

Review paper

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FOSTERING GREEN ECONOMY THROUGH NEW FINANCIAL INSTRUMENTS IN CENTRAL BANKS' PORTFOLIOS

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ABSTRACT

The green economy implies the use of renewable energy from biomass, solar panels, wind power plants and recycled waste, while providing the environmental protection, human well-being and sustainable economic progress. As with other investments, the important question is how to find sufficient sources of funds and get investors interested in these projects. Global green bond issuance started along with the increasing need for financing green businesses and technologies, resolving climate change issues and financing through efficient emission of green securities and trading on markets. The proceeds of these bonds are explicitly used to finance new or existing green projects. This paper examines the concept and evolving of green bonds with emphasis on the new role of central banks in greening financial systems and its impact towards a green economy. The green bond market dates back to 2007, with launching the World Bank Green Bonds programme in 2007 and the Climate Awareness Bonds by the European Investment Bank (EIB) in 2008 for financing renewable energy and energy efficiency projects. The significance of making bond between sustainable economic development and environmental issues is evident through the rapid growth of these green instruments. The objective of this research was to identify new types of financial instruments intended to improve ecological projects, as well as to compare effects of green bonds utilization in different countries and by different institutions. The results show the improvement of the financial market and investor profits, while there is simultaneously significant growth of green projects pointing to the benefits of using this new form of financial instrument in promoting the green economy.

Keywords: *green economy, sustainable and responsible investment, central banks, green bonds.*

INTRODUCTION

The green economy concept is based on solid foundations of environmental protection, social development and economic progress. The idea of "green economy" is perceived differently by each country depending on a number of factors. Recently there has been a sharp increase in global interest in greening and

the reasons lie in the fact that people slowly but surely raise their environmental awareness. With the process of globalization the enormous scale of the ecological crisis, the disturbance of ecosystems, and the overexploitation of natural resources also arise.

The term green economy was first used in 1989 in *Blueprint for a green economy*, composed by a group of leading British economists (Pearce et al., 1989). Green bonds concept is relatively new trend representing support to environmentally responsible finance and investment practices. The bond between sustainable economic development and environmental issues is the essence of this principle. UNEP (United Nations Environment Program) defines the green economy as an economy that results in improved human well-being and social equality, with a significant reduction in environmental risks and further environmental degradation. The utilization of the principles of the greening should reduce the harmful effects of global climate change while ensuring development economic strategies. The green economy implies the use of renewable energy from biomass, solar panels, wind power plants and recycled waste, while providing the environmental protection, human well-being and sustainable economic progress. As with other investments, the important question is how to find sufficient sources of funds and get investors interested in these projects. For investors trying to achieve both sustainability and financial objectives, green bonds have emerged as a significant tool toward the UN Sustainable Development Goals (SDGs). Green bonds are fixed income securities whose proceeds are used to finance new or existing eligible green projects (BIS, 2019).

The main actors driving green finance development are central banks, international financial institutions, financial regulators, institutional investors and commercial banks. Central banks have now taken a leading role within the financial system using a wide range of financial products to support the greening of the financial system. Through the literature, the main arguments justifying new central bank roles are the environmental and sustainability challenges including the financial and macroeconomic risk argument, the market failure argument, and an argument relating to the role of central banks as credible and powerful actors, especially in developing countries (Volz, 2017).

The objective of this paper is to explore the effect of inclusion of green bonds in the central banks portfolio considering types of green bonds, risk and return for investors.

MATERIAL AND METHODS

Empirical analysis comprises central banks in their portfolio expansion with new financial instrument, green bonds. The first part of the analysis looks at changing role of central banks and their adjustment in incorporating environmental sustainability objectives into their portfolios. In this paper it is explored how sustainability considerations can be integrated into the central banks framework. The second part presents the findings of the green bond structures by issuer type profiles and regions. The benefits and the risks were also observed through

generating diversification as well as significance of features on different bond types for issuers and investors.

In a time range of 5 years, the rapid issuance and growing demand shows significant rising from less than \$50 billion in 2014 to close to \$260 billion in 2019 (Climate Bonds Initiative, 2020). The paper reviews features and trends in green bonds through analysing data from the official websites of the observed central banks and financial institutions, as well as survey reports which follow the growth trends and movements of these bonds.

RESULTS AND DISCUSSION

A significant group of authors point out that the green economy is experiencing a real expansion after the last financial crisis (Georgeson et al. 2017; Davies 2013; Bowen et al. 2009). The need for new forms of investment and innovative financial resources were the impetus for further growth and development of this economic form. It is generally accepted that the concept of a green economy should improve human well-being and reduce inequality, while reducing harmful human impacts on the environment (Newton and Cantarello, 2014). According to these authors, it enables: reduction of atmospheric warming by reducing greenhouse gas emissions, stabilization of average air temperature, adequate management of natural resources, increasing the country's resilience to environmental changes or natural disasters and catastrophes. In addition to these environmental benefits of the green economy, it also brings social and economic benefits. In terms of economic effects, it is primarily referred to increasing economic growth and employment rates.

