extracted with the help of 'yahoofinance.com'. Correlation analysis was performed with the help of software R to address the objective of the study. Implication of the study helps investor to diversify their portfolio and helps issuers to issue AI enabled GF instruments.

INTRODUCTION

Environmental issues have been become more prevalent to address since last decade, specifically after the Paris agreement, in 2016. Environment has been exploited extensively during the industrial revolution and the consequences of that have started displaying recently. Major and mostly initiatives about the issues are taken by since last decade i.e. launch Sustainable Development Goals (SDGs) for 2030, introduce National Determined Contribution (NDC) in Paris agreement and many more. Attention towards environmental concerns have been increased for the last two decades that resulted in to numerous agreements and accords and management practices at organizational as well as employees' level

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(Anshima and Bhardwaj, 2023). The main objective of these agreements is to achieve the sustainable development goals by using different targets i.e. achieve net-zero goals, reduction in GHG emission, etc. Recent growth in the Asia has resulted in high air pollution in the Asia-pacific region (Uddin et al, 2022).

The major pillar for achieving sustainability is to arrange the adequate finance (Barua & Chiesa, 2019). To meet the criteria of sustainable project required copious amount of investment in green infrastructures. According to an estimate of UNCTAD, to meet the target of SDGs will require USD 5 to 7tn every year for 15 years. To meet the increasing demand of the finance towards sustainability, it is necessary to adopt innovative financial instruments, which is developed to meet the requirement of green finance. Green finance is one of the initiative in this direction that tries to give fair returns to the investors and helpful in order to finance the sustainable development goals (Berensmann and Lindenberg, 2019; Ozili, 2021). In the domain of green finance, famous financial green instruments is Green Bond (GB). The capacity of GBs to source the funds towards sustainability has been increased since the first issuance of GB in 2007 by European Investment Bank (EIB). GB has been become popular and preferred choice among the investors since it came into existence. In this study, GB based index was also taken to represent the GF, previous literature took GB as a proxy of GF (Taghizadeh-Hesary et al., 2021; Aneja et al., 2023). Numerous reasons are there to explain the limited growth of GB and one of them is the presence of information asymmetry (Berensmann & Lindenberg, 2016). The problem of information asymmetry will be reduced drastically with the help of AI based fintech resources (Cen & He, 2018).

Artificial intelligence is the crucial, relevant and the center point in Modern business management (Bhardwaj et al., 2023a). With industrial revolution 4.0, the whole world suffers from the climate change in today's world. Major economies of the world have been affected by the climate change issue. Since a long time various initiative have been taken up at global level to reduce carbon emission such as carbon trading, carbon credits etc (Bhardwaj, 2013). However, to tackle this issue, it is need to have copious amount of investment in the green technology. To increase the collection of amounts that is use for sustainability, numbers of financial instrument came into existence. Out of them, GB is one of the famous instruments. Finance supplying capacity of Green Bond has been increased over time, because GB can hedge the complete investors' equity portfolio in all economic conditions of the company (Chopra & Mehta, 2023).

There is numerous study that shows the relationship and asymmetric connection between Green Finance (GF) and different type of financial assets. (Yan et al., 2022; Dutta et al., 2021) reveals the association between the Gold and GB and (Saeed et al, 2021) studied the connection of GB and dirty assets in non-normal periods. (Baulkaran, 2019; Pham & Nguyen, 2022; Zhou and Cui, 2019) studied the stock market reactions after the issuance or announcement of issuance of GB and influence of stock market prices on the GB markets. Another branch of study related to the Market performance and GB issuance connection, (Pham, 2016) documented positive relation of GB market with conventional bond market and (Pham & Huynh, 2020) stated connection between investor attention and GB market performance. Indeed, there is no specific study that show the relation between green assets index and the Artificial Intelligence (AI) based stock index or aggregate index. AI and Green assets are very essential in today's world. Thus,in this study we try to examine the association between both the variables. To achieve this research objective, we use AI based stock index and green bond index for the respective proxies of AI and GB.

This study contributes to existing plethora of knowledge in this field in multiple ways.First, Since the literature analysing the relationship between these two variables is negligible it will help in the advancement of theory on green bonds and AI. Second, this is the pioneer study covering these variables

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