Considering the role of central banks in enhancing green finance, it includes possibility that financial firms may face climate or environment-related liability risks that could arise if agents suffering losses related to climate change or environmental damages seek compensation from those they hold responsible for their damage, including carbon extractors or emitters and environmental polluters more generally. To the extent that central banks are tasked with guarding financial stability, these risks need to be considered in central banks' financial stability and macroprudential policy frameworks (Carney, 2015). Green bonds offer similar yields, ratings and return profiles to other fixed income investments, and they fund projects that are making a tangible and measurable impact in the effort to address environmental, social and economic challenges. In other words, they offer additional impact benefits for investors, without additional financial risk (Graff and Hauter, 2017). Unlike classic bonds, green bonds support the financing of projects in the field of climate change mitigation. Their value lies in the fact that the issuer undertakes directly collected funds to the financing of projects that have a positive impact on the environment. These funds are raised exclusively to finance or refinance "green projects" and they are focused on energy efficiency (including efficient buildings), sustainable waste management, sustainable land use (including sustainable forestry and agriculture), conservation of biodiversity, clean transport, sustainable water management (including clean and/or drinking water) and adaptation to climate change (Vella, 2018). Green bonds are fixed income

securities whose proceeds are used to finance new or existing eligible green projects, projects to combat pollution, climate change or the depletion of biodiversity and natural resources (Ehlers and Packer, 2017). Green bonds were created to fund projects that have positive environmental and/or climate benefits. In Table 1. the main types of green bonds are presented and we can notice that majority of the green bonds issued are green “use of proceeds” or asset-linked bonds. There have also been green "use of proceeds" revenue bonds, green project bonds and green securitised bonds. Proceeds from these bonds are *earmarked* for green projects but are backed by the issuer’s entire balance sheet (Climate Bond Initiative, 2020).

Table 1. Types of green bonds

<i>Type</i>	<i>Proceeds raised by bond sale are</i>	<i>Debt recourse</i>	<i>Example</i>
"Use of Proceeds" Bond	Earmarked for green projects	Recourse to the issuer: same credit rating applies as issuer's other bonds	EIB "Climate Awareness Bond" (backed by EIB); Barclays Green Bond
"Use of Proceeds" Revenue Bond	Earmarked for or refines green projects	Revenue streams from the issuers though fees, taxes etc. are collateral for the debt	Hawaii State (backed by fee on electricity bills of the state utilities)
Project Bond	Ring-fenced for the specific underlying green project(s)	Recourse is only to the project's assets and balance sheet	Invenergy Wind Farm (backed by Invenergy Campo Palomas wind f.)
Securitisation (ABS) Bond	Refinance portfolios of green projects or proceeds are earmarked for green projects	Recourse is to a group of projects that have been grouped together (e.g. solar leases or green mortgages)	Tesla Energy (backed by residential solar leases); Obvion (backed by green mortgages)
Covered Bond	Earmarked for eligible projects included in the covered	Recourse to the issuer and, if the issuer is unable to repay the bond, to the	Berlin Hyp green Pfandbrief; Sparebank 1 Bolligkredit green covered bond

	pool	covered pool	
Loan	Earmarked for eligible projects or secured on eligible assets	Full recourse to the borrower(s) in the case of unsecured loans. Recourse to the collateral in the case of secured loans, but may also feature limited recourse to the borrower(s)	MEP Werke, Ivanhoe Cambridge and Natixis Assurances (DUO), OVG
Other debt instruments	Earmarked for eligible projects		Convertible Bonds or Notes, Schuldschein, Commercial Paper

Source: Adapted by the author, from The Climate Bonds Initiative (2020)

There are several main reasons for introducing green bonds to the market and into the central bank portfolio. We can observe it through the mutual benefit of investors, the state, the financial market and other participants in that market. From the investor's point of view, the modern era should involve different factors and partners into their investment processes, so that investors benefits could be: funding green projects without taking any additional risk or cost, greater transparency into a bond's use of proceeds, being in line with the basic principles on which sustainable development is based on along with environmental protection, reporting on climate impact of fixed income investments to their end asset owner. For years, investors have been growing their understanding of how environmental, social and governance issues in the real world affect their portfolios. Now understanding is also growing of how investors' actions also have outcomes in the real world - along with expectations of what investors should be doing about those outcomes (PRI, 2020). Green bonds have some additional transaction cost because issuers must track, monitor and report on use of proceeds. However, many issuers, especially repeat green bond issuers, offset this initial cost with the following benefits: highlights their green assets/business, positive marketing story, diversify their investor base and joins up internal teams in order to do the investor roadshow (environmental team with Investor relations and other business). The World Bank provides data on the estimated impact of its portfolio, e.g. two energy saving projects in China expect to save 12.6 million tons of CO2 equivalent annually through US\$400 million of financing from green bonds. According to the current data of the Climate Bond Initiative (CBI), global green bond and green loan issuance reached USD 257.7 bn in 2019, making a new global record. This presents huge increase in demand for this form of financial innovation since it started, thus justifying its creation. The green bond market dates back to 2007, when institutions such as the European Investment Bank and the World Bank issued bonds for financing, renewable energy and energy efficiency projects. Since

its introduction to the present day, the green bond market has diversified, with new issuers worldwide, especially in developed countries. Starting in 2007 by multilateral development banks, the market is mainly driven by issuers from the public sector, municipalities and states, government agencies, national and international banks.

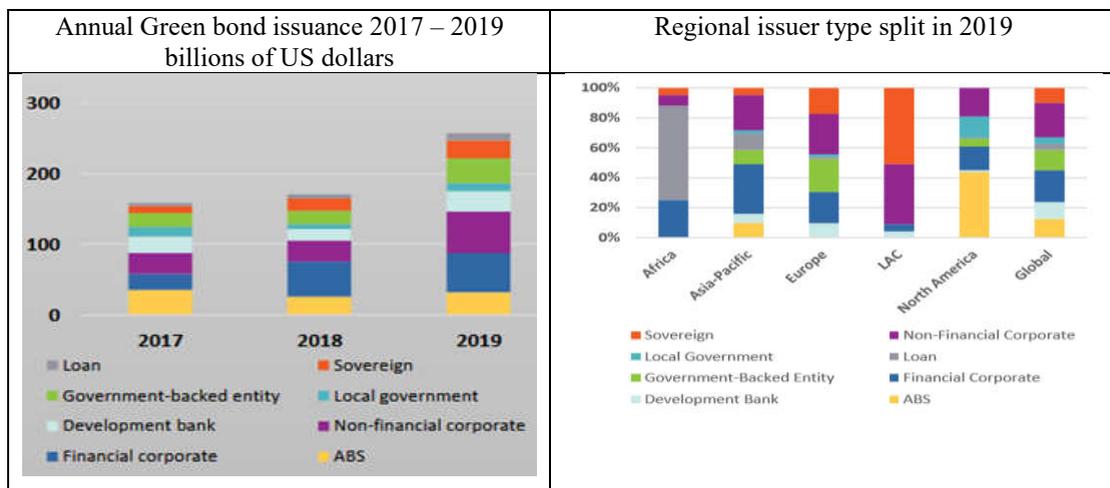


Figure 1. Annual issuance of green bonds by issuers and issuer split in 2019

*Source: Climate Bonds Initiative (2020)

The data shows that there is a continuing rise in Sustainability/SDG bond frameworks in 2019, looking between green and social eligibility criteria, which allow the issuer to classify a bond as “green”, “sustainability” or “social” depending on the use of proceeds. This framework allows the issuer to make a clear distinction between bonds that finance environmental and social projects, if relevant. This makes it easier for investors with a dedicated mandate to identify bonds that comply with their investment criteria. When observing regionally, USA, China and France are top-ranked countries. Together they accounted for 44% of global issuance in 2019.

Regional analysis of issuer types compared to 2019 shows the following differences: We can notice the structural differences in the types of issuers that access debt markets in each region. In the USA, significant issuance volume from Fannie Mae leads to a very high share of ABS deals and Muni bonds (issued by US local governments) are also common. In Europe, the share of government-backed entities is much higher than in most other regions owing to the historically greater role played by European states in economic activities and planning. In certain countries, for instance Brazil, local governments have limited abilities to issue debt, since it requires a sovereign guarantee. Comparing the profiles in 2019 with those up to 2018, it is also clear that less developed regions - namely Africa and Latin America and the Caribbean (LAC) - tend to have a more “volatile” mix of issuer types than their more developed counterparts. Sovereign issuance in Europe

also picked up in the last two years (especially in 2018). Overall, the issuer type mix in Europe is consistently the most varied and balanced of the regions. Asia-Pacific region saw a changing mix with an increase in non-financial corporate issuance in 2019, coupled with a decrease in financial corporate and development bank activity. In North America, the corporates - both financial and non-financial are growing in share while local governments are dropping on a relative basis.

CONCLUSION

The growth of green bond markets fosters the possibility to finance the implementation of green economy projects and to achieve the Sustainable Development Goals. This means more low-carbon, energy- and resource-efficient circular projects. Central banks are now playing an active and significant role in promoting the green and sustainable global economy. Integrating sustainability deliberations should help in diminishing the impact of natural disasters, simultaneously considering environmental and social sustainability issues that can affect the economy and financial markets.

Central banks can use various tools to support the greening of the financial system as it is including green bonds in their portfolios. The practice shows multiple benefits for investors, governments, social as well as environmental benefits. Green bonds can stimulate financial markets, regulatory and economic policy reforms to boost green growth and to help countries significantly accelerate green economy transformation.

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